REPORT

on the global HIV/AIDS epidemic

June 2000

Joint United Nations Programme on HIV/AIDS

UNAIDS

UNICEF • UNDP • UNFPA • UNDCP
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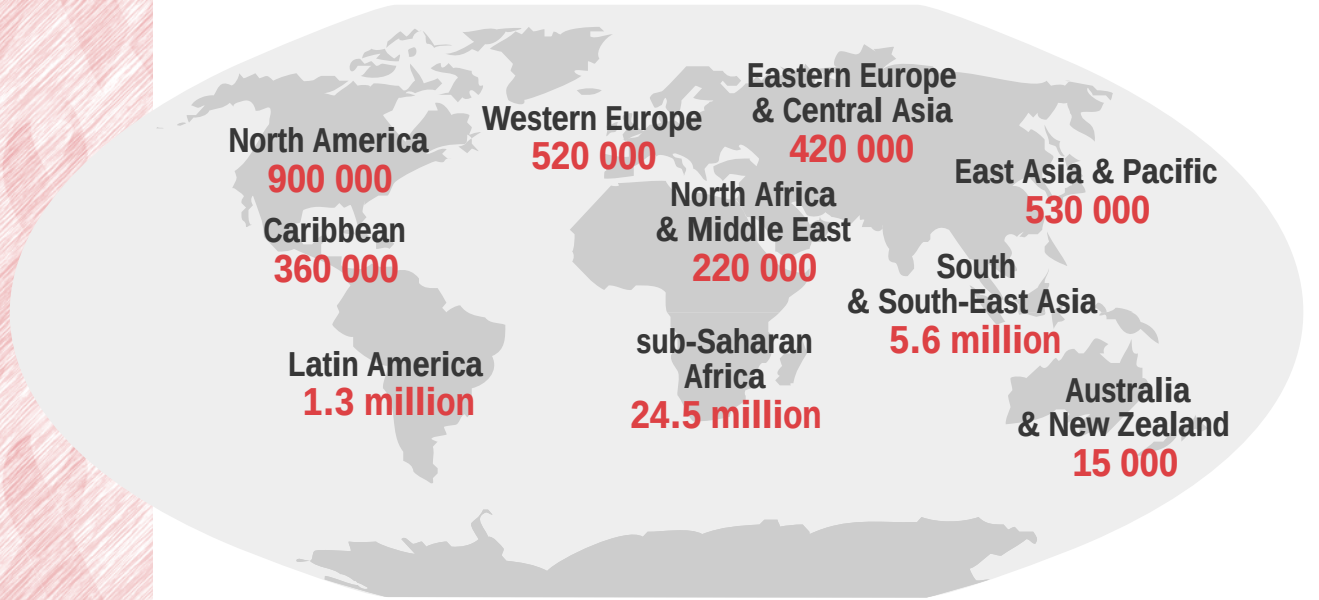
Global estimates of the HIV/AIDS epidemic as of end 1999[1]

People newly infected with HIV in 1999	**Total**	**5.4 million**
	Adults	4.7 million
	Women	*2.3 million*
	Children <15 years	620 000
Number of people living with HIV/AIDS	**Total**	**34.3 million**
	Adults	33.0 million
	Women	*15.7 million*
	Children <15 years	1.3 million
AIDS deaths in 1999	**Total**	**2.8 million**
	Adults	2.3 million
	Women	*1.2 million*
	Children <15 years	500 000
Total number of AIDS deaths since the beginning of the epidemic	**Total**	**18.8 million**
	Adults	15.0 million
	Women	*7.7 million*
	Children <15 years	3.8 million
Total number of AIDS orphans[2] since the beginning of the epidemic		**13.2 million**

[1] This summary supersedes the one published in the December 1999 *Update on the global HIV/AIDS epidemic*. For an explanation of how estimates are generated and updated, see Annex 1, pages 116-118.

[2] Defined as children who lost their mother or both parents to AIDS when they were under the age of 15.



Adults and children living with HIV/AIDS – total: 34.3 million

Preface

A decade ago, HIV/AIDS was regarded primarily as a serious health crisis. Estimates in 1991 predicted that in sub-Saharan Africa, by the end of the decade, 9 million people would be infected and 5 million would die – a threefold underestimation. Today, it is clear that AIDS is a development crisis, and in some parts of the world is rapidly becoming a security crisis too. There is now compelling evidence, presented in this report, that the trend in HIV infection will have a profound impact on future rates of infant, child and maternal mortality, life expectancy and economic growth. These unprecedented impacts at the macro-level are matched by the intense burden of suffering among individuals and households. AIDS is unique in its devastating impact on the social, economic and demographic underpinnings of development.

This report also tells another story. It demonstrates that 15 years of action against the epidemic have generated important insights into effective responses. It demonstrates that, while international political, financial and technical support are important, lowering incidence and mitigating the epidemic's impacts must be a *nationally* driven agenda. To be effective and credible, national responses require the persistent engagement of the highest levels of government. The report describes the other elements that have proved to be vital: a single, powerful national AIDS plan involving a wide range of actors; social openness, increasing the visibility of the epidemic and countering stigma; social policies that address core vulnerabilities; the engagement of all sectors (not just health); a recognition of the synergy between prevention and care; support to community participation; and targeting interventions to those who are most vulnerable, including young people before they become sexually active. Countries that have adopted forward-looking strategies to fight the epidemic are reaping the rewards in the form of falling incidence.

The task of rolling back the burdens that the AIDS epidemic has already brought is enormous. Caring for those who are infected remains an enormous national and international challenge. Caring for the orphans that the epidemic has left behind compounds this task. Protection of another generation of young people from premature illness and death is a responsibility of the highest order, and is in many countries, the greatest contemporary leadership challenge.

This report sets out our current level of knowledge about the epidemic at the start of the 21st century. It lays out the evidence, the success stories and the challenges that confront individual countries and the international community. In doing so, it seeks to convey the true seriousness of the global epidemic, but also to keep hope alive. The evidence demonstrates that we are not powerless against this epidemic, but our response is still at a fraction of what it needs to be. The real task now is to increase, massively, the political will, resources, systems and social commitment needed to turn the tide of the epidemic.

Peter Piot

Executive Director
Joint United Nations Programme on HIV/AIDS

AIDS in a new millennium: a grim picture with glimmers of hope

When AIDS emerged from the shadows two decades ago, few people could predict how the epidemic would evolve, and fewer still could describe with any certainty the best ways of combating it. Now, at the start of a new millennium, we are past the stage of conjecture. We know from experience that AIDS can devastate whole regions, knock decades off national development, widen the gulf between rich and poor nations and push already-stigmatized groups closer to the margins of society.

Just as clearly, experience shows that the right approaches, applied quickly enough with courage and resolve, can and do result in lower HIV infection rates and less suffering for those affected by the epidemic. An ever-growing AIDS epidemic is not inevitable; yet, unless action against the epidemic is scaled up drastically, the damage already done will seem minor compared with what lies ahead. This may sound dramatic, but it is hard to play down the effects of a disease that stands to kill more than half of the young adults in the countries where it has its firmest hold – most of them before they finish the work of caring for their children or providing for their elderly parents. Already, 18.8 million people around the world have died of AIDS, 3.8 million of them children. Nearly twice that many – 34.3 million – are now living with HIV, the virus that causes AIDS. Barring a miracle, most of these will die over the next decade or so. The most recent UNAIDS/WHO estimates show that, in 1999 alone, 5.4 million people were newly infected with HIV.

Africa: the enormous challenges of a long-lasting epidemic

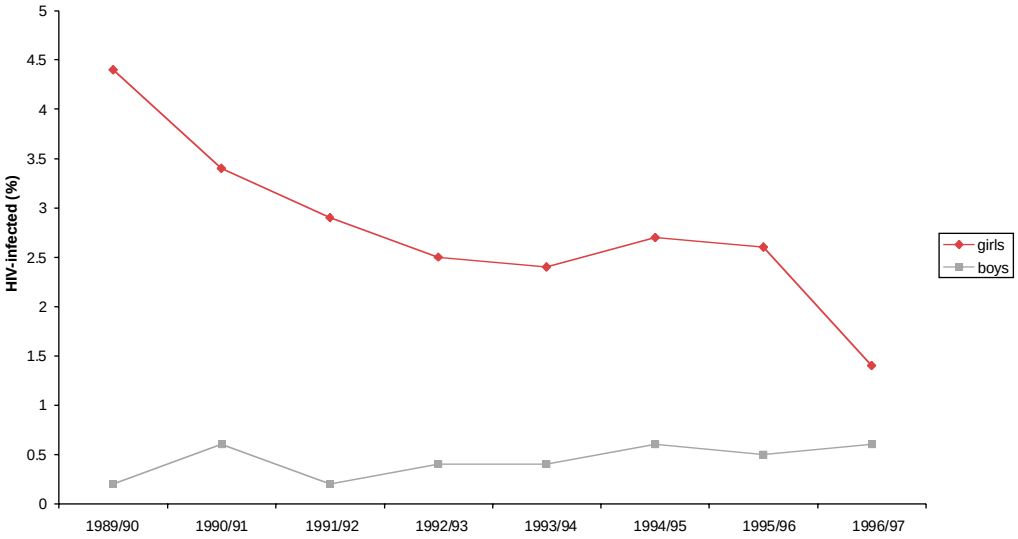
The African countries south of the Sahara have some of the best HIV surveillance systems in the world. They provide solid evidence that the HIV infection rate has stabilized at a relatively low level in Senegal and that the extremely high rates in Uganda have been reduced. However, in most sub-Saharan countries adults and children are acquiring HIV at a higher rate than ever before: the number of new infections in the region during 1999 was 4.0 million. This acceleration effect is yet another challenge posed by long-standing epidemics. As the rate of HIV infection in the general population rises, the same patterns of sexual risk result in more new infections simply because the chances of encountering an infected partner become higher.

Altogether, there are now 16 countries in which more than one-tenth of the adult population aged 15–49 is infected with HIV. In seven countries, all in the southern cone of the continent, at least one adult in five is living with the virus. In Botswana, a shocking 35.8% of adults are now infected with HIV, while in South Africa, 19.9% are infected, up from 12.9% just two years ago. With a total of 4.2 million infected people, South Africa has the largest number of people living with HIV/AIDS in the world. While West Africa is relatively less affected by HIV infection, the prevalence rates in some large countries are creeping up. Côte d'Ivoire is already among the 15 worst-affected countries in the world; in Nigeria, by far the most populous country in sub-Saharan Africa, over 5% of adults have HIV. The prevalence rate in other West African countries remains below 3%. Infection rates in East Africa, once the highest on the continent, hover above those in the West of the continent but have been exceeded by the rates now being seen in the southern cone. The prevalence rate among adults in Ethiopia and Kenya has reached double-digit figures and continues to rise.

These rises are not inexorable. Uganda has brought its estimated prevalence rate down to around 8% from a peak of close to 14% in the early 1990s with strong prevention campaigns, and there are encouraging signs that Zambia's epidemic may be following the course charted by Uganda (see Box 1, page 10). Yet, even in these countries, the suffering generated by HIV infections acquired years ago continues to grow, as millions of adults fall ill and die and as households, communities and whole sectors of the economy stagger under the burden.

Uganda's was the first government on the continent to recognize the danger of HIV to national development. Acknowledging an explosive epidemic in the general population very early on, President Yoweri Museveni took active steps to fight its spread through action by the Government and other groups in society, including religious leaders and community development organizations, which were encouraged to tackle HIV and AIDS in ways that made best use of their particular skills. This broad-based approach to the epidemic contributed to a reduction in HIV infections among young pregnant women living in towns and cities, as recorded in the 1998 *Report on the global HIV/AIDS epidemic*. Gratifyingly, data from a large community-based study now show a similar fall in infection rates in rural Uganda. Figure 1 shows that the HIV prevalence rate among 13–19-year-old girls has fallen significantly over an eight-year period, while the rate in teenage boys – always much lower because boys are less likely than girls to have partners in the older, more heavily infected age groups – has remained roughly stable. A large increase in condom use (see pages 59-64) probably contributed to these lower rates of infection (and to the significant decline in teenage pregnancies which accompanied it).

Figure 1. HIV prevalence rate among 13–19-year-olds, Masaka, Uganda, 1989-1997

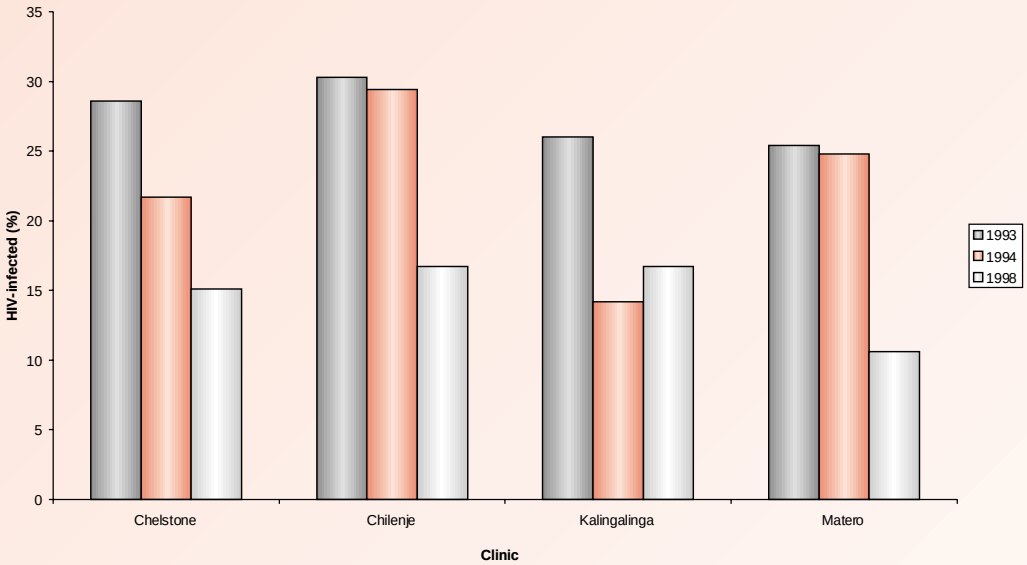


Source: *Kamali et al. AIDS 2000, 14: 427-434*

Box 1. A measure of success: reduced HIV rates in young Zambian women

In Zambia, the Government has been trying to involve all sectors in HIV prevention, from health to education, agriculture and industry. Religious leaders and church groups have also been playing a part in prevention. New data from Zambia's HIV ——>

Figure 2. HIV prevalence rate among pregnant 15–19-year-olds, Lusaka, Zambia, 1993-1998



Source: *Ministry of Health, Zambia, 1999*

sentinel surveillance system, depicted in Figure 2, show that the percentage of pregnant girls aged 15–19 infected with HIV in the capital, Lusaka, has on average dropped by almost half in the last six years.

Comparisons between studies of sexual behaviour conducted in 1990, 1992, 1996 and 1998 suggest that these falling HIV rates are due in part to a decrease in the prevalence of some types of risky sexual behaviour in urban areas. For example, far fewer young women in Lusaka were having sex before marriage in 1996 than in 1990, and the percentage of unmarried women who were sexually active fell from 52% to 35% over that period. Among young men, according to nationwide studies, the change came later; in 1998 just over half of unmarried men said they had not had sex in the past year, compared with just over a third two years earlier, and the proportion of men reporting two or more casual partners in the past year also fell. However, there was no evidence at the national level that either girls or boys were postponing the start of their sex life.

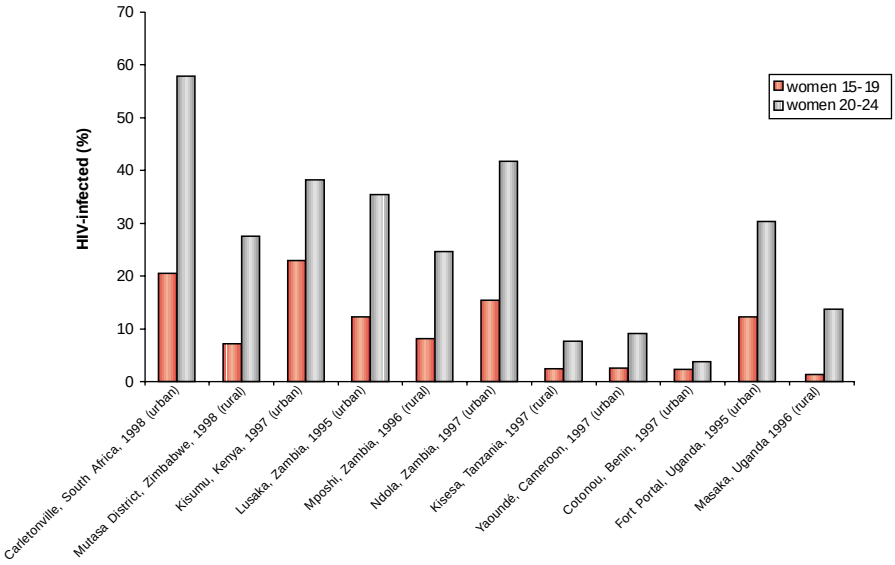
Elsewhere in the region too, there are signs that young people are avoiding the patterns of behaviour which led their parents and older siblings to such high levels of HIV infection. Condom use, for example, is increasing among young people (see pages 59-64) and there are indications that, among the better-educated, sex with casual partners may start later and be less frequent (see pages 43-44). But these changes are taking place against a background of very high infection rates, especially in young African women.

Figure 3 shows frighteningly high prevalence rates of infection among teenagers and women in their early 20s in various urban and rural areas in Africa. The rates among teenage girls and especially among women under 25 defy belief: in 7 of the 11 studies, more than one woman in five in her early 20s was infected with the virus; a large proportion of them will not live to see their 30th birthday. Close to 6 out of 10 women in this age group in the South African town of Carletonville tested positive for HIV.

The infection rates in young African women are far higher than those in young men. In the 11 population-based studies presented here, the average rates in teenage girls were over five times higher than those in teenage boys. Among young people in their early 20s, the rates were three times higher in women. In large measure, this enormous discrepancy is due to age-mixing between young women and older men, who have had much more sexual experience and are much more likely to be exposing the girls to HIV. It is also because girls are more easily infected during vaginal intercourse with an infected partner than boys are.

The fact that, in Africa, women's peak infection rates occur at earlier ages than men's helps explain why there are an estimated 12 women living with HIV for every 10 men in this region of the world. Not only do the young age groups account for a bigger proportion of the population, but individuals who are infected at a younger age tend to survive longer and continue to be counted among those living with HIV.

Figure 3. HIV prevalence rate among women in their teens and early twenties, various African studies, 1995-1998



Asia holds HIV at bay – but for how long?

In comparison with the rates of HIV infection in Africa, those in the general populations of Asia are low. The prevalence among 15–49-year-olds exceeds 1% in only three countries – Cambodia, Myanmar and Thailand; in other countries, the prevalence rate is often far lower. In Indonesia, the world's fourth most populous country, fewer than 5 people in 10 000 are living with HIV. In the Philippines, the rate of HIV infection is only slightly higher, at 7 per 10 000.

These figures do not tell the whole story, however. Within the largest Asian nations, some geographic regions have far more inhabitants than most African countries and have HIV prevalence rates far greater than the national average. In Asian countries in which the epidemic is concentrated in certain groups, such as injecting drug users, it is misleading to focus solely on the prevalence in the general population.

China and India between them account for around 36% of the world's population. With such huge populations, even low HIV prevalence rates mean that huge numbers of people live with the virus. Indeed, in India, where only 7 adults in 1000 are infected with HIV, 3.7 million people were living with HIV/AIDS at the beginning of the millennium – more than in any other country in the world except South Africa. India's epidemic is highly diverse: while some states show almost no HIV infection, others have reached adult HIV prevalence rates of 2% and above.

In parts of north-east India, widespread injecting drug use provided an easy early entry-point for HIV. In Manipur, the prevalence of HIV infection among injecting drug users shot up from virtually nothing in 1988 to over 70% just four years later, and it has remained at these high levels ever since. Predictably, since almost all injecting drug users in the state are men, HIV then spread to their wives and girlfriends through unprotected sex. Around 2.2% of pregnant women in Manipur tested positive for HIV in 1999. In other states, even higher levels of HIV have been recorded among pregnant women. Most cases of infection appear to have been acquired from husbands who had been infected in turn by sex workers, themselves part of a longer chain of transmission. By the mid-1990s, a quarter or more of sex workers in cities such as New Delhi, Hyderabad, Madurai, Pune, Tirupati and Vellore tested positive for HIV. In Mumbai, the prevalence of HIV infection among sex workers reached 71% in 1997.

The Indian Government and individual state governments have launched prevention programmes to reduce high-risk sex, and there is evidence that in some states these programmes are resulting in safer behaviour (see Box 2 below). If current prevention efforts can be scaled up and sustained, India may be able to bring down the rates of HIV infection in particularly exposed groups and avert a widespread heterosexual epidemic.

Box 2. A measure of success: changing behaviour in Tamil Nadu

It is important to collect information about the behaviour that spreads HIV as well as about the progress of the virus itself. It is very difficult to track new infections because HIV typically causes no symptoms for many years. The proportion of the population infected – the HIV prevalence rate – is not a reliable indicator of recent trends in risky behaviour; it encompasses all people with HIV, including those who became infected many years previously. Information about behaviour can be a useful early warning in countries where the virus is rare or confined to particular groups and can help explain changes in HIV prevalence in populations where the virus is already well established. Behavioural information also helps to monitor progress in promoting safe sexual behaviour and hence shows the impact of national prevention programmes.

In countries where HIV is widespread, data on sexual behaviour are collected from men and women in households chosen randomly as representative of the general population. In countries where HIV infection is less prevalent, it is more common to conduct surveys among occupational groups – such as soldiers, factory workers or sex workers – that typify different levels of risk and that can be contacted regularly over time.

When surveillance systems in the Indian state of Tamil Nadu – home to some 60 million people – showed that HIV infection rates among pregnant women were rising,

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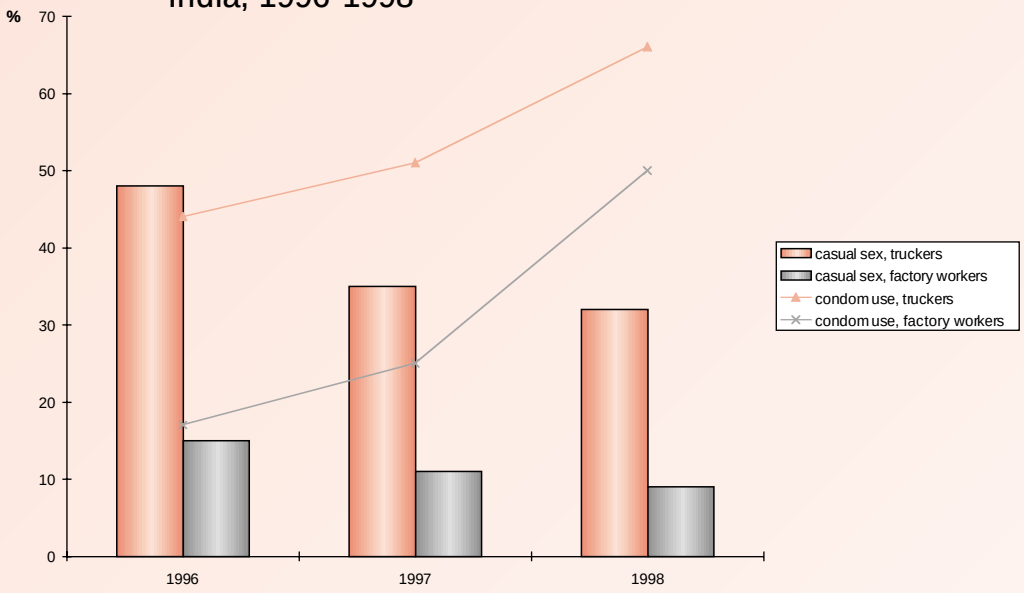
tripling to 1.25% between 1995 and 1997, the State Government acted decisively. It set up an AIDS Society which worked closely with nongovernmental organizations and other partners to develop an active AIDS prevention campaign. It hired a leading international advertising agency to promote condom use for risky sex in a humorous way, without offending the many people who do not engage in risky behaviour. The campaign also attacked the ignorance and stigma associated with HIV infection, encouraging compassion for those affected.

The bold safe-sex campaign has been a hit with its target market – young, sexually active men. Regular behavioural surveillance shows that the number of visits to sex workers and sex with other irregular partners has fallen, and condom use during risky sexual encounters has risen dramatically.

Figure 4. Proportion of men reporting casual sex in the past year and condom use with their last non-regular partner, Tamil Nadu, India, 1996-1998



Source: *AIDS Prevention and Control Project, Tamil Nadu, India, 1999*

Figure 4 shows that more men than before decided to avoid sex with non-regular partners, while men who continued to have casual sex were far more likely to use a condom. The groups illustrated here – factory workers and truck drivers – are thought to represent men with a medium and a high likelihood, respectively, of engaging in risky sexual behaviour.

Thailand's well-publicized success in curbing a rampant heterosexual epidemic has brought to light other routes of transmission against which HIV prevention programmes have been far less successful. HIV continues to spread virtually unchecked

through the sharing of drug-injecting equipment and through unprotected sex between men. Myanmar, too, has witnessed simultaneous epidemics of HIV among injecting drug users, men who have sex with men, and heterosexuals with a high turnover of partners.

In Cambodia, the spread of HIV is driven by a norm of premarital and extramarital sex for men, usually with women who are paid. As in India, high infection rates among prostitutes and their male clients are followed by a wave of HIV transmission to wives. But there are early signs that some pilot prevention programmes may be resulting in greater use of condoms by men who have extramarital sex (see pages 45-46). If scaled-up programmes such as these are accompanied by offers of decent alternatives to sex work for poor women, Cambodia has a good chance of stemming the steep rise in its HIV infection rates.

Many other countries in Asia have yet to see a significant spread of HIV, despite evidence that many men regularly have sex outside of marriage. It may be just a matter of time before infections reach a critical level in populations with the highest risk behaviour and begin to spread more widely. Certainly, there is no room for complacency.

Latin America: an epidemic with many faces

The HIV epidemic in Latin America is highly diverse. Most transmission in Central American countries and countries on the Caribbean coast occurs through sex between men and women. Brazil, too, is experiencing a major heterosexual epidemic, but there are also very high rates of infection among men who have sex with men and injecting drug users. In Mexico, Argentina and Colombia, HIV infection is also confined largely to these sub-populations. The Andean countries are currently among those least affected by HIV infection, although risky behaviour has been recorded in many groups.

The countries with the highest prevalence rates in the region tend to be found on the Caribbean side of the continent. Over 7% of pregnant women in urban Guyana tested positive for HIV in 1996. Strikingly, the rates in pregnant women were similar to those in patients attending clinics for sexually transmitted infections, who are usually considered a sub-population with especially high-risk behaviour. This suggests that many people in the general population may be linked in extensive sexual networks. Studies of sex workers in the capital, Georgetown, showed that 46% of street- and brothel-based women were infected with HIV, and over a third of the women said they never used condoms with clients.

In Honduras, Guatemala and Belize there is also a fast-growing heterosexual epidemic, with HIV prevalence rates among adults in the general population between 1 and 2%. In 1994, less than 1% of pregnant women using antenatal services in Belize District tested positive for HIV, while one year later the prevalence had risen to 2.5%,

the rate in one health centre, in Port Loyola, hitting 4.8%. In the Honduran city of San Pedro Sula, the rate of HIV infection among pregnant women has fluctuated between 2% and 5% for several years. Much of the problem is concentrated in teenagers, suggesting that the worst is still to come. Between one-fifth and one-tenth of sex workers are infected in various cities in Honduras. In some ethnic sub-groups, principally on the Caribbean coast, the prevalence in 15–49-year-old men and women exceeds 8%, and the rates in men and women in their 20s are twice as high. In Guatemala, HIV infection follows a similar pattern, with higher infection rates among pregnant women and sex workers in coastal cities and the capital than in highland cities.

Heterosexual transmission of HIV is rarer in other countries of Central America. In Costa Rica, for example, HIV is transmitted mainly during unprotected sex between men. In this country, as in many other parts of Latin America, there is little systematic surveillance for HIV among groups with high-risk behaviour, but studies among men who have sex with men in Costa Rica showed infection rates of 10–16% as long ago as 1993.

In Mexico, too, HIV has affected mainly men who have sex with men, more than 14% of whom are currently infected. HIV rates among pregnant women, however, are extremely low. Data from a programme to reduce the transmission of HIV from mothers to infants suggest that fewer than 1 in every 1000 women of childbearing age is infected. Even among female sex workers in Mexico, the prevalence rate is well under 1%.

Box 3. A measure of success: young Brazilians increasingly reject unprotected sex

In Brazil, where over half a million adults are living with HIV, the Government has taken an active lead in HIV prevention, care and protection of the rights of people affected by the epidemic. Perhaps the most visible commitment is the Government's undertaking to provide free antiretroviral therapy to all those who need it (see page 101). Alongside this, the Government has committed considerable resources to fighting HIV through information campaigns and prevention services. To help ensure that these services reach not just the general population but also marginalized groups, whose members make up an increasing proportion of those infected with HIV, the Government has forged active partnerships with nongovernmental organizations and others.

A survey of the sexual behaviour of 3500 adults shows that young Brazilians are more able and willing to negotiate condom use with their partners than ever before. While in 1986 less than 5% of young men reported using a condom the first time they had sex, the figure in 1999 was close to 50% – a tenfold increase. Among men with higher educational levels, over 70% surveyed in 1999 said they used a condom for their first act of intercourse.

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In Brazil as elsewhere, men are more likely to use condoms in their more risky partnerships than with their wives or long-term partners. Among 16–25-year-old men, 87% said they consistently used condoms with their casual sex partners – an impressively high figure corroborated by a massive rise in sales of commercial condoms, from 70 million a year in 1993 to 320 million a year in 1999.

A low prevalence of HIV infection among heterosexuals is the norm in the Andean region, at least in the countries for which data are available. In Colombia, HIV infection is more common in coastal than in mountainous regions, but nowhere is the rate greater than 1 in 250 among pregnant women. Even among sex workers, the figure is below 2%. Similar rates are recorded in Peru and Bolivia. In these countries, the prevalence of HIV infection among men who have sex with men is similar to that in Mexico. Argentina has typically high rates of HIV infection among injecting drug users and men who have sex with men, but a relatively low average prevalence of 0.4% among pregnant women.

One of the defining features of the Latin American epidemic is that several populous countries, including Argentina, Brazil and Mexico, are attempting to provide antiretroviral therapy for all people infected with HIV. Coverage still varies widely (see page 90), but these efforts are having a definite impact. While they are improving both the length and the quality of people's lives, they are also increasing the proportion of people living with HIV.

HIV in the Caribbean: small islands, large epidemic

HIV is ravaging the populations of several Caribbean island states. Indeed, some have worse epidemics than any other country in the world outside of sub-Saharan Africa. In Haiti, over 5% of adults are living with HIV, and in the Bahamas the adult prevalence rate is over 4%. In the Dominican Republic, 1 adult in 40 is HIV-infected, while in Trinidad and Tobago the rate exceeds 1 adult in 100. At the other end of the spectrum lie Saint Lucia, the Cayman Islands and the British Virgin Islands, where fewer than 1 pregnant woman in 500 tested positive for HIV in recent surveillance studies. In most of the worst-affected countries of the Caribbean, the spread of HIV infection is driven by unprotected sex between men and women, although infections associated with injecting drug use are common in some places, such as Puerto Rico. High rates have also been recorded among small populations of men who have sex with men in a number of islands, including Haiti and Jamaica.

Haiti, where the spread of HIV may well have been fuelled by decades of poor governance and conflict, is the worst-affected nation in the region. In some areas, 13% of anonymously tested pregnant women were found to be HIV-positive in 1996. Overall, around 8% of adults in urban areas and 4% in rural areas are infected. HIV transmission in Haiti is overwhelmingly heterosexual, and both infection and death are concentrated in young adults. It is estimated that nearly 75 000 Haitian children had lost their mothers to AIDS by the end of 1999.

The Dominican Republic, which has conducted systematic HIV surveillance among pregnant women, sex workers and patients with sexually transmitted infections every year since 1991, also has a substantial heterosexual epidemic. The HIV prevalence rate among new mothers in the capital, Santo Domingo, more than doubled over the seven-year period for which surveillance results are available, reaching 1.9% in 1997, while the average rate in sex workers and patients with sexually transmitted infections was around 6–8%.

The heterosexual epidemics of HIV infection in the Caribbean are driven by the deadly combination of early sexual activity and frequent partner exchange by young people. In Saint Vincent and the Grenadines, where the prevalence of sexually transmitted infections such as syphilis is high for the region, a quarter of men and women in a recent national survey said they had started having sex before the age of 14, and half of both men and women were sexually active at the age of 16. In a large survey of men and women in their teens and early twenties in Trinidad and Tobago, fewer than a fifth of the sexually active respondents said they always used condoms, and two-thirds did not use condoms at all. A mixing of ages – which has contributed to pushing the HIV rates in young African women to such high levels – is common in this population too: while most young men had sex with women of their age or younger, over 28% of young girls said they had sex with older men. As a result, HIV rates are five times higher in girls than boys aged 15–19 in Trinidad and Tobago, and at one surveillance centre for pregnant women in Jamaica, girls in their late teens had almost twice the prevalence rate of older women.

Eastern Europe and Central Asia: drug injecting is still the main risk

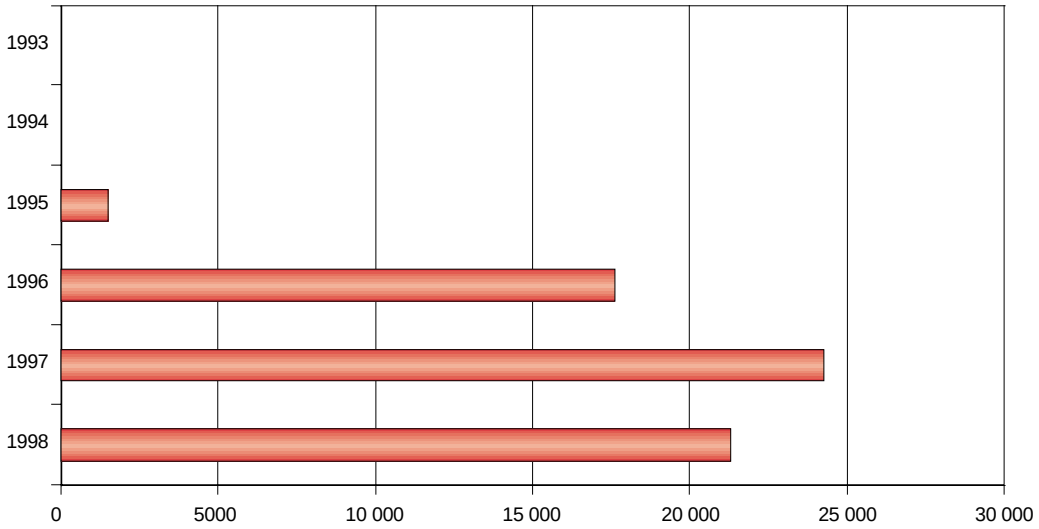
In the countries of the former Soviet Union, the HIV epidemic continues to be concentrated heavily in injecting drug users. The absolute number of cases has remained small in many countries so far, but overall the growth has been rapid.

In Ukraine, the number of diagnosed HIV infections jumped from virtually zero before 1995 to around 20 000 a year from 1996 onwards, about 80% of them in injecting drug users. Around a third of these cases have been seen by a special public health doctor, after which they are included in the official HIV case registry. While no country's HIV surveillance system can ever be sure of capturing all infections, the data on HIV diagnoses shown in Figure 5 may well represent the true trend of the epidemic in Ukraine. As HIV spreads and new infections occur, the total number of people living with HIV continues to grow, reaching an estimated 240 000 at the end of 1999, compared with 110 000 two years earlier.

In any country with unsafe drug-injecting practices, a fresh outbreak of HIV is liable to occur at any time. This is especially true of the countries in Eastern Europe where the HIV epidemics are still young and have so far spared some cities and sub-populations. In the Russian Federation, a new outbreak of HIV among injecting drug users in the Moscow region in 1999 resulted in the reporting of more than three times as many new

cases in that year than in all previous years combined. While about 130 000 Russians are thought to be already infected with HIV, recent estimates of the number of injecting drug users in the country range between 1 and 2.5 million. Obviously, many more infections may still occur in this group, apart from the risk of further spread of HIV into other parts of the population.

Figure 5. Number of diagnosed HIV infections, Ukraine, 1993-1998



Source: *National AIDS Programme, Ukraine, 1999*

High-income countries: long survival but more risk behaviour

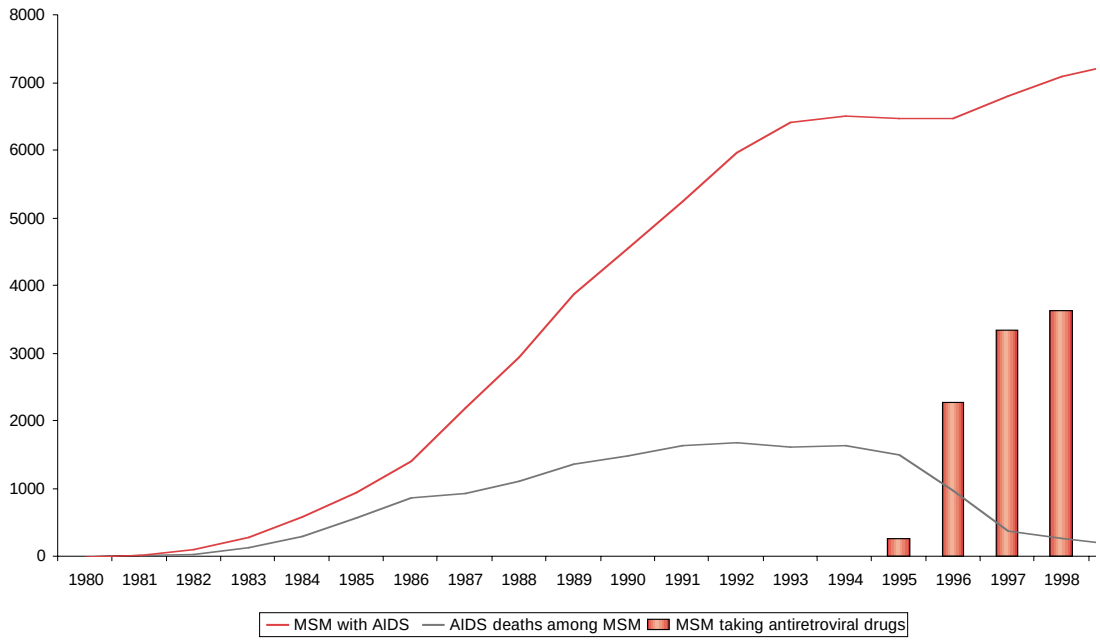
In high-income nations, HIV infections are concentrated principally among injecting drug users and gay men. The available data suggest that there are very low HIV infection rates among heterosexuals in the general population. In Germany in the mid-1990s, fewer than 3 out of 10 000 women of childbearing age were infected. Similarly low rates have been recorded elsewhere. Very early in the epidemic, once information and services for prevention had been made available to most of the population, the level of unprotected sex fell in many countries and the demand rose for reproductive health services, HIV counselling and testing and other preventive services.

The situation is very different among injecting drug users. Some communities and countries have initiated aggressive HIV prevention efforts in this group, containing the HIV prevalence rate below 5%. In many places, however, the political cost of

implementing needle-exchange and other prevention programmes has been considered too high for such programmes to be started or maintained. As a result, there are continuing high prevalence rates among injecting drug users in many high-income countries. In Canada, nearly half of all new HIV infections occur in this group. In Spain, a recent study in Barcelona found a prevalence rate of 51% among injecting drug users.

Among gay men (see pages 65-70), the virus had spread widely before it was even identified and had established a firm grip on the population by the early 1980s. With massive early prevention campaigns targeted at gay communities, risk behaviour was substantially reduced and the rate of new infection dropped significantly during the mid- and late 1980s. Recent information suggests, however, that the frequency of risk behaviour may be increasing again in some communities. This and the effects of therapies that keep infected people alive for longer have added up to slowly rising numbers of people living with AIDS – an effect illustrated by data for gay men in San Francisco in the USA, shown in Figure 6.

Figure 6. Number of AIDS patients, AIDS deaths and patients on antiretroviral therapy among men who have sex with men (MSM), San Francisco, USA, 1980-1998



Source: *San Francisco Department of Public Health (California), USA, 1999*

Waking up to devastation

Since the early 1990s, it has been clear that HIV would help undermine development in countries badly affected by the virus. Warnings about falling life expectancy, increasing numbers of orphans, extra costs for business and the destruction of family and community structures are not new.

These effects are becoming increasingly visible in the hardest-hit region of all, sub-Saharan Africa, where HIV is now deadlier than war itself: in 1998, 200 000 Africans died in war but more than 2 million died of AIDS. AIDS has become a full-blown development crisis. Its social and economic consequences are felt widely not only in health but in education, industry, agriculture, transport, human resources and the economy in general. This wildly destabilizing effect is also affecting already fragile and complex geopolitical systems.

As a result, AIDS is rapidly becoming the key issue for human security in sub-Saharan Africa. AIDS in Africa was chosen as the theme for the United Nations Security Council meeting on 10 January 2000 – the first time that body had dealt with a development issue.

The demographic impact of AIDS

The population chimney

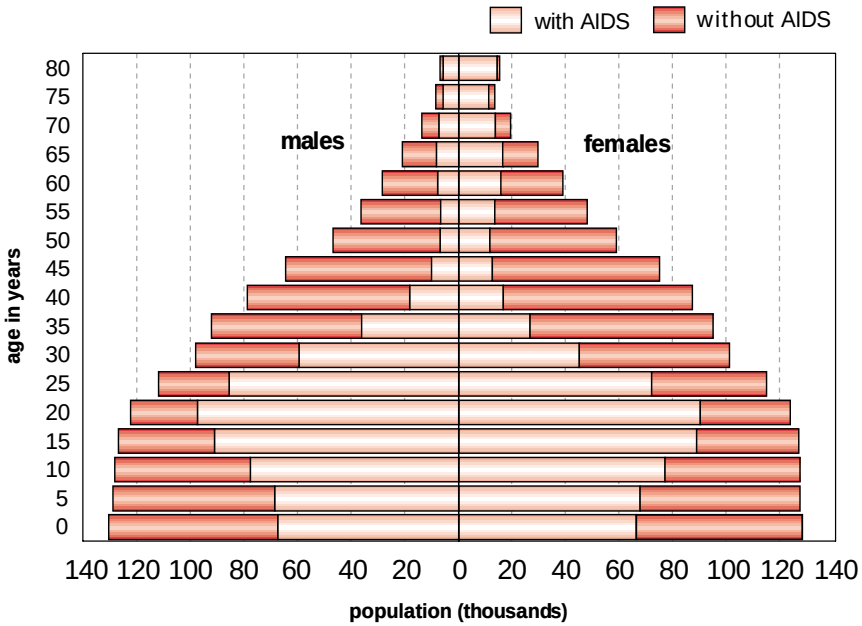
It is now clear that the population structures of badly affected countries will be radically altered by HIV. And that can only mean massive changes in the way societies organize themselves, make a living and care for the needy.

In developing countries, population structure is generally described as a pyramid, reflecting the demographer's traditional depiction of populations according to age group, with men on one side of a central axis and women on the other. The shape of the pyramid is determined by both birth and death rates. When both are high, the pyramid has a wide base and tapers off steadily with increasing age. As health improves and fertility falls, the older age groups grow larger than the younger age groups, and the pyramid becomes more of a column.

Now, AIDS has begun to introduce a completely new shape, the "population chimney". The base of the pyramid is less broad. Many HIV-infected women die or become infertile long before the end of their reproductive years, which means that fewer babies are being born; and up to a third of the infants born to HIV-positive mothers will acquire and succumb to the infection. But the dramatic change in the population pyramid comes around 10 or 15 years after the age at which people first become sexually active, when those infected with HIV early in their sexual lives begin to die off. The populations of women above their early 20s and men above their early 30s shrink radically. As only those who have not been infected survive to older ages, the pyramid becomes a chimney.

The chimney is illustrated in Figure 7, which shows the dramatic impact that AIDS is predicted to have on the structure of the population of Botswana, where over a third of the 775 000 adults are now infected with HIV. The red pyramid shows the population structure as it would be in the absence of an AIDS epidemic. More children would be born (because more mothers would survive and remain fertile throughout their reproductive years) and fewer would die because they acquired the virus from their mothers. Far fewer young adults would die before old age.

Figure 7. Projected population structure with and without the AIDS epidemic, Botswana, 2020



Source: *US Census Bureau, World Population Profile 2000*

The implications of this change in population structure are truly shocking. According to the United States Census Bureau, there will be more adults in their 60s and 70s in Botswana in 20 years' time than there will be adults in their 40s and 50s. This projection is based on the assumption that patterns of new infection will not change

greatly over the next decade; however, as changes in future infection rates will principally affect men and women under 40 in 2020, the demographic chimney pattern for older adults is hardly affected by this assumption. The "missing adults" – men and women who should have reached their 40s and 50s in 2020 – are now in their 20s and 30s, although some have already died. Many more are already infected with HIV, which will kill them before they reach their 50s.

What this means for society is hard to predict, since the world has never before experienced death rates of this magnitude among young adults of both sexes across all social strata. But there is one certainty: a small number of young adults – the group that has traditionally provided care for both children and the elderly – will have to support large numbers of young and old people. Many of these young adults will themselves be debilitated by AIDS and may even require care from their children or elderly parents rather than providing it.

Increases in adult and child mortality rates are already being recorded

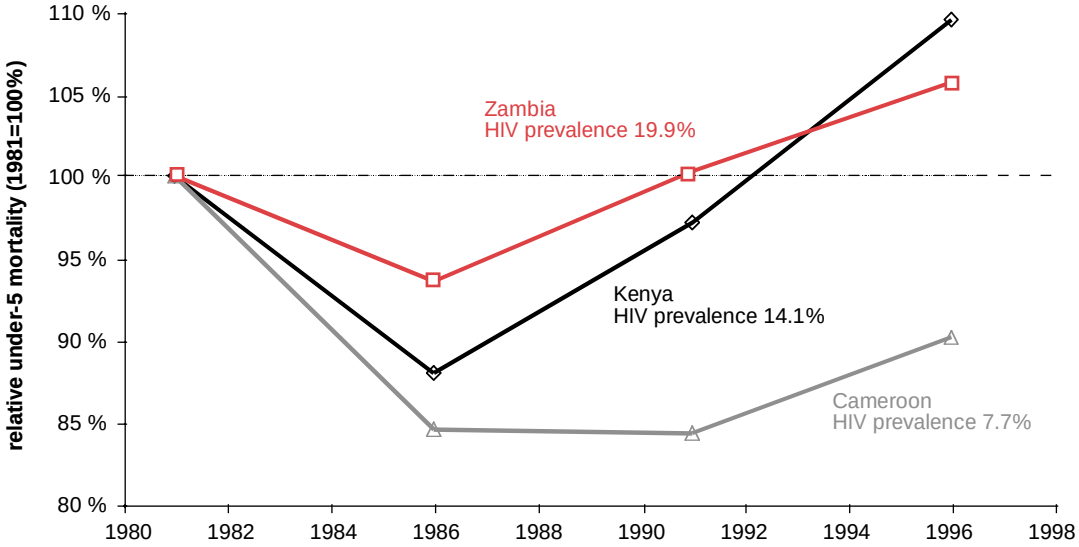
Even without analysing the data on death rates, countries with severe long-standing HIV epidemics know from the massive increase in funerals that deaths are on the rise. The data show the same rising trend. Demographers have developed techniques to measure death rates in developing countries by asking about recent household deaths or by studying the reports of surviving relatives in large-scale censuses and surveys. Recent analyses of these household-based data for countries with high HIV prevalence rates show clear increases in both adult and child mortality rates, which often appear after many years of a steady decline in death rates. It is worth noting that these data represent a "best-case" scenario and may underestimate actual death rates. Because AIDS may kill several members of a household, it can destroy households completely, with the result that some of the deaths will not be captured in subsequent household surveys.

Figure 8 shows the decrease in under-5 child mortality achieved by three African countries between 1981 and 1986 and the subsequent upturn, which has been attributed to AIDS. Almost all AIDS deaths in young children can be traced back to mother-to-child transmission of the virus. This is why countries such as Zambia and Kenya, with their high adult HIV prevalence rates, have seen a particularly steep rise in child mortality.

Even more dramatic increases are seen in adult death rates. In Zimbabwe, a comparison of estimates based on registered deaths and data collected in different censuses and household surveys over the past two decades show remarkably consistent patterns of increasing mortality among young men (see Figure 9). Even though the data presented here have been adjusted for the under-reporting of deaths that is the norm in developing countries, the adjustments must be viewed as conservative, because the families most devastated by deaths may no longer exist to report such events. The true mortality rates could thus be even higher.

Given the death rates prevailing at the time in each age group, a man who was 15 in 1983 would have had just a 15% chance of dying before reaching his 50th birthday.

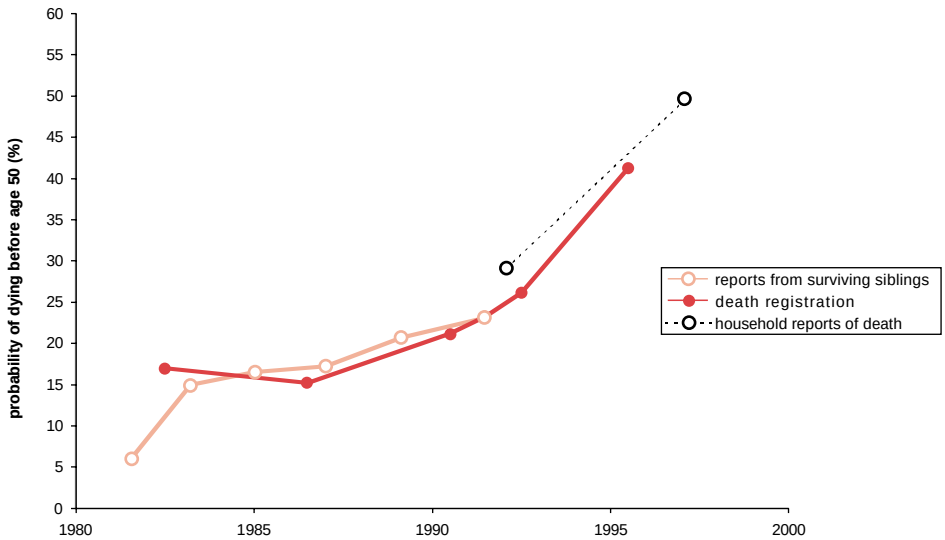
Figure 8. Trends in mortality among children under five years old and end-1999 adult HIV prevalence rate, selected African countries, 1981-1996



Source: *Demographic and Health Surveys, Macro International, USA*

By 1997, 15-year-old boys faced a much bleaker prospect: half could expect to die before the age of 50. The situation was just as bad for women: the likelihood of a 15-year-old dying before the end of her reproductive years quadrupled from around 11% in the early 1980s to over 40% by 1997.

Figure 9. Probability of a Zimbabwean boy aged 15 dying before age 50, trends over time, various national surveys



Source: *Feeney G, 1999 (unpublished data)*

There is no phenomenon apart from the AIDS epidemic that could possibly explain this recent drastic rise in mortality after years of declining death rates. Indeed, smaller community-based studies with information on the cause of death show that in countries where just under 10% of the adult population has HIV infection, almost 80% of all deaths in young adults aged 25–45 are associated with HIV. The proportion of HIV-related deaths is likely to be even higher in areas with higher HIV prevalence rates.

In some countries, over a third of 15-year-olds may die of AIDS

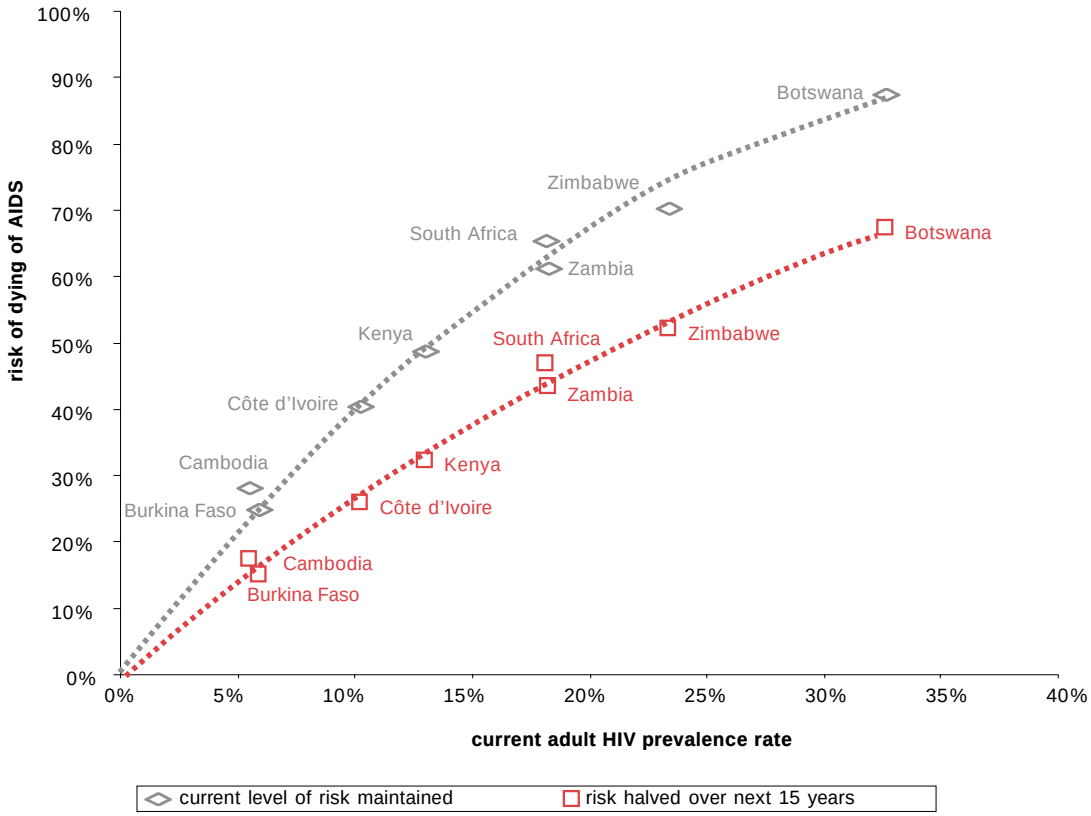
High and stable HIV prevalence rates are bad news. But there is worse news. Prevalence rates do not reflect the true impact of the epidemic. The 15–49-year-old age group includes people who are not yet infected with HIV but who will be one day. And it excludes men and women born 15–49 years ago who were infected with HIV but have already died. If the probability that a person will become infected at any time in his or her life is summed up, the cumulative figure is higher than the “snapshot” provided by current prevalence rates.

To give a better idea of the actual risk of dying of HIV-associated disease, researchers have built models to follow people throughout their lives, examining their exposure to risks of infection with HIV at each age. The risks are calculated from patterns of HIV infection at each age observed in African communities. In general, the rate of new infections peaks among women in their early 20s and among men slightly later, and tapers off at older ages. The rate of new infections at each age is determined by the current phase of the HIV epidemic in a country. In the model, men and women also face the competing risk of dying of other causes at rates similar to those recorded before the HIV epidemic.

The results of this exercise are illustrated in Figure 10 for men. Along the bottom of the graph is the current prevalence of HIV in adults aged 15–49. The vertical axis shows the probability that a boy who is now 15 years old will die of AIDS. Clearly, the likelihood that a boy now aged 15 will eventually die of AIDS is much higher than the likelihood that a man now aged 15–49 is currently infected with HIV. This sobering fact remains true even if the rates of new infection fall in the future. The grey line shows the relationship between current prevalence and the risk of a 15-year-old eventually dying of AIDS if infection rates stay at current levels – a pessimistic scenario. The red line shows the relationship if the risk for new HIV infection at each age drops by half over the next 15 years – in other words, if prevention campaigns are very successful. Even in this optimistic scenario, however, the proportion of young people who will die of AIDS is appallingly high in many countries: in virtually any country where 15% or more of all adults are currently infected with HIV, at least 35% of boys now aged 15 will die of AIDS.

In countries where HIV infection is concentrated in specific sub-populations – for example, men who have sex with men – there is a similar relationship between current HIV prevalence in that group and the lifetime risk of dying of HIV-related disease.

Figure 10. Lifetime risk of AIDS death for 15-year-old boys, assuming unchanged or halved risk of becoming infected with HIV, selected countries



Source: *Zaba B, 2000 (unpublished data)*

Social and economic impacts

The premature death of half of the adult population, typically at ages when they have already started to form their own families and have become economically productive, can be expected to have a radical effect on virtually every aspect of social and economic life. While it is difficult to measure the precise impact of HIV at a national level in most hard-hit countries, a great deal of information does exist about how the epidemic is affecting everything from households to the public and private sector of the economy.

Household impacts

The few surveys of the impact of having a family member with AIDS show that households suffer a dramatic decrease in income. Decreased income inevitably means fewer purchases and diminishing savings.

In a study in Thailand, one-third of rural families affected by AIDS experienced a halving of their agriculture output, which threatened their food security. Another 15% had to take their children out of school, and over half of the elderly people were left to take care of themselves. In urban areas in Côte d'Ivoire, the outlay on school education was halved, food consumption went down 41% per capita, and expenditure on health care more than quadrupled. When family members in urban areas fall ill, they often return to their villages to be cared for by their families, thus adding to the call on scarce resources and increasing the probability that a spouse or others in the rural community will be infected.

Families make great sacrifices to provide treatment, relief and comfort for a sick breadwinner. In the Thai study, the families spent on average US$ 1000 during the last year of an AIDS patient's life – the equivalent of an average annual income.

A common strategy in AIDS-affected households is to send one or more children away to extended family members to ensure that they are fed and cared for. Such extended family structures have been able to absorb some of the stress of increasing numbers of orphans, particularly in Africa. However, urbanization and migration for labour, often across borders, are destroying those structures. As the number of orphans grows (see Box 4 below) and the number of potential caregivers shrinks, traditional coping mechanisms are stretched to breaking point. Households headed by orphans are becoming common in high-prevalence countries. Studies in Uganda have shown that following the death of one or both parents, the chance of orphans going to school is halved and those who do go to school spend less time there than they did formerly. Other work from Uganda has suggested that orphans face an increased risk of stunting and malnourishment.

There is a consensus that help for orphans should be targeted at supporting families and improving their capacity to cope, rather than setting up institutions for the children. Orphanages may not be relevant to a long-term solution. Moreover, in a subsistence economy, children sent away from their village may lose their rights to their parents' land and other property as well as their sense of belonging to a family.

Box 4. The orphans left behind

So far, the AIDS epidemic has left behind 13.2 million orphans – children who, before the age of 15, lost either their mother or both parents to AIDS. Many of these children have died, but many more survive, not only in Africa (where 95% currently live) but in developing countries throughout Asia and the Americas.

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Before AIDS, about 2% of all children in developing countries were orphans. By 1997, the proportion of children with one or both parents dead had skyrocketed to 7% in many African countries and in some cases reached an astounding 11%.

In African countries that have had long, severe epidemics, AIDS is generating orphans so quickly that family structures can no longer cope. Traditional safety nets are unravelling as more young adults die of this disease. Families and communities can barely fend for themselves, let alone take care of orphans. Typically, half of all people with HIV become infected before they turn 25, acquiring AIDS and dying by the time they turn 35, leaving behind a generation of children to be raised by their grandparents or left on their own in child-headed households.

Wherever they turn, children who have lost a mother or both parents to AIDS face a future even more difficult than that of other orphans. According to a report published jointly in 1999 by UNICEF and the UNAIDS Secretariat, AIDS orphans are at greater risk of malnutrition, illness, abuse and sexual exploitation than children orphaned by other causes. They must grapple with the stigma and discrimination so often associated with AIDS, which can even deprive them of basic social services and education.

Although the crisis is enormous and its impact devastating, countries and communities across Africa are rallying to react to the damage and to counter some of its worst impacts. In Malawi, the Government decided early on to support community-based programmes and has had a National Orphan Care Task Force since 1991. Across the country, community-based organizations are setting up child-care centres to improve the care of children and increase their learning opportunities. In Zambia, which has the second largest proportion of AIDS orphans in the world after Uganda, nongovernmental organizations are working hard to fill gaps by providing food, clothing and school fees to orphans and their families. In Zimbabwe, where 7% of all children under 15 are orphaned by AIDS, a National Policy on the Care and Protection of Orphans has been developed, which advocates that orphans should be placed in institutions only as a last resort and be cared for by the community whenever possible. Uganda Women's Effort to Save Orphans (UWESO) was started in 1986 by Janet Museveni, wife of President Yoweri Museveni, in the aftermath of the country's lengthy civil war, functioning as a relief agency to assist orphans in resettlement camps and return them to their extended families. As the country became increasingly affected by the AIDS epidemic, UWESO shifted its emphasis to support for AIDS orphans; the organization, with its 35 branches countrywide, helps fund education and training for the children and runs a micro-finance scheme to help the caretakers – typically, female relatives of the children – to start up small businesses and trading activities.

The toll on teaching…

Education is an essential building block in a country's development. In areas where HIV infection is common, HIV-related illness is taking its toll on education in a number of ways. First, it is eroding the supply of teachers and thus increasing class sizes, which is likely to dent the quality of education. Secondly, it is eating into family budgets, reducing the money available for school fees and increasing the pressure on children to drop out of school and marry or enter the workforce. Thirdly, it is adding to the pool of children who are growing up without the support of their parents, which may affect their ability to stay in school.

Skilled teachers are a precious commodity in all countries, but in some parts of the world, they are becoming too sick to work or dying of HIV-related illness long before retirement. The Central African Republic, where around one in every seven adults is estimated to be infected with HIV, already has a third fewer primary school teachers than it needs. A recent study of the impact of HIV on the educational sector showed that almost as many teachers died as retired between 1996 and 1998. Of those who died, some 85% were HIV-positive, and they died an average of 10 years before reaching the minimum retirement age of 52. The study recorded that 107 schools had closed owing to staff shortages, and only 66 remained open. With the teacher shortage expected to worsen, researchers calculate that over 71 000 children aged 6–11 will be deprived of a primary education by the year 2005. A similarly dramatic impact has been found in Côte d'Ivoire, where teachers with HIV miss up to six months of classes before dying (compared with 10 days missed by teachers dying of other causes) and where confirmed cases of HIV/AIDS account for 7 out of 10 deaths among teachers.

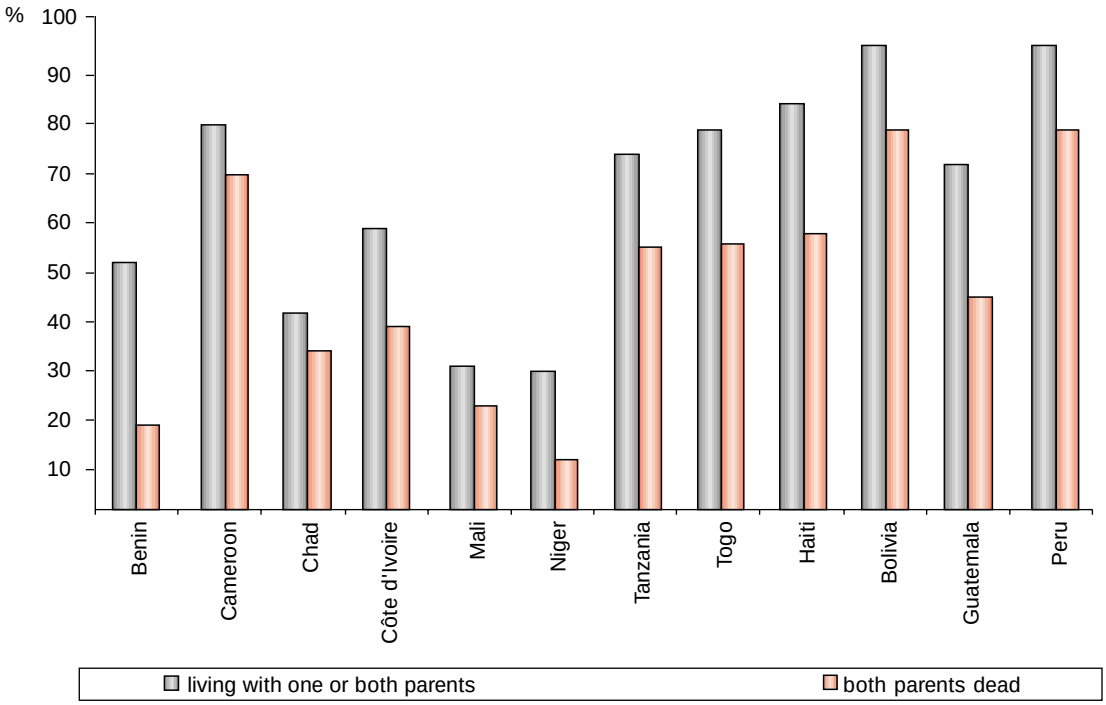
In Zambia, deaths among teachers are very high and still rising rapidly. In the first 10 months of 1998, Zambia lost 1300 teachers – the equivalent of around two-thirds of all new teachers trained annually. AIDS may aggravate the existing disparity in educational access between town and countryside. In a national survey of 6–15-year-olds in 1996, over 70% of those living in cities were enrolled in school, compared with just over half of those in rural areas. Rural postings are already unpopular among teachers in many countries, and the Zambian study suggested that the need to be close to a source of health care – a town or city – acted as an extra disincentive to teachers to go to rural areas.

… the toll on learning

It is commonly assumed that children drop out of school when their parents die, whether of AIDS or another cause. While there has been little rigorous research, a few studies can point to AIDS in the family as a direct cause of school drop-out. For example, in a study of commercial farms in Zimbabwe, where most farmworker deaths are attributed to AIDS, 48% of the orphans of primary-school age who were interviewed had dropped out of school, usually at the time of their parent's illness or death, and not one orphan of secondary-school age was still in school.

Information collected in large household surveys representative of the general population confirms the general assumption that children whose parents have both died are less likely to be in school than children who are living with one or both parents (see Figure 11).

Figure 11. Proportion of children aged 10-14 who are still in school according to whether their parents are alive, surveys in various countries, 1994-1998



Source: *Demographic and Health Surveys, Macro International, USA, and UNICEF, 2000*

The impact of parental AIDS is not necessarily a direct one or seen only in children who have already been orphaned. A child's schooling may be temporarily interrupted by a shortage of cash occasioned by spending on a parent's ill-health or by periods of work in the home to help sick parents. By the time children are actually orphaned, they are likely to be over-age for their class, even if they are still in school. This was the case in both the Zimbabwean and Kenyan studies cited here. Being older than their classmates was in turn associated with a higher rate of dropping out of school for a number of other reasons, including pregnancy and the need to take paying work. Many of the marriages that led to drop-out were arranged, so it is quite possible that relatives or sick parents themselves saw marrying a girl off as a relatively painless way of ensuring that she would be cared for after their death. In at least one study of orphans in Kenya, boys tended to give economic reasons for dropping out of primary school (64% said they could not afford fees or needed to earn cash from

fishing) while 28% of girls said that they had become pregnant and 41% had left to get married.

Health sector under stress

Since the start of the epidemic, 18.8 million children and adults have fallen sick and died and almost twice that number are now living with HIV, with some 5.4 million newly infected people joining their ranks in 1999. As a consequence, the epidemic's impact on the health sector over the coming decade will be predictably greater than in the past two decades combined.

Already, however, the increased demand for health care from people with HIV-related illnesses is heavily taxing the overstretched public health services of many developing countries. In the mid-1990s, it was estimated that treatment for people with HIV consumed 66% of public health spending in Rwanda and over a quarter of health expenditures in Zimbabwe. A recent study estimates that in 1997, public health spending for AIDS alone already exceeded 2% of gross domestic product (GDP) in 7 of 16 African countries sampled – a staggering figure in countries where total health spending accounts for 3–5% of GDP. In recent years, HIV-positive patients have occupied half of the beds in the Provincial Hospital in Chiang Mai, Thailand, 39% of the beds in Kenyatta National Hospital in Nairobi, Kenya, and 70% of the beds in the Prince Regent Hospital in Bujumbura, Burundi. A related impact of the epidemic is that patients suffering from other conditions are being crowded out. The hospital sector in Kenya has seen increased mortality among HIV-negative patients, who are being admitted at later stages of illness.

The shifting and growing demand on health care systems is underscored by the exploding tuberculosis epidemic in the countries most heavily affected by HIV. As noted elsewhere in this report, as HIV weakens people's immune systems it makes them far more vulnerable to developing active tuberculosis (see page 86). Tuberculosis has become the leading cause of death among people with HIV infection, accounting for about a third of AIDS deaths worldwide. Hospital data from Africa show that up to 40% of HIV-infected patients have active tuberculosis. With a greater number of HIV-positive people developing active tuberculosis, there is also a greater risk that the tubercle bacillus will pass to others in the community. The World Bank has estimated that 25% of HIV-negative persons dying of tuberculosis in the coming years would not have been infected with the bacillus in the absence of the HIV epidemic. Each of these new tuberculosis infections represents a further cost to the health sector.

The development of new therapies for HIV-infected persons and of vaccines will further raise health sector costs in infrastructure, drugs, training, and personnel expenditures. At the same time, HIV-related illness and premature death among health care workers themselves will continue to create costs of another kind for the health sector. Sickness and death due to AIDS is growing rapidly among health care

personnel, but few countries have as yet fully understood the epidemic's impact on human resources in their health sector. A study in Zambia showed that in one hospital, deaths in health care workers increased 13-fold over the 10-year period from 1980 to 1990, largely because of HIV. As in other sectors of the economy, rising rates of HIV infection in health care workers will increase rates of absenteeism, reduce productivity, and lead to higher levels of spending for treatment, death benefits, additional staff recruitment and training of new health personnel.

Impact on agriculture

Agriculture is one of the most important sectors in many developing countries, particularly when measured by the percentage of people dependent on it for their living. Although the sector may produce only 20% of a country's wealth (measured as a percentage of the gross national product), it might provide a living or survival for as much as 80% of the country's population. Indirectly, it provides a livelihood for still other parts of the population, such as processing workers on sugar estates (see "The bottom line", below).

The effect of AIDS is devastating at family level. As an infected farmer becomes increasingly ill, he and the family members looking after him spend less and less time working on his family's crops. The family begins to lose income from unmarketed or incompletely tended cash crops, has to buy food it normally grows for itself, and may even have to sell off farm equipment or household goods to survive. The vicious circle is compounded by the high costs of health care, whether the sick person turns to a traditional healer or to the health services. A 1997 study by the Food and Agriculture Organization of the United Nations (FAO) showed that in the mid-west of Côte d'Ivoire, care for male AIDS patients cost on average about US$ 300 a year, representing a quarter to a half of the net annual income of most small-scale farms.

The time lost by family members must also be taken into account. For instance, the repeated absence of another member of the farm to accompany the patient to a healer also reduces the farm's production. And when the most debilitating phases of AIDS coincide with key farming periods such as sowing or clearing, the time spent nursing a sick person and lost to farm labour is sorely missed. A recent survey in the rural Bukoba district of the United Republic of Tanzania found a radical shift in the allocation of labour time: a woman with a sick husband spent 60% less time on agricultural activities than she would normally do.

Altogether, the effects on production can be serious. In West Africa, many cases have been reported of reduced cultivation of cash crops or food products. These include market gardening in the provinces of Sanguié and Boulkiemdé in Burkina Faso and cotton, coffee and cocoa plantations in parts of Côte d'Ivoire. A recent study in Namibia by the FAO concluded that the impact on livestock is considerable, with a heavy gender bias: households headed by women and children gener-

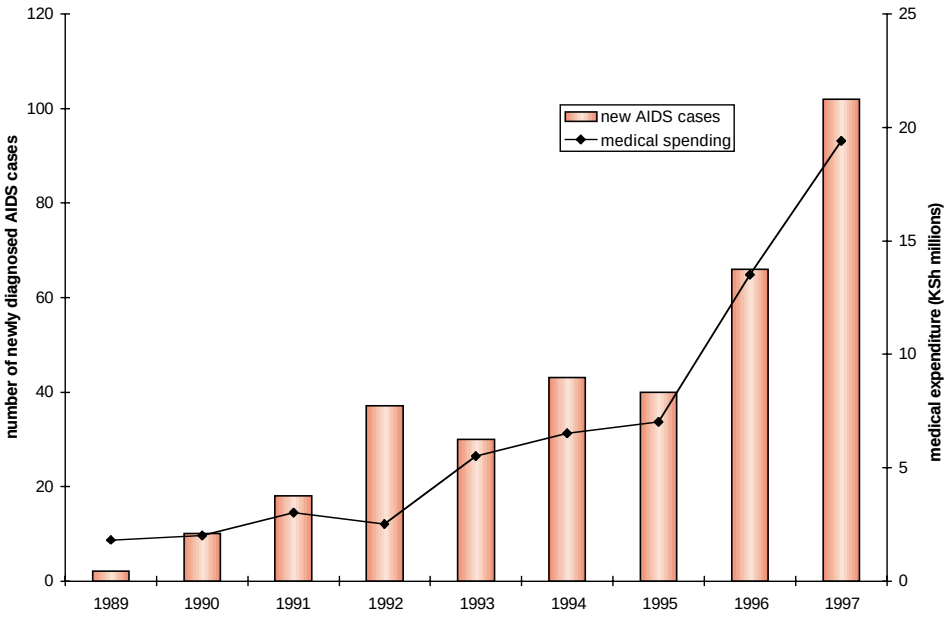
ally lose their cattle, thus jeopardizing the food security of the surviving members. But even the poorer male-headed households experience a decrease in livestock when a wife dies. In Zimbabwe, the output of communal agriculture (much of it subsistence farming) has fallen by 50% over the past five years owing largely, though not solely, to the AIDS epidemic, according to a report published in 1998. Maize production has seen a decline of 54% of harvested quantity and a further drop of 61% in marketed output. The number of hectares under cotton has decreased by about 34% and marketed output by a further 47%, and the production of groundnuts and sunflowers has fallen by 40%. The Southern Africa AIDS Information Dissemination Service (SAfAIDS), an AIDS-related nongovernmental organization in Zimbabwe, warned that a food crisis could erupt in Zimbabwe within the next 20 years as the group of people of productive age shrinks and the areas under cultivation diminish as a result.

The bottom line: HIV is hurting business

Given the proportion of adults infected with HIV and dying from associated diseases in Africa, it is inevitable that the business sector, as well as families, schools and other sectors, will feel the cost. Yet many companies (in common with many governments) have ignored the early warning signs and have not acted against HIV until sickness and deaths become too common to ignore. While experience suggests that HIV prevention is most effective when it is introduced very early on, before the virus gets a grip and the population of infected people becomes uncontrollably large, business people have taken some persuading. Interviews conducted in engineering and construction companies in Gaborone, Botswana, found resistance to the idea of implementing HIV prevention and planning measures even though 39% of people of working age in the city were estimated to be infected in 1998.

Some companies in Africa have already felt the impact of HIV on their bottom line. Managers at one sugar estate in Kenya said they could count the cost of HIV infection in a number of ways: absenteeism (8000 days of labour lost due to sickness between 1995 and 1997 alone), lower productivity (a 50% drop in the ratio of processed sugar recovered from raw cane between 1993 and 1997) and higher overtime costs for workers obliged to work longer hours to fill in for sick colleagues. Direct cash costs related to HIV infection have risen dramatically in this same company: spending on funerals rose fivefold between 1989 and 1997, while health costs rocketed up by more than 10-fold over the same period, reaching KSh 19.4 million (US$ 325 000) in 1997. The company estimated that at least three-quarters of all illness is related to HIV infection. Indeed, illness and death have jumped from last to first place in the list of reasons for people leaving a company, while old-age retirement slipped from the leading cause of employee drop-out in the 1980s to just 2% by 1997. Figure 12 shows the massive rise in both health spending and new AIDS cases recorded by another agricultural estate in Kenya.

Figure 12. Newly diagnosed AIDS cases and medical expenditure on an agricultural estate in Kenya, 1989-1997



Source: *Rugalema et al. HIV/AIDS and the commercial agricultural sector of Kenya, UNDP/FAO, 1999*

Box 5. HIV in the workplace: the business response

At Volkswagen in Brazil, which employs 30 000 people, the potential impact of HIV was assessed early on. By 1996, the company considered that AIDS was accounting for high treatment costs and employees were experiencing frequent interruptions, precocious illness and shortened life expectancy. It quickly established an AIDS Care Programme that included medical care, clinical support, information and installation of condom machines. Volkswagen also adopted a technical protocol detailing the standard of assistance and care it should provide. Three years later, hospitalizations were down by 90% and HIV/AIDS costs by 40%.

American International Insurance, Thailand's largest life insurance company, began its efforts close to home by providing training on HIV and AIDS in its own offices. In 1995, it began a nationwide fundraising "AIDSathon", which in turn led to the development, with the Thailand Business Coalition on AIDS, of group insurance benefits to policyholders that demonstrated they had effective policies for combating HIV and AIDS.

In India, the Tata Iron and Steel Company has evolved its own AIDS policy in recognition that the fight against the epidemic cannot be the responsibility of governments alone. In its own words, "Tata Steel will take measures to prevent the incidence and spread of HIV/AIDS in our society. In case of need, the company will arrange to pro-

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vide counselling and medical guidance to HIV/AIDS patients and their families." To do this, it set up a core group of professionals in medicine, community services and education. It also targeted information and education programmes to young people, migrant labourers, truckers, and army and police personnel. "As a result, our employees also benefit." Tata's work also includes media promotion, installation of condom vending machines, work with nongovernmental organizations, training and awareness programmes at Tata Main Hospital, counselling and help-lines.

In Botswana's relatively recent HIV epidemic, the tidal wave of deaths has yet to break. Recognizing that a massive increase in sickness and death is on its way (see Figure 7, page 22), several companies joined forces to fund the Botswana Business Coalition on AIDS in order to share information about prevention and care in the workplace and keep up to date on legal and ethical issues raised by the epidemic. The Coalition also works in close collaboration with the Government and trade unions to coordinate approaches to policy and HIV prevention programmes in the workplace. The Government's occupational health service provides training to companies that wish to initiate HIV prevention in the workplace.

Experience has shown that there are effective measures that businesses can take to respond to the epidemic (see Box 5). A study in 40 Zimbabwean factories demonstrated that strengthened prevention efforts in the workplace can reduce HIV transmission (and the future costs associated with it) when compared with workplaces that have weaker prevention programmes. In all 40 factories, workers were given information about preventing HIV and were offered voluntary counselling and HIV testing. In half the factories, workers could also choose to speak privately with one of the peer educators – workers who had been specially trained to discuss HIV prevention with their colleagues, make condoms available, and provide information about sexually transmitted infections and where they could be treated. Discouragingly, the number of new HIV infections actually rose over the two-year period of the study in both groups of factories and in all age groups. But the good news for the managers of factories with peer educators was that the rise was 34% less in these factories than in the others. This substantial reduction was achieved at a cost of around US$ 6 per employee – less than the cost of one set of protective overalls.

Since untreated syphilis, gonorrhoea and other sexually transmitted infections increase the risk of acquiring and passing on HIV (see pages 71-72), companies seeking to prevent HIV in the workforce have a clear interest in making sure that these infections are treated quickly and effectively. Many companies have their own clinics at which workers can be treated for free. Companies that consider this option too expensive might reflect on the findings of a company survey in Botswana, which showed that workers lost several hours waiting at government clinics where free external treatment was available. The associated lost productivity probably cost the company much more than providing private treatment would have done.

In fact, some studies suggest that providing services to the wider community can have as much of an effect on the health of the workforce as providing them to the workers alone. In a study in South Africa, a mine-sponsored service for treating sexually transmitted infections in sex workers in the surrounding community led to a significant reduction in the number of infections among the miners themselves. Over the same period, in another mining community where there was no special prevention effort, sexually transmitted infections among miners increased.

Government policy can encourage companies in the private sector to invest in HIV prevention in the workforce, for example by providing tax breaks for those with active prevention programmes. Some development agencies now require an assessment of the impact of AIDS in every development project, and a few governments, for example that of Botswana, are considering including AIDS prevention in the workplace as a requirement for any large tender.

What makes people vulnerable?

Individuals do not live and make decisions in a vacuum. After years of focusing on personal choices about lifestyles, by the early 1990s AIDS prevention programmes were giving renewed attention to the social and economic context of people's daily lives – the context that shapes sexual and drug-related behaviour.

Many factors and forces exist that restrict people's autonomy and leave them particularly exposed to HIV infection, or vulnerable to needless suffering once they are infected. Intolerance of racial, religious or sexual minorities; discrimination against people with known or suspected HIV infection; lower status of women; abuse of power by older or wealthier individuals; scarcity of HIV counselling and testing facilities and of condoms; lack of care and support for those infected or affected; poverty or trafficking that leads to prostitution; domestic violence and rape; military conflict and labour migration which split up families – the list is a long one and varies from place to place. Recognition of the factors that fuel the HIV epidemic prompted the development of new programmes for reducing vulnerability – in the civil, political, economic, social and cultural arenas – that would work in synergy with the more traditional prevention approaches aimed at diminishing risk-taking behaviour.

Many factors in vulnerability – the root causes of the epidemic – can best be understood within the universal principles of human rights. Vulnerability to AIDS is often engendered by a lack of respect for the rights of women and children, the right to information and education, freedom of expression and association, the rights to liberty and security, freedom from inhuman or degrading treatment, and the right to privacy and confidentiality. Where human rights such as these are compromised, individuals at risk of HIV infection may be prevented or discouraged from obtaining the necessary information, goods and services for self-protection. Where people with AIDS risk rejection and discrimination, those who suspect they have HIV may avoid getting tested and taking precautionary measures with their partners, for fear of revealing their infection; they may even avoid seeking health care. Promoting human rights and tolerance is thus important in fighting AIDS as well as in its own right.

Paradoxically, some usually positive features can also fuel a country's HIV epidemic, such as a good road network which enables people from low- and high-prevalence areas to travel and mix more freely. It is important to anticipate such unintended impacts so as to take them fully into account in national development and AIDS prevention plans.

Fear, stigma and denial: a vicious circle

Warnings about the growing threat of HIV and AIDS date back to the early and mid-1980s. But many people, from members of affected communities to leaders of global organizations, have failed to take them seriously. In some cases, the denial has been deliberate. People simply do not want to admit that a fatal disease spread by behaviour branded as "immoral" could be rampaging through their community or their country.

Other unique features of AIDS aid and abet denial. The behaviours that spread HIV take place in private. There is a lag time of up to a decade and more between infection and any visible sign of illness. HIV does not cause a single, specific fatal disease; instead, individuals whose immune system has been weakened by the virus fall prey to infections and ailments that may look familiar in their community. In other words, people who do not want to accept the reality or gravity of AIDS can find all sorts of ways of questioning whether it is as bad as the data from surveillance suggest.

A country in which denial flourishes is a country whose citizens are vulnerable to the silent spread of HIV. Until political figures and respected community leaders speak out and breach the wall of silence, there is little hope of mounting a vigorous, broad-based effort against the epidemic (see pages 108-109). Fortunately, the past year has seen major progress at the highest level of political leadership (see Box 6 below).

Box 6. Breaking the silence in Africa

Nearly a decade ago, a few bricks were chipped out of the wall of silence erected by political leaders around the fearful subject of AIDS in Africa. That was when Ugandan President Yoweri Museveni, faced with rising sickness and death in his country, reversed his long-standing opposition to condoms and began talking openly about AIDS. The subsequent national response helped bring about a significant fall in the prevalence of HIV infection in the country, described on pages 9-10.

Public acknowledgement of the existence and danger of AIDS gathered momentum with an event that electrified Mozambique last year: the announcement that Boaventura Machel, the brother of Mozambique's independence hero and first president, had died of AIDS. In Blantyre, Malawi's president Bakili Muluzi invited a cross-section of society, including soldiers, schoolchildren, prostitutes and HIV-infected persons, to the launch of a new five-year plan against AIDS.

A clarion call for greater openness had already been sounded by South African President Thabo Mbeki. "For too long we have closed our eyes as a nation, hoping the truth was not so real," the then Deputy President Mbeki told South Africans in 1998.

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"For many years, we have allowed the HIV virus to spread... [and now] we face the danger that half of our youth will not reach adulthood. Their education will be wasted. The economy will shrink. There will be a large number of sick people whom the healthy will not be able to maintain. Our dreams as a people will be shattered."

The end of the millennium allowed yet more African leaders to take a stand, and they did. In Botswana, newly elected President Festus Mogae said his five-year term would be devoted to fighting his country's priority problems: high unemployment, poverty and the spread of AIDS.

There was significant activity in Kenya as well. After long opposition to condom use, President Daniel arap Moi radically reversed his position in his New Year's address. "Anything that can be said or done to halt the progress of the disease must be said and done," he said. He was echoed in the United Republic of Tanzania by President Benjamin Mkapa's own millennium discourse. "We must openly declare war on this killer disease," he said. "Let us not feel shy to talk about it and look for means to solve the problem."

Even more recently, President Olusegun Obasanjo of Nigeria inaugurated the National Action Programme Committee on HIV/AIDS by saying: "We are determined not to allow our country to be overwhelmed by HIV/AIDS." He will directly oversee the high-level committee, which will be staffed by his deputy and the ministers of health, education, information, defence, culture, women's affairs and youth development.

Further evidence that AIDS, especially as it affects Africa, is now at the centre of the world's political agenda was its choice as the theme for the United Nations Security Council's meeting in January 2000. The Chairman of that meeting, Vice-President Al Gore of the United States, said that governments must consider the epidemic as a threat to peace and security on the continent. Kofi Annan, Secretary-General of the United Nations, told the Council that the "impact of AIDS is no less destructive than that of warfare itself, and by some measures, far worse."

In their speeches, then, more and more politicians are confronting the reality of AIDS and declaring their intention to do whatever it takes to reduce the spread and impact of the epidemic. As many African and world leaders realize, fine words are an important start but will not by themselves make any difference to the course of the epidemic. They must be followed up with budgets and with action.

In many places, however, ordinary citizens are still reluctant to acknowledge the relevance of AIDS to their own lives because of the shame and fear that surround this fatal disease, and the discrimination directed at those affected. People with or suspected of having HIV infection may be turned away by health care providers, denied jobs and housing, refused insurance and entry to foreign countries, thrown out by their spouse or family, even murdered.

Not surprisingly, the great majority of individuals who suspect or know they are infected do not wish to disclose their status publicly. In the absence of support for sharing the news, most people shrink from telling their spouse or partner that they have HIV. Families protect their loved ones from disclosure during and even after illness and death, and those who care for them often collude in the denial. In a city in South Africa with a high prevalence of HIV infection, one hospital runs a training programme for providers of home-based care for the dying in which the word “AIDS” is never mentioned.

It takes no great leap of the imagination to see that, for individuals, this wall of silence hinders both prevention and care. If people are so afraid to acknowledge or even find out that they are infected, they will lose precious opportunities for warding off or treating illnesses brought on by the infection (see pages 105-106). If couples cannot talk about risks that either one may have taken, it is hard for either partner to bring up the issue of condoms or HIV testing as a way of preventing further spread of the virus to the spouse or child.

The stigma surrounding AIDS can extend into the next generation, placing a further emotional burden on the shoulders of orphans and other survivors. When children whose parents had died of AIDS in the hard-hit rural community of Rusinga Island, Kenya, were asked about the cause of their parent’s death, the single most common response was witchcraft or a curse. Often, they gave detailed explanations of the nature of the curse. None mentioned AIDS.

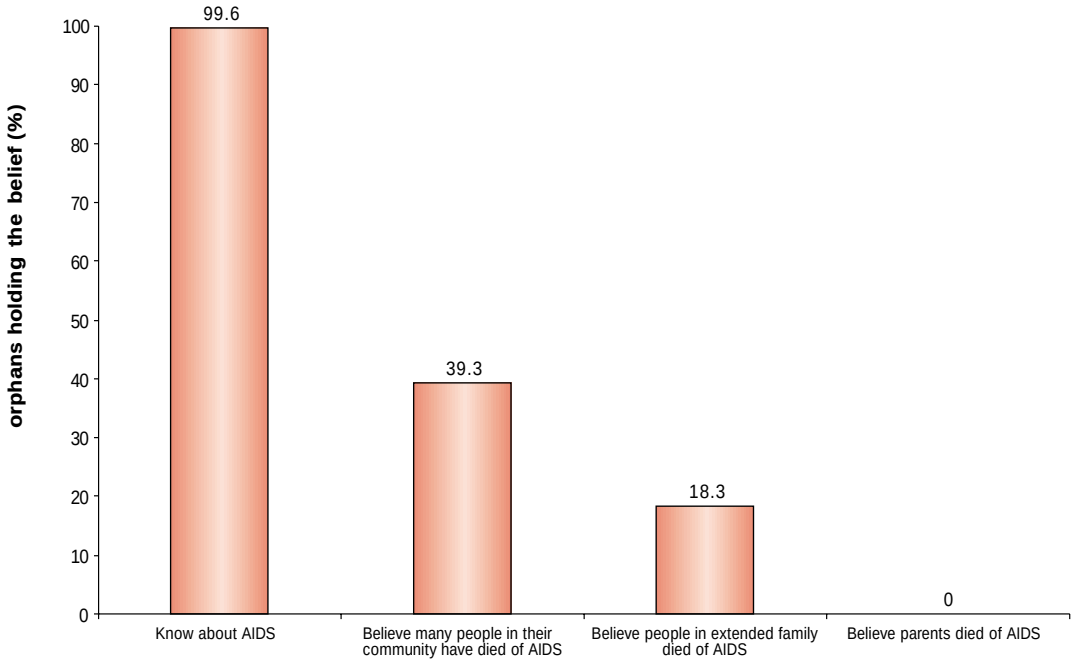
This reluctance to recognize the cause of death was not the result of ignorance about AIDS. As Figure 13 shows, knowledge about AIDS was more or less universal among these children. Many were also prepared to recognize that AIDS had killed many people in their community. The closer the questioning came to home, however, the less the willingness to acknowledge the personal impact of the disease. Not one of the 72 AIDS orphans in the study said that their parents had died of AIDS.

Uninformed and hence vulnerable

In the last decade, extraordinary strides have been made in imparting to people the basic facts about HIV: how it is transmitted and how it can be prevented. Remarkably high proportions of people of all ages in most continents know about HIV and AIDS, and most can repeat the basic facts about the transmission and prevention of HIV infection.

Despite generally high levels of basic knowledge, however, millions of people around the world are still vulnerable to HIV because they do not know the basic facts. Pockets of ignorance and misinformation survive even in the worst-affected populations. In the South African town of Carletonville, for example, only 40% of men or women knew that an individual can live with the virus for many years without any

Figure 13. Knowledge and beliefs concerning AIDS among AIDS orphans, Rusinga Island, Kenya



Source: *Johnston T et al. Population Communication Africa, Kenya, 1999*

outward sign of infection. Around a third of respondents were mistakenly convinced that all HIV-positive people would show symptoms of their infection, while a quarter had no idea what to expect.

Box 7. AIDS hotline: reducing vulnerability in Egypt

An AIDS Hotline and Counselling Service, with staff and office space provided by the Egyptian Ministry of Health and funding from the Ford Foundation, opened in September 1996. It evolved out of a trial telephone counselling service established in Egypt during the early 1990s to provide a channel for people to discuss issues surrounding sex and sexuality in a society where cultural taboos prohibit open discussion of these topics. Staffed by counsellors who have undergone an intensive four-week training programme, the Hotline aims to provide accurate information about AIDS to the general public, including young people, and to provide confidential and anonymous HIV counselling services. A team of trained counsellors answers all calls, and callers can choose to speak to a woman or a man.

Evaluation has shown that more than 50% of callers are between 13 and 25 years

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old, and 70% are unmarried. Most callers have had a high-school or university education. Less than 20% are women. The Hotline is advertised on bulletin boards, trains, metros, buses and in Arabic-language newspapers. Although the project originally focused on Greater Cairo, people call in from rural settings and from other countries where these newspapers are read.

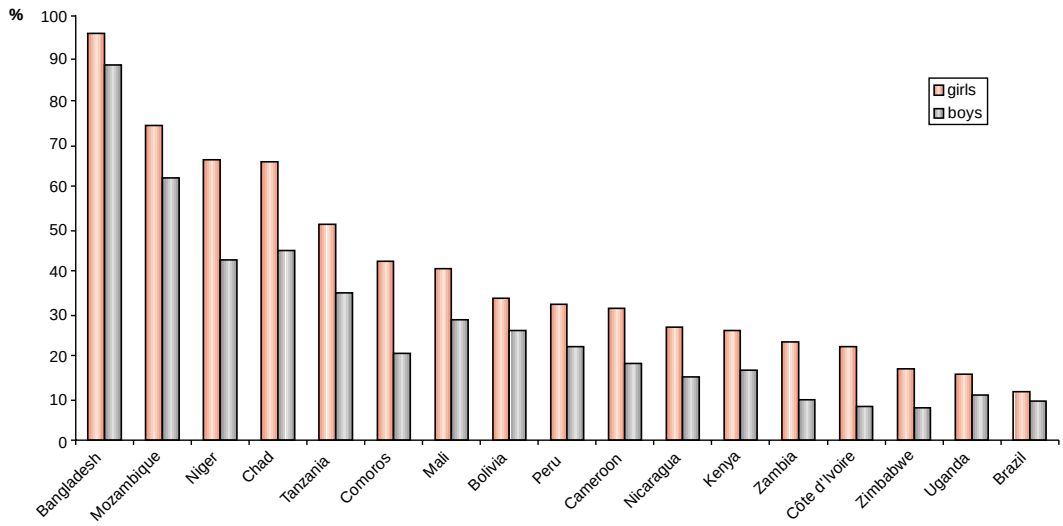
Between September 1996 and May 1998, 18 628 calls were made, averaging nearly 1000 per month – a number that has surpassed all expectations. The anonymity of the Hotline appears to have provided a vital link to information and counselling services that would not otherwise have been accessible. Through the Hotline, people can discuss issues such as sexuality, condom use, premarital sex and homosexuality, which are rarely addressed in public forums. At the time of its evaluation, this was the only hotline run by a government service in the Middle East and given enough resources to function effectively.

The right to information about HIV transmission and prevention has sometimes been denied to young people on the grounds that they are – or should be – sexually abstinent (the reality of young people's sexuality is far more complex than this, however – see pages 56-59). In some places, therefore, young people are more vulnerable than their elders because they are less likely to know enough about HIV to protect themselves. An international programme of demographic and health surveys permits a comparison of knowledge about HIV among teenagers in several countries. Figure 14 shows the proportion of teenagers who do not know how to protect themselves against HIV. Either they have never heard of AIDS or they think nothing can be done to avoid the virus, or they think it is not inevitable but cannot name a way of avoiding it. In four countries where the adult HIV prevalence rate is over 10%, a fifth or more of girls in their late teens know too little about the virus to protect themselves. Boys consistently have more knowledge than girls, and this may be one reason why they have lower HIV rates (see pages 9-10 and 48).

Lack of education: a growing liability

In general, people with more education lead healthier, more productive lives. There are several reasons for this association: better-educated people generally have greater access to information than those who are illiterate or uneducated, and they are more likely to make well-informed decisions and act on that information. In addition, educated people generally have better jobs and greater access to money and other resources which can help them support healthier lives. These same resources can, however, be used to buy alcohol, drugs and sex, to move to urban areas where better jobs are available but HIV infection rates are high, and to otherwise encourage behaviours that increase the risk of becoming infected. When it comes to protection against HIV, is education really an asset?

Figure 14. Proportion of girls and boys aged 15-19 who do not know how to protect themselves from HIV, surveys in selected countries, 1994-1998



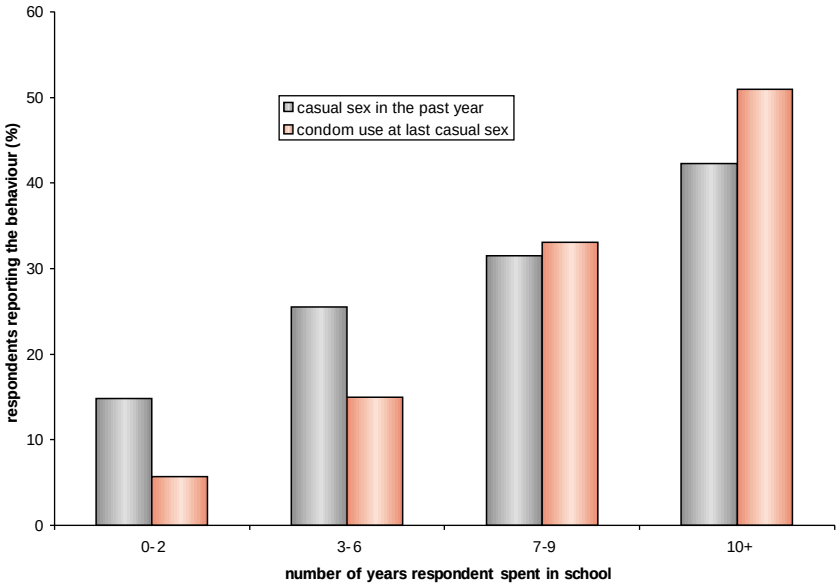
Source: *Demographic and Health Surveys, Macro International, USA, and UNICEF*

In an attempt to draw correlations between sexual behaviour and education, UNAIDS analysed the results of studies conducted mostly among 15–19-year-olds in 17 African and 4 Latin American countries. The analysis showed that as the level of education increases, some kinds of risky behaviour increase in frequency while other kinds decrease. Better-educated girls tend to start having sex later: the proportion of girls who were sexually experienced by the age of 18 was 24% lower among those with a secondary education than among those who had been only to primary school. However, the reverse was true of boys in many countries. A further risk pattern, seen in both sexes, was that better-educated individuals were generally more likely to have casual partners.

On the other hand, people with more education were far more likely to protect themselves by using condoms for casual sex. An increase of even a few years of schooling translated into a rise in condom use, especially among girls. Figure 15 illustrates the increase in both casual sex and condom use with increasing education found in a study of over 5000 men and women in Mozambique.

While greater condom use among better-educated people was seen in all of the studies analysed by UNAIDS, some unexpected reversals in risk were found in countries where the HIV prevalence rate is 8% or higher. In Uganda and Zambia, for example, the more education boys had, the more likely they were to be virgins at the age of 18. In those same countries and in Kenya and Malawi, education did not make men more likely to have casual sex partners. In Zimbabwe, the more

Figure 15. Casual sex and condom use, by educational status, Mozambique



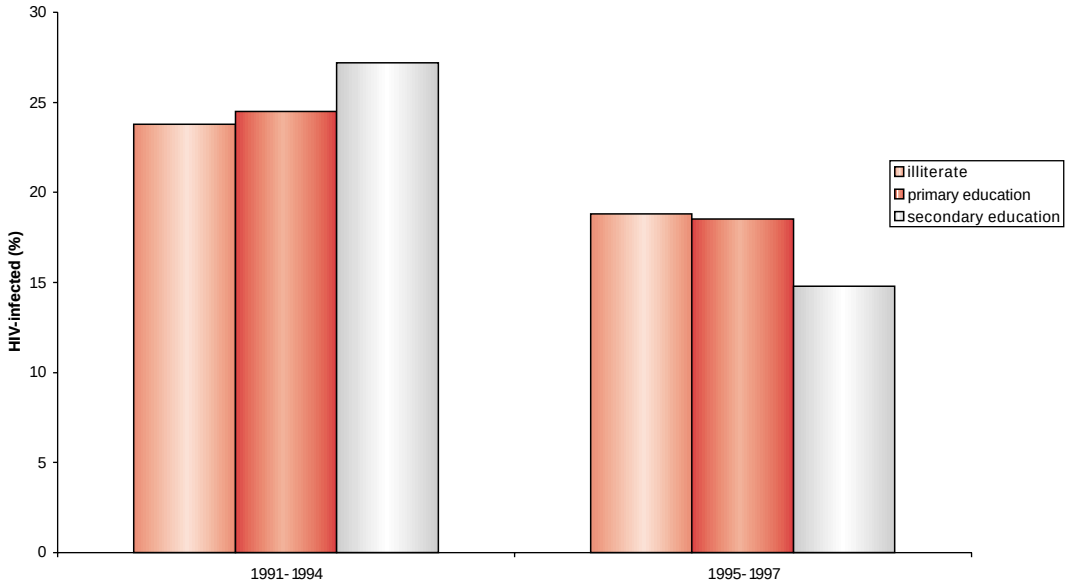
Source: *Agha S, et al. The promotion of safer sex among high-risk individuals in Mozambique, Population Services International, USA, 1999*

education women had, the less casual sex they had. These results suggest that the best-educated people in the countries hardest hit by the AIDS epidemic may be shifting towards less risky behaviour. If this is true, it has encouraging implications for the future course of the epidemic.

The UNAIDS analysis did not take into account the content of the school curriculum with regard to life skills or HIV. Carefully designed studies to evaluate the effect of sex education programmes in school on sexual behaviour and exposure to HIV are now under way in several African countries. Experience has already shown, however, that when AIDS prevention programmes include a strong school-based awareness and skills training component, schooling can encourage safe behaviour. In Uganda, as Figure 16 shows, although the prevalence of HIV infection among young pregnant women rose with level of education in the earlier years of the epidemic, the trend has been reversed in more recent years. While falling HIV infection rates have been seen in young women of all educational levels, the fall has been most dramatic among the better educated. Among young women with a secondary education, the infection rate in 1995–1997 was nearly half that in the early 1990s.

One thing is clear: education and information are fundamental human rights. When children and young people are denied the basic information, education and skills to deal with HIV – whether because of religious values, social mores or cultural preferences – they are that much less empowered to reduce their own risk of infection.

Figure 16. HIV prevalence rate among pregnant 15–24-year-olds, by educational status, Uganda



Source: *Kilian A et al. AIDS 1999, 13: 391-398*

Men and women on the margins

Groups who are made to live on the margins of society exist in every country, although they differ from place to place. What marginalized groups have in common is an increased vulnerability to HIV. Those who engage in stigmatized behaviour are less likely to be cared about or even acknowledged by society's decision-makers, who do not want to spend their political or financial capital on AIDS programmes for them. Even where prevention and care services for them exist, individuals whose practices are against the law – or whose presence in the country is illegal – may be reluctant to risk exposure by participating in them.

Whether the individuals concerned are illegal immigrants, drug users, sex workers or men who have sex with men, their vulnerability is proportional to the lack of information and services available to them and to their constrained margin of manoeuvre.

One useful approach to reducing vulnerability is to encourage the participation of nongovernmental organizations, which may enjoy more credibility with certain groups and be able to reach them better. For example, in countries where sex between men is stigmatized, community-based organizations of such men have been particularly active in both AIDS prevention and care, and in some places they are receiving increased government support (see pages 67-68).

In other countries, governments have pragmatically organized AIDS prevention campaigns for the benefit of men in prison, drug users, or sex workers and their clients. Thailand with its "100% condom use" campaign for commercial sex is a prime example, but the results obtained in Cambodia show that lower-income countries can also effectively reduce vulnerability.

Cambodia, one of South-East Asia's poorest countries and the one with the highest rate of HIV infection among adults, faces a host of development challenges as it emerges from decades of war and political turmoil. When early efforts to track the spread of HIV infection showed that the prevalence among sex workers had already reached 40%, that men who were frequent clients were also heavily infected with HIV and that they were passing the infection on to their wives, the Government placed HIV prevention high on its agenda. A regular behavioural surveillance system was set up to identify risk behaviour, plan a response and monitor success.

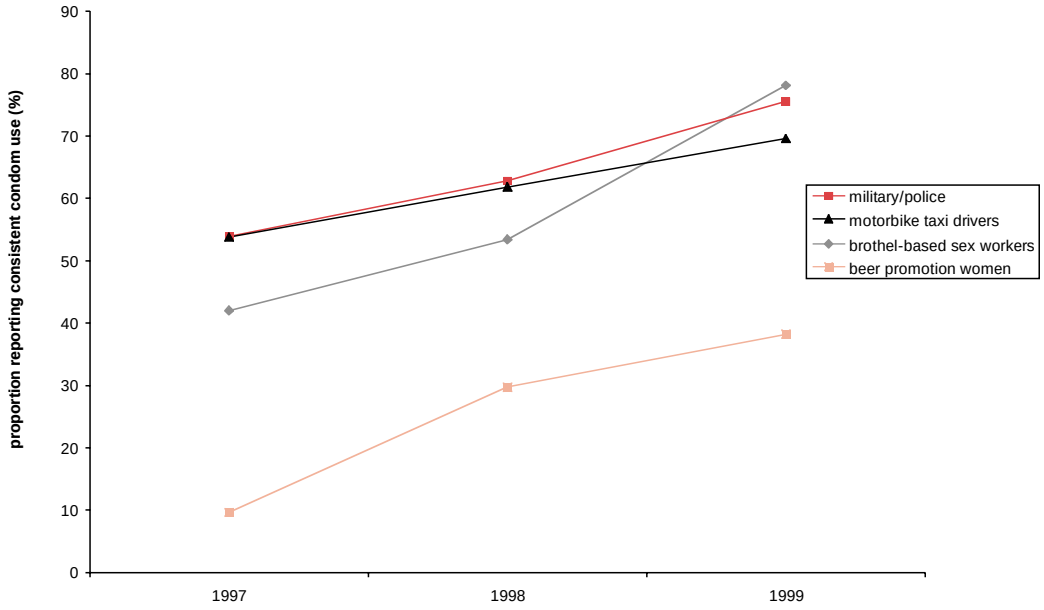
The surveillance system, which covers Cambodia's five main urban centres, showed that visiting sex workers was the norm among men in some occupational groups, including soldiers, policemen and motorcycle taxi drivers, all of whom are relatively mobile and have ready cash, and many of whom are married. Yet condom use was relatively low. Because sex workers may not have the power to insist on condom use, reducing their vulnerability must involve working with their clients. In 1998, a "100% condom use" campaign was piloted in the port city of Sihanoukville. Inspired by Thailand's successful effort but adapted to the local situation, the campaign took a pragmatic approach to the sex trade, which is illegal but widespread in Cambodia. Public health authorities elicited the help of local authorities to promote condom use in all high-risk sexual encounters, working with brothel owners and sex workers as well as with clients. At the same time, strengthened health care services – including care for sexually transmitted infections – were made available for the sex workers, while public information campaigns were conducted to help the population understand the HIV threat from unprotected sex.

As Figure 17 shows, men are now far more likely to report using a condom when they buy sex. The same is true of brothel-based prostitutes. While only two-fifths reported always using a condom with clients in 1997, this figure had reached almost four-fifths by 1999. In addition, women hired to promote beer reported a near-quadrupling of consistent condom use by men who paid them for sex, from close to 10% in 1997 to almost 40% in 1999. These reports are corroborated by condom sales, which have shot up over the years.

Young girls: vulnerable for many reasons

Women of all ages are more likely than men to become infected with HIV during unprotected vaginal intercourse. This vulnerability is especially marked in girls whose genital tract is still not fully mature.

Figure 17. Proportion of sex workers and sex work clients always using condoms with commercial partners, Cambodia, 1997-1999



Source: *National AIDS Programme, Cambodia, and Family Health International, 2000*

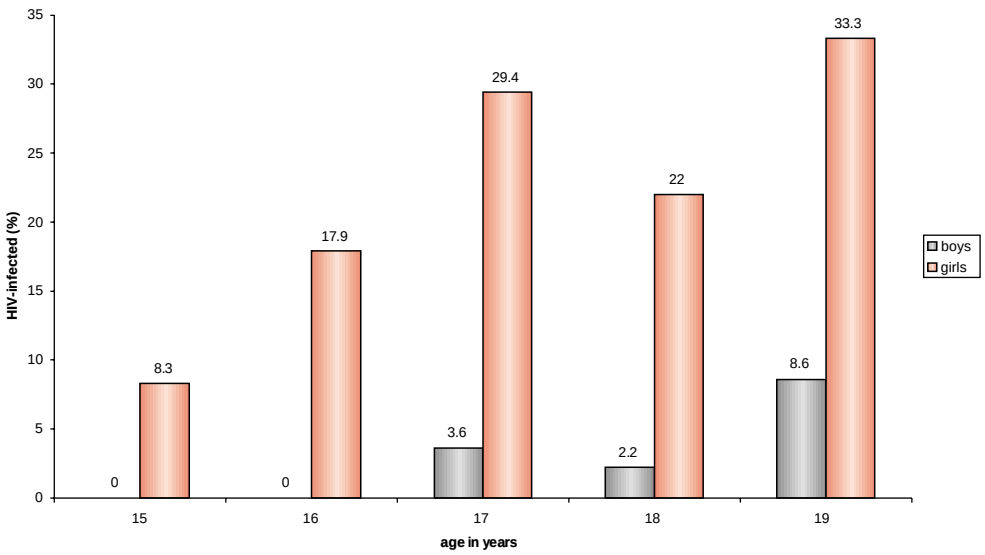
Compounding their biological vulnerability, women often have a lower status in society at large and in sexual relationships in particular. This gender vulnerability, again, is particularly acute for young girls.

It is the interplay of biological, cultural and economic factors that makes young girls particularly vulnerable to the sexual transmission of HIV. While both girls and boys engage in consensual sex, girls are more likely than boys to be uninformed about HIV (see pages 40-42), including their own biological vulnerability to infection if they start having sex very young. Girls are also far more likely than boys to be coerced or raped (see pages 49-54) or to be enticed into sex by someone older, stronger or richer. Sometimes the power held over them is mainly that of greater physical strength. Sometimes it is social pressure to acquiesce to elders. Sometimes it is a combination of factors, as may be the case with older “sugar daddies” who offer schoolgirls gifts or money for school fees in return for sex. In the era of AIDS, the consequences for young girls can be disastrous.

In a recent comparison of HIV infection and behaviour in two cities in East Africa with a high prevalence of infection and two in West Africa with a lower prevalence, few striking differences were found in the frequency of extramarital sex or condom use. However, there was a major difference in the proportion of girls aged 15–19 who said they had started having sex before turning 15 – an age at which virtually none are married. In areas where HIV is common, greater sexual activity during the early teens translates inexorably into a high prevalence of HIV among girls. Figure 18 shows the prevalence by age among teenage girls in Kisumu, western Kenya. Over a quarter of this group said they had had sex before they were 15, and indeed 1 girl in 12 was

already infected by her 15th birthday. Obviously, the girls were becoming infected during their earliest sexual exposures.

Figure 18. HIV prevalence rate among teenagers in Kisumu, Kenya, by age



Source: *National AIDS Programme, Kenya, and Population Council, 1999*

The other crucial factor pushing up HIV rates in young women is age-mixing. If the girls' sole sex partners were boys their own age, they would run little risk of becoming infected; as Figure 18 shows, there are few if any HIV infections among boys before the late teens. However, girls also have sex with older men – men who have been sexually active for many years and who therefore tend to be more heavily infected than younger males.

In rural areas of the United Republic of Tanzania, some 17% of unmarried teenagers reported having had sex with a man at least 10 years older than themselves. In a nationwide study in Zambia, over a quarter of the men who had extramarital encounters had casual sex with women 10 years or more their junior. Men who have sex with younger women may also have other high-risk partners. Among men identified as clients of sex workers in a study in four African cities, for example, around one-third had also had casual sex with teenage girls.

While there are many cultural and economic reasons for this kind of cross-generational sex, the fear of HIV seems to be prompting some men to seek out partners they believe are less likely to be infected – young girls. There is a double deadly irony here. Men who are fearful of acquiring HIV may be infected themselves without

knowing it. Moreover, given the very high infection rates now being seen in girls (see Figure 18), it is unwise to expect young partners to be free of HIV.

Whether sexual initiation is consensual or coerced, it may occur at a very early age in particularly marginalized communities. In a survey of 1600 children and adolescents in four poor areas of the Zambian capital, Lusaka, over a quarter of children aged 10 said they had already had sex, and the figure rose to 60% among 14-year-olds. In South Africa, 10% of respondents in a study in six provinces said they had started having sex at age 11 or younger. The study, commissioned by the South African Department of Health, recommended that sex education be introduced to children around the age of 12 if it was to reach most of them before they became sexually active. Clearly, though, it is important to complement education on AIDS and life skills with vigorous action against sexual abuse and rape and campaigns to discourage older men from seeking out young girls for sex.

Box 8. Working with vulnerable girls in Nepal

In Nepal, the Maiti Project has targeted children and young women who are subject to sexual exploitation and abuse, including girls who are at risk of being sold into prostitution in India. The project has established camps in high-risk areas, each camp functioning as a shelter for about 30 girls rescued from traffickers or who are in danger of being sold. The camps provide education and vocational training, as well as support and counselling. The project has worked in conjunction with colleges, local pressure groups, village leaders, medical officers, lawyers and the police. An evaluation suggested that Maiti Nepal prevents approximately 180 girls from being sold into brothels in India each year. In addition, 105 people have been imprisoned as a result of the project's efforts to expose child traffickers. In 1997 alone, 60 girls were repatriated from India and three-quarters of them were subsequently reunited with their families. Taking account of the daily challenges faced by vulnerable young people, the project is remarkable for its integrated approach to their needs for shelter, food, education, health care, legal protection and supportive adult networks.

Violence against women

Violence directed against girls and women – in a sense, the most egregious sign of male domination – makes them vulnerable to HIV infection in a number of direct and indirect ways.

Violence in the home

Domestic violence reduces women's control over their exposure to HIV. Obviously, in settings where violence is regarded as a man's right, women are in a poor posi-

tion to question their husbands about their extramarital encounters, negotiate condom use or refuse to have sex. A study in Zambia confirmed how much subservience in marriage, often reinforced by violence, can compromise women's ability to protect themselves. Fewer than a quarter of women in the study believed that a married woman could refuse to have sex with her husband even if he had been demonstrably unfaithful and was infected. And only 11% of the women thought a woman could ask her husband to use a condom in these circumstances.

According to a large number of studies in many countries and on all continents, between a third and a half of married women say they have been beaten or otherwise physically assaulted by their partners. From Cambodia to the Gaza Strip, from Chile to Switzerland, studies in country after country show that violence within marriage and regular partnerships is frighteningly common. In Uganda, 41% of men in two districts said they beat their partners.

There is often a thin line between physical violence and sexual coercion. In a large study in the Indian state of Uttar Pradesh, 17% of men said they beat, slapped, kicked or bit their wives, and 7% said they used physical force to make their wives have sex with them. Aggravating the risk to wives, men who used force to get sex at home were far more likely than other men to report extramarital sex and sexually transmitted infection.

Box 9. Rape in war

The military can have a powerful impact on the general population's exposure to HIV, whether through commercial sex with civilians or through rape in times of conflict. Rape, a weapon of war since time immemorial, is most often used to humiliate and control the behaviour of civilian populations or to weaken an enemy by destroying the bonds of family and society. It may take place in front of other family members.

During the last century, hundreds of thousands of women were raped in war. According to the International Planned Parenthood Federation, during Bangladesh's nine-month fight for independence in 1971, at least 250 000 women were raped, of whom 10% became pregnant as a result. In South-East Asia, the United Nations High Commissioner for Refugees has reported that 39% of Vietnamese boat women aged 11–40 were abducted and/or raped at sea in 1985. In a random sample of 20 Ethiopian refugees in a camp in Somalia in 1986, 17 knew someone in their village and 13 knew someone in their family who had been raped by the Ethiopian militia. In a letter dated 13 March 2000, the United Nations special rapporteur on violence against women called for investigations into allegations of gang rape and murder of women and girls by soldiers in Sri Lanka. And the list goes on.

Women raped by military personnel suffer not just immediate physical injury and the risk of pregnancy but are also exposed to a far higher risk of HIV and other sexually transmitted infections than they would be through other unprotected sex, not just

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because rape can result in torn tissue and hence create an easy entry-point for HIV, but because their rapist has a higher risk of being infected. In most countries, for example, sexually transmitted infection rates among the military are generally two to five times greater than those in comparable civilian populations, even in peacetime. In times of conflict, the figures increase dramatically.

Sexual abuse of women and children

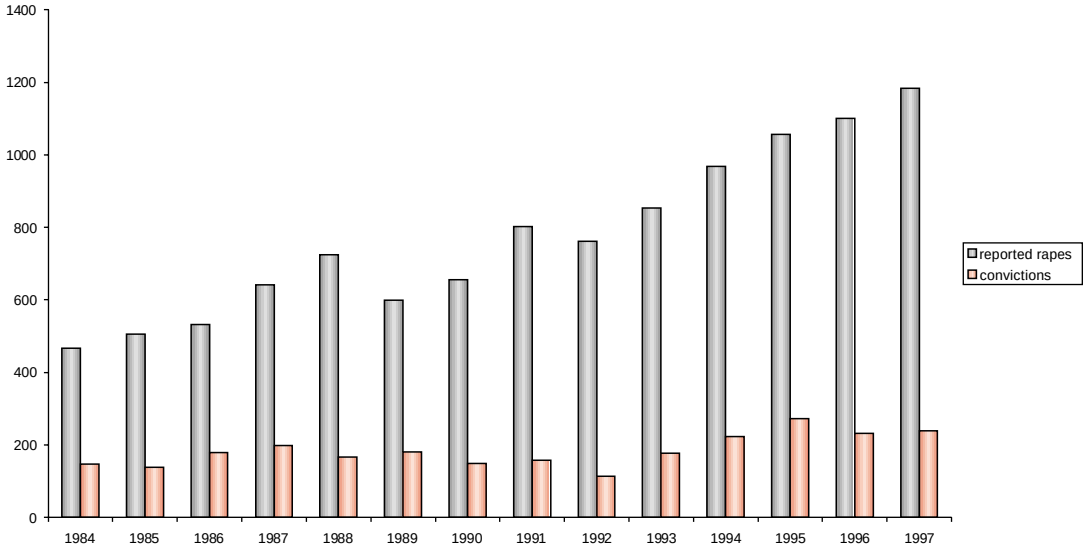
The relationship between violence and HIV is often indirect: the fear of violence makes it more difficult for women to refuse unsafe sex. In the case of sexual violence, however, the relationship can be very direct.

Like domestic violence, sexual violence directed against women is depressingly common all over the world, although accurate statistics are few and far between. A study in a low-income area of Nairobi, Kenya, illustrates women's reluctance to report sexual violence even when it is extremely common in the community. Some 30% of women aged over 18 said they had been sexually abused, as had one-fifth of teenage girls, but the vast majority took no action. Many said they were too shy – some had been raped by a relative or friend of the family; others considered it would be a waste of time to report. Those that do report abuse are sometimes made to suffer themselves and are seldom rewarded by the arrest of the person in question. Of 16 cases of rape reported to police and/or the local chief in a six-month period (including two cases of incest and two rapes of minors), action was taken in only five cases. Unfortunately, police records in Kenya tend to record most violent offences as "assault", and trends are difficult to track.

In Botswana, where record-keeping is more thorough, a review of police and court records shows a steady rise in reported rape cases (see Figure 19). Many of the rape victims are very young: over two-fifths of all rape cases that reach the courts involve girls under the age of 16. In 1997, just a fifth of reported rape cases ended in a conviction, and three-quarters of the convicted rapists were given a prison sentence of four years or less. Most cases were closed even before resulting in a criminal prosecution. After lobbying by women's groups and human rights groups, Botswana changed its rape laws in 1998. The minimum prison sentence for those convicted of rape is now 10 years and rises to 15 years if the rape is committed by someone found to be HIV-positive. If it can be shown that the rapist was likely to have known he was HIV-infected, the minimum sentence is 20 years.

Botswana is not the only country to take decisive action in the face of unacceptably high rates of sexual abuse, especially of young girls. Zimbabwe, for example, has altered its judicial system to increase the likelihood that perpetrators will be successfully prosecuted (see Box 10) while also providing abused children with services such as the Family Support Trust. Based at a major hospital in Harare, the Family Support Trust gives free medical and psychological care to girls (and more rarely boys) under the age of 16 who have been sexually abused. In 1998, an average of 77 children a month came to the clinic. By 1999, as the clinic became better known, the number rose to 94

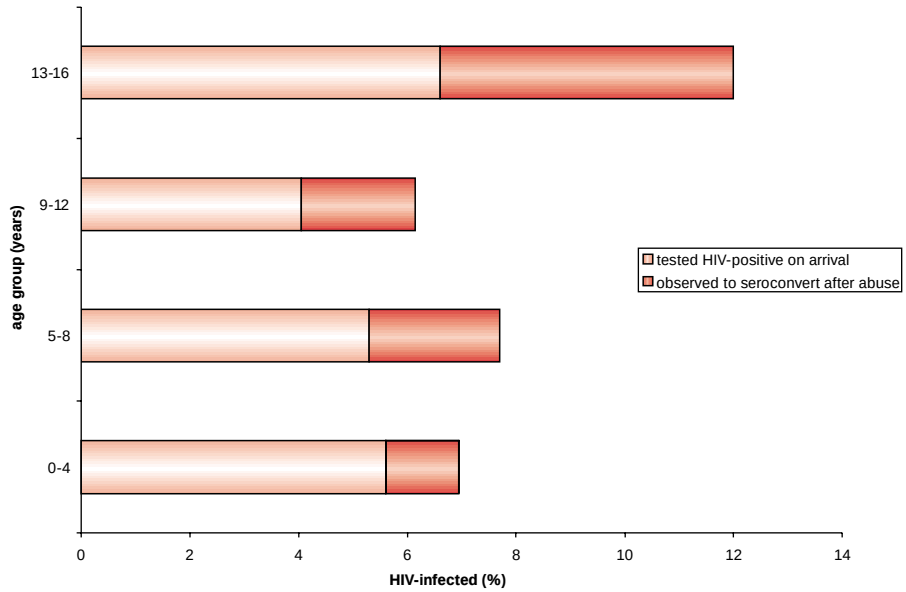
Figure 19. Number of reported rapes and convictions in Botswana, 1984-1997



Source: *Emang Basadi Women's Association, Botswana, 1998*

children a month, with a peak around holiday periods. Over half of the children seen in the first two years of the clinic's operation were under 12, and over 300 were under five, the youngest being just a few months old. Virtually none of them said their abuser was a complete stranger, although several victims were too young to identify an assailant.

Figure 20. Proportion of children testing HIV-positive at a sexual abuse clinic, Harare, Zimbabwe, 1998-1999



Source: *Family Support Trust, Zimbabwe, 1999*

Figure 20 shows that many of the abused children not only endure psychological trauma but acquire an infection that will most likely kill them in the prime of their lives. The red part of the graph shows the percentage of children who were probably infected during the rape – they tested negative when they first arrived and seroconverted to HIV-positive status just a few weeks later, once their body had had time to make the antibodies that most HIV tests use for detecting infection. The pink part of the graph shows children who were HIV-positive on arrival. While most of these infections probably preceded rape, some children did not come to the clinic until weeks or months after the rape and may well have acquired the virus from their abuser.

Box 10. Child-friendly courts in Zimbabwe

In common with many other countries, Zimbabwe has seen very low rates of conviction in cases of sexual assault and rape, and the rates have been lowest for children. As early as 1992, the judicial authorities began to investigate why this was so. They found that children faced with hostile questioning and in the presence of the adult who had abused them very often broke down in court or simply refused to speak. Intimidated and embarrassed, abused children could not describe the sexual acts they had been subjected to and could not adequately testify. Without their testimony, the accused was often acquitted on technical grounds. These findings led in 1994 to the formation of a national committee to design child-friendly courts.

One of the first changes to be made was extensive training of the police who take the initial testimony from a child and of those who examine abused children medically. Social welfare officers were also involved from the earliest stages of a complaint, in counselling children and working to reduce the trauma. Support and cooperation with police and social welfare officers have been critical to the success of the child-friendly courts initiative.

The next step was to make the court hearings less intimidating. Children now give testimony in a separate room, linked to the court through closed-circuit television, so that they do not have to face their abuser. An intermediary sits in the room with the child, along with a family member or other person who can help the child feel more at ease. It is the trained intermediary who relays the court's questions to the child, in gentle language that the child will easily understand. The child also has male and female dolls available, so that he or she can demonstrate what happened rather than having to describe it.

Zimbabwe now has a child-friendly court in every province. Officials say that more people are now bringing cases to trial, and the percentage of convictions is on the rise.

Sexual abuse in childhood has many long-term consequences, apart from the immediate risk of HIV and other sexually transmitted infections. Some of these have implications for the further spread of HIV. For example, evidence from high-

income countries suggests that sexual abuse of young girls may lead to them taking sexual risks in adolescence, perhaps in part because abused children have lowered self-esteem and find it harder to assert themselves in sexual negotiation in later life.

Prevention: daunting challenges ahead

The spread of HIV relies primarily on private human behaviour. Even if individuals everywhere had the full benefit of measures to reduce vulnerability and full access to the tools and skills to prevent transmission, it is illusory to think that all the spread would stop. However, two decades of experience show that behavioural prevention can make a serious dent in the rate of new infections and change the course of the epidemic. This section looks at progress and problems encountered in reducing the spread of HIV through sex between men and women, through male–male sex, through injecting drug use and through mother-to-child transmission.

Avoiding heterosexual transmission: how well are existing prevention strategies working?

The regional update (see pages 8-20) can leave no doubt: unprotected sex between men and women continues to fuel the HIV epidemic in many countries, even in the face of prevention campaigns. The situation is so serious that there is no room for rhetoric or wishful thinking. It is time to take a long, hard look at what is working and what is not.

A number of options are traditionally promoted in prevention campaigns directed at the general public. One is to abstain altogether from sex – or, for young people who have not yet become sexually active, to postpone the start of their sex life. Another is to engage in sex that involves no penetration. As a further option, people are encouraged to have sex with only one other person – someone who will never have sex with anyone else. Mutual fidelity is protective, of course, only if both partners stick to the rules and were uninfected to begin with. Finally, the consistent and correct use of condoms (both the traditional kind and the female condom – see page 63) for every act of sexual intercourse protects both partners from HIV and other sexually transmitted infections.

These are not either/or choices. People may adopt different prevention strategies at different points in their lives, and good prevention campaigns emphasize that many options are available which reinforce each another.

There is now plenty of evidence about how well these various options work in prac-

tice. Because young people are an increasing focus for prevention campaigns, they are also a focus of this review of how well different strategies are working.

How many young people manage to delay first sex?

Many societies confer on their young people ideals that are not always matched by reality. Virginity at marriage, especially for women, is an ideal across many continents which AIDS prevention programmes have often espoused. But when young people are asked about what really goes on in their lives, the gap between the ideal and the reality can be very wide indeed.

In the high-income countries, the percentage of young people who were no longer virgins by the age of 17 started rising gradually in the late 1970s. In Switzerland, for example, 65% of boys in 1985 had already begun to have sex by age 17, and the same was true for 58% of girls in 1989. The epidemic and AIDS prevention campaigns, however, began to reverse this trend, and by 1997 the percentage of sexually active 17-year-old boys had fallen to 54%. In the United States, the proportion of sexually active 15-year-old boys fell from around one-third in 1988 to around one-quarter by 1995.

In most Asian countries, including China, sexual activity is reported to start later than elsewhere. Both men and women generally have their first intercourse after the age of 20. Studies of 15–19-year-olds who had never been married in Singapore and Sri Lanka, for example, found less than 2% of boys reporting that they had already had sex. In the Philippines, 15% of boys of this age said they were no longer virgins. In all three countries, none of the unmarried teenage girls surveyed reported having had sex.

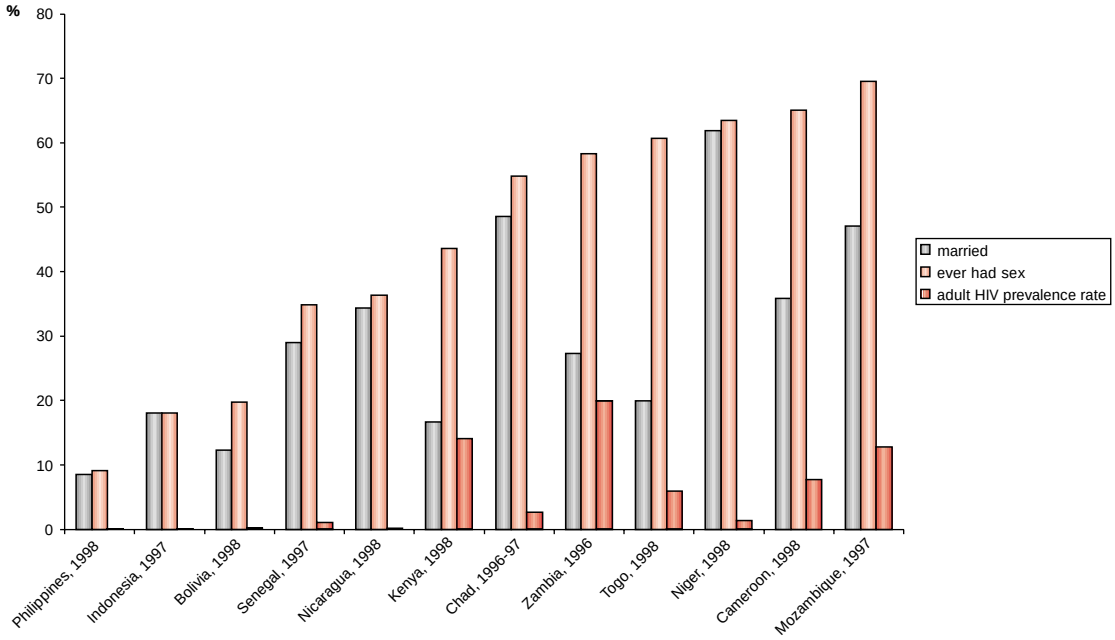
In Latin America, sexual activity can start earlier. A large study in Venezuela found that a quarter of young people had lost their virginity between the ages of 10 and 14, and in Mexico the proportion of sexually active boys in the same age group was 17%. In the Caribbean and in much of sub-Saharan Africa, many young people begin their sex lives at very early ages. Unlike the trend seen elsewhere, girls tend to become sexually active earlier than boys.

How many stay abstinent before marriage?

Even where the sexual debut is late, marriage tends to come later still. In study after study, in country after country, higher proportions of men and women in their teens and early 20s are sexually active than are married. In a large survey in the Indian state of Orissa, a quarter of men in rural areas and around half in the highly mobile district of Puri reported having had premarital sex. In Viet Nam, a society that maintains strict social controls and a firm ideal of virginity at marriage, over one-tenth of young people surveyed reported that they were having premarital sex, and just over half of those said they regularly used condoms.

Where more young people are sexually active than are married, there is a greater likelihood of HIV infection. Figure 21 shows the difference between the proportion of 15–19-year-olds who are married and the proportion who have started having sex in selected countries in Africa, Asia and Latin America. It can be seen that the countries with large discrepancies between these two categories are also the ones with high rates of HIV in the adult population.

Figure 21. Proportion of 15–19-year-old girls married, proportion reporting ever having had sex, and adult HIV prevalence rate, surveys in selected countries, 1996-1998



Source: *Demographic and Health Surveys, Macro International, USA*

Sex before marriage: the HIV risks

Clearly, very high proportions of women and men around the world are having sex before marriage, often from a very early age. Prevention campaigns that promote no sex until marriage seem to be failing young people in most continents. But so long as people are choosing only one uninfected partner who never has sex with anyone else, that is not necessarily a problem. Many people do go on to marry the person they first have sex with. But the available data suggest that this is by no means the norm.

In a recent study in western Kenya, a third of young married men said they had had more than 10 partners before marriage, and the average number of premarital partners reported was close to 9. Women marry younger and may thus have less opportunity for premarital partnerships, but married women in rural areas in the Kenyan study nevertheless reported having sex with an average of three men before marriage. And it seems that, in many places, these partnerships overlap. In studies of young people's sexual behaviour in South Africa and Zambia, over half of the sexually active respondents in some areas said they had more than one sex partner currently or in the past three months.

The number of premarital partners is not the only factor contributing to the risk of HIV infection. As discussed on pages 46-49, the crucial factors for girls are early sexual debut – at an age when their biological vulnerability is very high – and sex with older and more heavily infected men. Studies in African cities where the prevalence of HIV is high tend to confirm that young women are more likely than young men to become infected with HIV during premarital sex. In the Kenyan city of Kisumu, nearly two-fifths of women who had had premarital partners were HIV-positive, while no infections were found in the women who said they were virgins when they married. Overall, in the high-prevalence heterosexual epidemics of eastern and southern Africa, HIV infection rates among young women are far higher than the rates among the men they are apt to marry – men their own age and those up to five years older. The inescapable conclusion is that in some badly affected countries women are now more likely than men to enter marriage already infected and may be exposing their new husbands to HIV. In Kisumu, over a quarter of married men aged 20–24 tested HIV-positive, compared with fewer than 10% of single men.

What about fidelity between regular partners?

While some women may be entering marriage infected and putting their husbands at risk, the reverse still holds true in most countries of the world. Moreover, in most cases women are far more likely than men to be put at risk of HIV by their partner's extramarital encounters.

Mutual monogamy is a social ideal in many societies and most religions, but a double standard tends to relax the rules for men. Men are far more likely than women to report and indeed to have multiple and casual sex partners, even if women underreport this activity where it is socially disapproved. In a study of the general populations of several cities in southern Viet Nam, more than one man in four reported having had a casual sex partner in the previous year, compared with 1 woman in 200, and two-fifths of the men did not always use a condom for casual sex. In a qualitative study in the Indian state of Gujarat, 33 out of 78 married men interviewed said they had had extramarital sex, mostly with unmarried women in their immediate community. The consequences for a spouse who remains faithful to an unfaithful partner can be devastating. A review of the case histories of 134 women infected

with HIV in Chennai (Madras) – almost all of them married – showed that 88% had had sex with only one person in their lives. Few women reported any risk factors other than sex.

Ideals and behaviour can conflict even within the same individual. In a South African study, four men out of five said that people should stick to one faithful, regular partner to avoid AIDS, but over half of the same men reported having had at least one casual partner in the past year. Similar but smaller discrepancies were found among women.

Condom use: rising, but still not enough

By far the commonest method of prevention mentioned spontaneously by people in many studies is condom use. For example, in a study among miners in South Africa in 1997, three-quarters mentioned condom use whereas only two-fifths mentioned monogamy.

Despite opposition from many quarters, condoms have been actively and successfully promoted as part of HIV prevention strategies in many countries.

Box 11. How well do condoms work?

Obviously, people will not use condoms to protect themselves against HIV, other sexually transmitted infections or pregnancy unless they believe that condoms provide effective protection. Huge misconceptions about the safety of condoms in many populations certainly contribute to the low levels of use among sexually active youngsters. In a large survey in central Kenya, nearly half of the young men who had had sex and over two-thirds of the young women had never used a condom. Among these young people, over 40% of the boys and 55% of the girls thought that HIV might be able to pass through a condom, and roughly the same proportions believed condoms could get stuck inside a woman's body.

Worryingly, misconceptions about condoms are not confined to the young. Over half of the parents and guardians of the young people in the study thought that HIV could pass through a condom, and only 48% said condoms were effective prevention against HIV. Misunderstandings about the effectiveness of condoms are reinforced by statements from social leaders. For example, a religious authority in the area of central Kenya where the study was conducted was quoted in the country's largest newspaper as saying that "the rampant use of condoms was to blame for the spread of AIDS… despite condom use, the number of people infected with AIDS continued to increase, an indication that they were not effective in the prevention of the disease".

The effectiveness of condoms in protecting against HIV and other sexually transmitted infections is a scientific rather than a moral issue. And all the scientific evidence points in the same direction: correct and consistent use of condoms of good quality

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vastly reduces the likelihood of HIV transmission. Among discordant couples (couples where just one partner is infected), those who always use condoms for sex have little or no risk of the virus passing to the uninfected partner compared with couples who use condoms sporadically or not at all.

There is wide variation in condom use around the world, and even within communities. On the whole, though, more men report using condoms than women, and both sexes are far more likely to use condoms for sex with casual partners than with a spouse or regular partner (see page 80).

Studies show that young people are more likely than their elders to use condoms to protect themselves and their partners against HIV infection. Young people in all cultures and corners of the globe have proved themselves ready and willing to adopt behaviours and attitudes that promise to stem the rampage of AIDS. This bodes well for the future, since it is probably easier to maintain established behaviours over time than to change habits once they have been formed. Indeed, many young people are beginning to insist on safe sex even at the start of their sexual lives.

In Latin America, Brazil has chalked up impressive results in encouraging condom use for first intercourse (see page 16). So has Mexico, where a study among high-school and university students found that 42% of young men and 36% of young women reported having used a condom the first time they had sex. Increases in condom use have also been recorded on the Caribbean coast of Nicaragua, following an active HIV prevention and condom promotion campaign conducted between 1991 and 1997. Among people who had had sex with more than one partner over the past year, condom use rose from 35% in 1991 (before the campaign) to 55% in 1994 and to 71% in 1997.

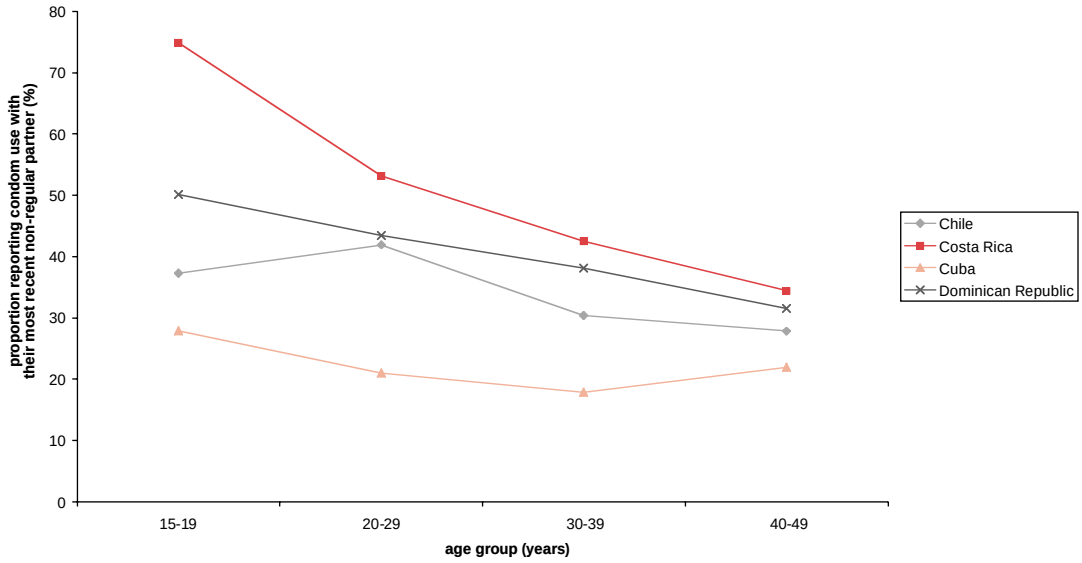
Figure 22 shows that, in several countries in Latin America and the Caribbean, young people were more likely than older people to use condoms with casual partners.

In most western European countries, more than 60% of young people currently report that they used a condom the first time they had sex. In Switzerland (see Figure 23), almost 80% of people aged 17–30, many of whom are unmarried, say they consistently use condoms with casual partners (up from less than 20% a decade ago).

In sub-Saharan Africa, condom use has increased considerably over time. In Uganda, the percentage of teenage girls who had ever used a condom tripled between 1994 and 1997, and more teenage girls reported condom use than any other age group, indicating that the acceptability of condoms is growing more rapidly among young people than among older people. Lifetime condom use among the men who have sex with these women also rose, more than doubling in all age groups between 1994 and 1997.

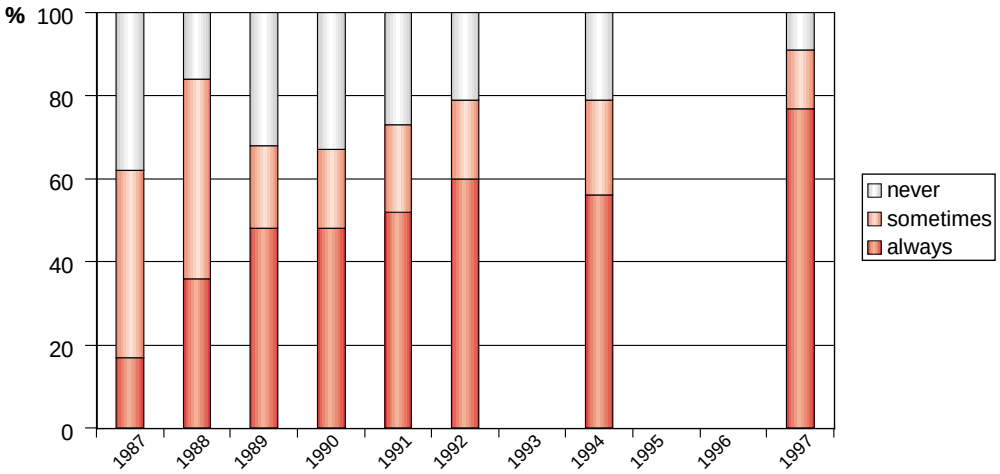
However, the rates remain very low in some areas. A study in western Kenya found that 63% of unmarried men and women who had had sex in the past year never

Figure 22. Condom use for casual sex, by age, selected Latin American and Caribbean countries, 1996-1997



Source: *National AIDS Programmes*

Figure 23. Condom use for casual sex in the past six months, 17–30-year-olds, Switzerland, 1987-1997



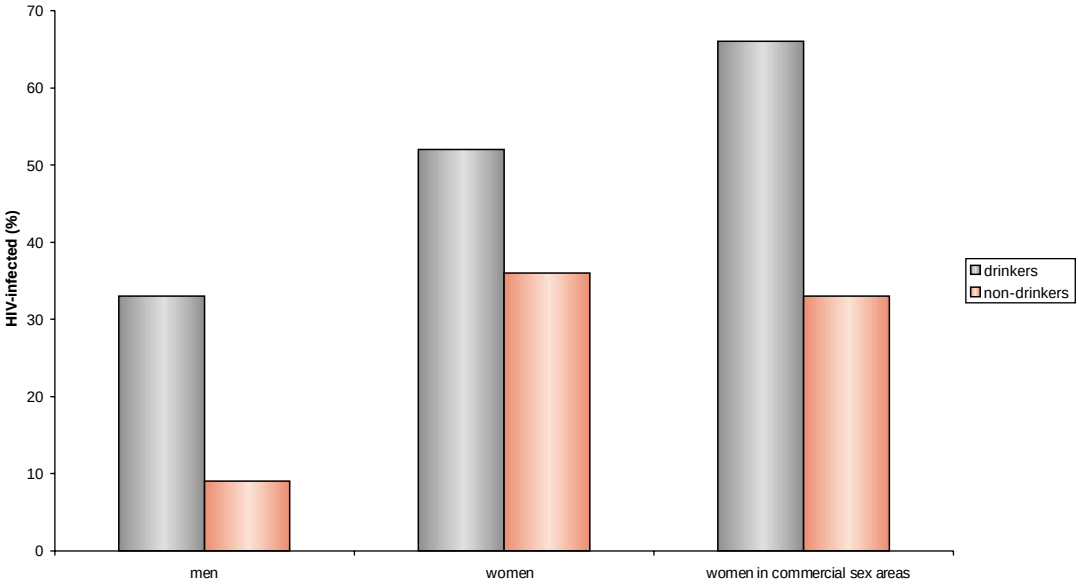
Source: *University Institute of Social and Preventive Medicine, Lausanne, Switzerland, 1999*

used a condom, while just 18% said they always did. Among those who were married, the men's use of condoms with outside partners was similarly low and that of the women was even lower – over four out of five married women never used a condom with men who were not their husbands. Most worrying of all were the relatively low rates of condom use for very high-risk encounters. A study of sex workers in

Kisumu, Kenya, showed that only half had used a condom with their most recent client, and a third had never used a condom. Perhaps not surprisingly, given this low rate of condom use, fully three-quarters of the sex workers responding to the survey in this high-prevalence area of East Africa tested positive for HIV.

One of the factors that influences condom use is alcohol consumption. In many continents, commercial sex and other risky encounters take place after drinking sessions. People who are drunk are less likely to use condoms than people who are sober. The consequences can be dire, as Figure 24 shows. In this South African study, the prevalence of HIV infection was far higher among men and women who consumed alcohol than among men and women who said they never drank. This was true even among women in red-light districts.

Figure 24. HIV prevalence rates among people consuming alcohol and among non-drinkers, Carletonville, South Africa, 1998



Source: *Campbell et al. (unpublished data)*

In Zambia, close to a quarter of women and a fifth of men with casual partners said they had been drinking the last time they had sex with their casual partners. In western Kenya, most sex workers questioned said that alcohol was involved the first time they ever sold sex, and the overwhelming majority of sex workers in the town of Kisumu said that alcohol was an integral part of sexual transactions, with men buying women a drink to signal their interest in buying sex. They also said condom use tended to evaporate when either the client or the sex worker was drunk. Studies among men in Europe, Mexico, Zimbabwe and Uganda have also shown a strong correlation between frequent use of alcohol and other drugs and unprotected sex.

Box 12. The female condom

Until recently, the male condom was the only physical barrier available against the sexual transmission of infection, including HIV. Now there is another prevention device to choose from: the female condom.

The female condom is a strong, soft sheath that is inserted into the vagina before sexual intercourse. It has two plastic rings: one at the closed end, which helps insert the condom and keep it in place, and the other at the open end, which remains outside the vagina. It is made of polyurethane plastic, which requires no special storage; it can be inserted quite a while before having sex, it does not require immediate withdrawal after ejaculation and it can be used with both oil-based and water-based lubricants. Because it is usually visible during sex, a woman cannot easily use a female condom without her partner knowing about it, but women do have more control over use of this method than they do over use of a male condom.

The female condom is not meant to replace the male condom. Rather, it is meant to increase the options available to fight HIV and other sexually transmitted infections. According to a Thai study among sex workers in brothels, when a female condom was provided as an extra option to the male condom, the women experienced a 34% decrease in the number of new sexually transmitted infections. The same study also found that sex workers who had access to both the female and the male condom were less likely to have unprotected sex than women who had access only to male condoms.

*Use of the product is not expected to reach the high levels recorded in many countries for the male condom, not least because it is currently far more expensive. Research in Zambia and Zimbabwe reveals that after a year of mass marketing, awareness of the female condom is high but use remains extremely low. Some studies show, however, that once women try the female condom, they like it. For example, among female drug users in Brazil, 75% who used the female condom reported being comfortable with it. Follow-up interviews three months later showed that 43% reported continued use, although women living in poor areas (*favelas*) were less likely to continue using the condom.*

Four out of five sex workers who agreed to try a female condom in a study in Thailand said they were satisfied and would use it again. Indeed, the female condom may be especially attractive to sex workers, because it reduces the need for negotiation and can be used even when a man has an incomplete erection, which is sometimes the case with drunken clients.

Female condoms are several times more expensive than male condoms. Since 1996, a special agreement between UNAIDS and The Female Health Company, currently the sole manufacturer of the female condom, has made the female condom available to governments and other public agencies at a special price. Efforts to expand access, increase global volume and further reduce the price continue. A guide to assist countries in programme implementation has been prepared by WHO and the UNAIDS Secretariat, while the United Nations Population Fund (UNFPA) provides technical assistance to country programmes.

It is especially important for young people to use condoms in high-prevalence countries where they are likely to encounter an HIV-infected partner at the start of their sex lives. South Africa, one such country, offers good examples both of what can be done to encourage young people to behave safely and of the challenges that remain. In 1999, over three-quarters of all students in high schools in Johannesburg and in tertiary institutions in Northern Province had used a condom the last time they had sex, and nearly as many said they always used condoms. Unfortunately, in rural areas in KwaZulu Natal, where over a quarter of pregnant women in their late teens have HIV and where the probability of encountering an infected partner is probably as high as anywhere in the world, the rates of condom use among young people were three times lower than those elsewhere in the country. The study showed that the use of condoms is far higher in places where condoms are easily and confidentially available to young people than in places where no special effort is made to meet the needs of the young (see Box 13 below).

Box 13. Making the safe choice easier

Condoms must be widely and conveniently accessible if they are to be an easy choice. In one South African study, around 85% of both men and women said that use of condoms could prevent AIDS, and high proportions of the respondents had multiple partners or believed that their regular partner was unfaithful, but over 60% of both men and women had never used a condom. While half of all the men said they intended to use a condom every time they had sex with a casual partner, only 16% of them actually did so. When asked why, many respondents said they simply did not have a condom handy.

There has been impressive progress in improving the availability of condoms, for example through social marketing – an approach which relies on the profit motive as an incentive for vendors to purchase subsidized condoms and sell them at a small mark-up.

For example, in the space of less than a year, a condom social marketing project in Myanmar achieved an impressive increase in the accessibility of, and the demand for, condoms. The quarterly sales of condoms in this project rose from 1 million in October–December 1997 to 1.8 million in July–September 1999. Over the same period, the cumulative number of retail outlets (both traditional and non-traditional) for social marketing of condoms increased from 364 to 1500.

While programmes such as this operate in many countries, much still remains to be done, especially for young people who may need particularly discreet access and may not be able to afford even subsidized condoms.

Men who have sex with men

In many countries around the world, openly “gay” communities are rare or non-existent. Male homosexual behaviour, on the other hand, exists in every country. It often involves penetrative anal sex between men, an act that carries a high risk of HIV infection.

Sex between men is one of the major forces behind the HIV epidemic in many high-income countries and in some parts of Latin America. In Asia, the contribution of sex between men to the HIV epidemic has been recorded regularly but has rarely been quantified. Most of the countries with openly gay communities are in the industrialized world, which are also the countries with the best access to prevention information and to therapy and other care. In developing countries, men who have sex with men are far more likely to do so in hidden ways (see below), and they are less likely to have access to prevention information and services and care.

Prevention is faltering in high-income countries

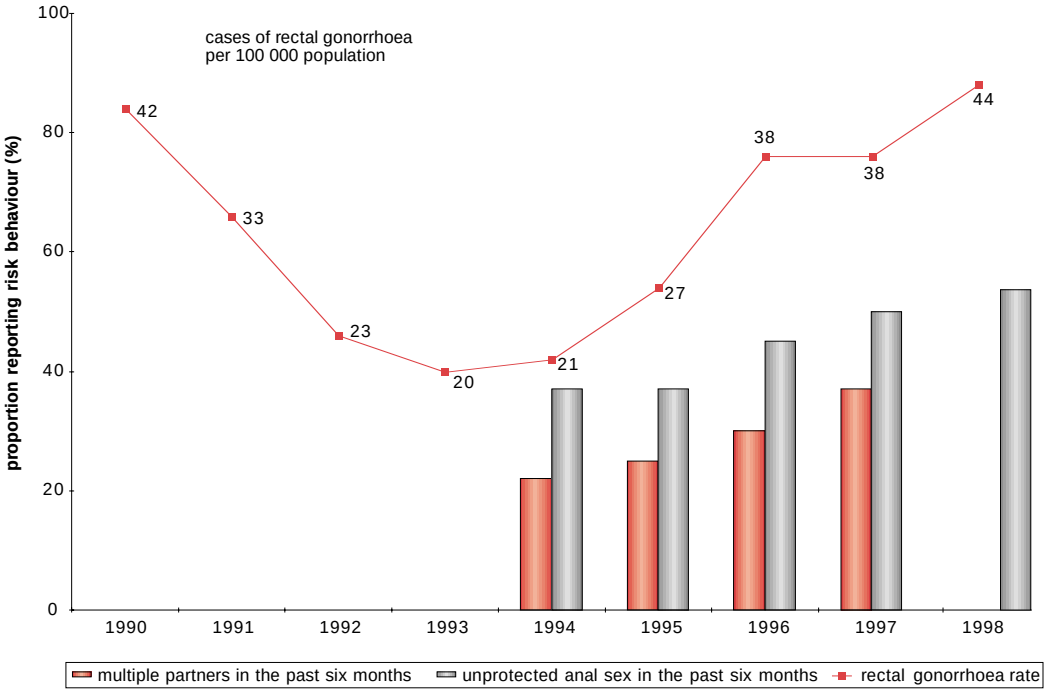
AIDS was first identified among gay men in the USA. By the time the virus that causes the syndrome was isolated, around 1983-1984, HIV had already spread widely throughout the gay community, and was beginning to be found in other groups, too. The reaction of the gay community in the United States and elsewhere was rapid and forceful. Prevention campaigns were organized on a huge scale, and they were largely effective. In particular, consistent condom use during anal sex rose from virtually nothing before the advent of AIDS to around 70% by 1995.

Studies among gay men in a few cities where antiretroviral therapy for individuals with HIV is widely available have shown that men may be growing complacent about the risk of AIDS. A study in the Australian cities of Sydney and Melbourne in 1998 found that a third of gay men were less worried about HIV infection than they were before antiretroviral drugs became available. And they appeared to act on this new sense of security: these men were 40% more likely to have had recent unprotected anal sex than men whose fear of infection was not changed by the advent of therapy. Remarkably similar results were found among gay men in New York, San Francisco and London.

Risk behaviour is undeniably on the rise in some communities. Regular surveys of several thousand gay men in San Francisco have found an increase in the proportion reporting that they had unprotected anal sex and multiple partners in the past six months. As Figure 25 shows, these increases in risk behaviour are paralleled by rising rates of rectal gonorrhoea – a reversal of the falling trend seen up to 1993. More worrying still, surveillance systems using sophisticated testing methods show that in San Francisco the rate of new HIV infections in men with rectal gonorrhoea nearly doubled between 1996 and 1998. The rate of HIV incidence also rose among

men presenting for voluntary counselling and testing, nearly tripling from 1.3% in 1997 to 3.7% in 1999.

Figure 25. Rectal gonorrhoea and sexual risk behaviour among men who have sex with men, San Francisco, USA, 1994-1998



Source: *San Francisco Department of Public Health (California), USA, 1999*

The San Francisco surveys show that risk behaviour is increasing most rapidly among men under 25. In this age group, the percentage who had had unprotected anal sex and multiple partners in the past six months rose from 22% in 1994 to 32% in 1997. In 1997, 68% of the young men reporting unprotected anal sex with more than one partner in the previous six months did not know the HIV status of at least one of their partners. Alarming rates of continuing HIV infection have been detected elsewhere in the country too, with the help of methods that allow public health officials to calculate what proportion of HIV tests are recent infections. Among nearly 3500 young gay men aged 15–22 in seven US cities, nearly 3% became newly infected with HIV each year between 1994 and 1998, with the highest rate of new infections seen in African-American men.

Complacency may not be the only factor involved in these worrying trends among men under 25. It is possible that some young men are not using condoms because they do not identify with the group of HIV-positive gay men, or because information programmes have failed to reach or convince them. The time may have come for

young gay men to take on the task of informing their own peers, as was done almost two decades ago by the pioneers of AIDS education.

The high cost of neglect and denial

In much of the developing world, where expensive antiretroviral therapy is unavailable, the problem for many men who have sex with men is not complacency but neglect and denial. Too few have been reached with appropriate prevention messages and helped to adopt safe behaviour.

Although sex between men is a major driving force for HIV infection in much of Latin America and the Caribbean, a predominantly macho culture has stunted the development of gay identities and has led to widespread denial of male–male sex, at a societal and sometimes at a personal level. Getting appropriate HIV prevention services to men who have sex with men but who do not consider themselves gay has proved a major challenge in many countries.

In studies of the prevalence of HIV infection in Mexico between 1991 and 1997, 14% of over 7000 homosexual men tested positive for HIV, and male–male sex was shown to be the primary route of infection even among men who were also injecting drug users. While Argentina has little sentinel surveillance among men who have sex with men, over a quarter of all AIDS cases in Argentina were associated with sex between men in mid-1999.

Even in countries where HIV transmission is believed to be overwhelmingly heterosexual and where the overall proportions of infected men and women are similar, sex between men is a major risk factor for HIV. In a study of truck drivers in four cities in Honduras, men who said they had had anal sex with men were six times more likely than exclusively heterosexual men to be infected with HIV, syphilis or hepatitis B. In Honduras, 8% of men who had sex with men were HIV-positive, as compared with just under 2% of the whole adult population. In Jamaica, the prevalence of HIV infection among men who have sex with men rose from close to 10% in 1985 to 15% in 1986, then doubled to 30% in the decade that followed; the rate in the general adult population was less than 1%. In Peru, the prevalence rate among men who engaged in sex with men was 14% in Lima and almost 5% in provincial areas; one study found that 60–77% of men reporting anal sex had never used a condom.

In many countries in Latin America, there is a deliberate willingness to ignore the existence of this “socially undesirable” behaviour, as shown by the sparse information on homosexual activity, and perhaps even some unwillingness to promote measures that would stop an undesirable behaviour from becoming a fatal behaviour. However, in countries where governments have supported nongovernmental organizations in implementing prevention programmes, successes have been recorded. In the Colombian capital, Bogotá, for example, while sexual activity with multiple partners remains common, the use of condoms for anal sex has increased. Some 55% of men in one survey said they always used a condom during anal sex

with casual partners. Among men with no steady partner, three-quarters reported using a condom the last time they had had anal sex. These rates of protected sex, on a par with those recorded in countries where the gay community is far less marginalized, constitute a major achievement for HIV prevention.

Brazil, too, has seen an increase in condom use by men who have sex with men. While a series of studies in Rio de Janeiro showed that between 1989 and 1995 the proportion of men reporting anal sex in the past six months rose from 67% to 76%, the proportion of anal sex protected by condoms rose much more dramatically, more than doubling from 34% to 69%. In the impoverished north-eastern region of Brazil, however, where there is little in the way of prevention activities, a study in the city of Fortaleza found very high levels of unprotected anal sex among men having sex with men, who had an average of 14 sex partners over the previous year. Brazilian men continue to become infected with HIV through male–male sex at an alarming rate. In São Paulo, one study showed that the rate of new HIV infections in this population group was 2% a year between 1994 and 1997.

Men who have sex with men and women

The Fortaleza study in Brazil raised an issue of some concern: while only 15% of the men spontaneously identified themselves as bisexual, 23% reported in answer to questioning that they had had sex with a woman in the previous year, most of it unprotected. Of those reporting unprotected sex with a woman, two-thirds had also had unprotected anal sex with a man. This overlap of risk behaviour provides a classic "bridge" for HIV, allowing it to pass from a population with high prevalence rates to a heterosexual population with typically lower infection rates.

Box 14. Needed: an AIDS vaccine

An AIDS vaccine is urgently needed in a world where over 5 million people are newly infected with HIV every year, but it will take time and a concerted international effort before we have one.

In the long term, a safe, effective and affordable preventive vaccine against HIV is our best hope of bringing the global epidemic under control. However, it would be a mistake to think that the development of such a vaccine will be quick or easy or to expect that once a vaccine is available it will replace other preventive measures. Given the complex chain of endeavour involved in vaccine development, it would also be illusory to believe that a vaccine will be developed without the active participation of affected countries and communities, who are an essential link in the chain.

Scientists around the world are working to understand the kind of immunity a vaccine would have to induce in order to protect someone against HIV infection. They are also

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looking into the genetic variability of the virus, which might affect the protection a vaccine could confer.

The information that scientists generate is in turn being used by the pharmaceutical and biotechnology industry to develop "candidate vaccines" to be tested in HIV-negative human volunteers. The first human trial of an HIV-preventive vaccine was conducted in 1987 in the United States. Since then, more than 30 small-scale trials have been conducted, including 12 in developing countries (Brazil, China, Cuba, Thailand and Uganda). These trials, carried out with the participation of more than 5000 healthy volunteers, have shown that the candidate vaccines are safe and that they induce immune responses that could potentially protect people against HIV infection.

The first large-scale HIV vaccine trials, designed to show whether the candidate vaccines actually protect against HIV infection or disease, were launched in 1998 in the United States and in 1999 in Thailand. The trials involve 8000 healthy volunteers who are given one of two different versions of gp120, a protein located on the outside of the virus, depending on the virus strains prevalent in the two countries. The initial results from these trials may be available within the next two years. In parallel, other candidate HIV vaccines are being developed through different experimental approaches. Some are based on the HIV strains prevalent in developing countries. Most of these newer candidate vaccines will be tested in small-scale trials in human volunteers, and the best will proceed to large-scale evaluation for efficacy.

Vaccine development is complicated not only by the range of virus subtypes circulating but by the wide variety of human populations who need protection and who differ, for example, in their genetic make-up and their routes of exposure to HIV. Inevitably, different types of candidate vaccines will have to be tested against various viral subtypes in multiple vaccine trials, conducted in both high-income and developing countries. It is vital for developing countries to build up their technical and human capability to conduct such trials with the highest ethical and scientific standards and with the full participation of the community.

Most likely, the initial HIV vaccines will not be 100% effective, and they will have to be delivered as part of a comprehensive prevention package. What is important now is to ensure that countries where there is an urgent need for HIV vaccines participate in the global effort to ensure that a vaccine appropriate for their use is developed. Likewise, it is not too early to start planning how to ensure that a future vaccine is made available in the areas of the world where it is most needed.

In Asia, a clearly defined "gay" identity is even rarer than it is in Latin America. There is very strong social pressure on men to marry and father children, and men who have sex with men are commonly married as well. This results in even higher levels of potential "bridging" than those recorded in Latin America.

In one study of truck drivers in India – men who spend long hours together on the road – almost a quarter reported oral or anal sex with a man, and all of those said

they also had sex with women. A study of men attending a clinic for sexually transmitted infections in the southern Indian city of Pune showed that men reporting receptive anal sex with men were 2.6 times more likely to be HIV infected than men who reported no anal sex, even after taking into account other risk factors.

In Thailand, the impressive success in reducing heterosexual transmission of HIV has exposed a failure to focus on other important groups, including men who have sex with men. In a study of military conscripts in an area of northern Thailand with a high prevalence of HIV infection, 134 of over 2000 young men said they had sex with men and all but three of these men also had sex with women. The men reporting male–male sex were nearly three times as likely to be infected with HIV as the men who had sex only with women, even after taking into account other factors such as sexually transmitted infections. Although male–male sex was reported by less than 7% of the men, it was responsible for 13% of the HIV infections in this population in 1995.

Box 15. Male circumcision and HIV infection

For several years, researchers have been debating the relationship between male circumcision and HIV. Several studies have indicated that circumcised men are less likely to become infected with HIV than uncircumcised men. However, because circumcision is usually linked to culture or religion, it has been argued that the apparent protective effect of the procedure is likely to be related not to removal of the foreskin but to the behaviours prevalent in the ethnic or religious groups in which male circumcision is practised. In addition, some researchers have assumed that any association between circumcision and HIV must be complicated by the presence of other sexually transmitted infections, which have been found to be more common among uncircumcised men.

Clearly, the correlations are not straightforward. In the higher-income countries, the rates of HIV infection among men who have sex with men do not vary greatly even though the circumcision rates do: few men in Europe and Japan but four-fifths of men in the United States are circumcised. In Africa, however, circumcision seems to confer some protection. A study in Nyanza Province, Kenya, among men from the same ethnic group, the Luo, found that one-quarter of uncircumcised men were infected with HIV, compared with just under one-tenth of circumcised men. The protective effect remained even after other factors, such as sexual behaviour and sexually transmitted infections, had been taken into account. A study of over 6800 men in rural Uganda has suggested that the timing of circumcision is important: HIV infection was found in 16% of men who were circumcised after the age of 21 and in only 7% of those circumcised before puberty. A recent review of 27 published studies on the association between HIV and male circumcision in Africa found that, on average, circumcised men were half as likely to be infected with HIV as uncircumcised men. When African men with similar socio-demographic, behavioural and other factors were compared, circumcised men were nearly 60% less likely than uncircumcised men to be infected with HIV.

Even though the weight of evidence increasingly suggests that circumcising men before they become sexually active does provide some protection against HIV, the practical implications for AIDS prevention are not obvious. Circumcision, where it is practised, usually has links to religious or ethnic identities and life-cycle ceremonies, and may customarily be done after puberty. If the same scalpel were used without sterilization on a number of boys, this could actually contribute to the transmission of HIV. Finally, if circumcision were promoted as a way of preventing HIV infection, people might abandon other safe sexual practices, such as condom use. This risk is far from negligible – already, rumours abound in some communities that circumcision acts as a "natural condom". A sex worker interviewed in the city of Kisumu in Kenya summed up this misconception, saying: "I can sleep with circumcised men without a condom because they don't carry a lot of dirt on their penis". While circumcision may reduce the likelihood of HIV infection, it does not eliminate it. In one study in South Africa, for example, two out of five circumcised men were infected with HIV, compared with three out of five uncircumcised men. Relying on circumcision for protection is, in these circumstances, a bit like playing Russian roulette with two bullets in the gun rather than three.

HIV and other sexually transmitted infections: an opportunity to strengthen prevention

The important links between HIV and other sexually transmitted infections have been known for many years. One link is behavioural. Engaging in unprotected intercourse exposes a person both to HIV and to a classic sexually transmitted infection. By the same token, using condoms consistently can prevent both kinds of infection. The second link is biological. A person with an untreated sexually transmitted infection is more likely both to contract and to pass on HIV during unprotected sex. Some evidence exists that prompt diagnosis and treatment of the curable sexually transmitted infections, such as syphilis and chancroid, can sever this link and reduce the number of new HIV infections.

New information highlights the challenges raised by these interlinked infections as well as the opportunities for their joint prevention. On the one hand, there now is evidence that genital herpes, an incurable viral infection in which patients have recurrent genital ulcers, may play a more important part in fuelling the spread of HIV than previously thought. On the other hand, recent data point to the enormous potential of using improved health care for sexually transmitted infections as an entry-point for prevention services that could help reduce the rates of both HIV and other sexually transmitted infections.

In high-income countries, genital herpes – infection with herpes simplex virus-2 (HSV-2) – is the leading cause of genital ulcers, although rates are low. HSV-2 is now assuming that position in sub-Saharan Africa, too, overtaking chancroid and other

sexually transmitted infections in many countries. An ulcer in the genital area provides an "open door" through which HIV can easily pass. HSV-2 and HIV appear to operate in a vicious circle, each increasing the risk of contracting and passing on the other. Unfortunately, HSV-2 infection is lifelong and incurable. Drugs that suppress the genital ulcers and viral shedding associated with HSV-2 do exist, but they are very expensive, and their widespread use in poor countries is problematic. Thus, the only practical option for HSV-2 is prevention. This brings us full circle: the best way to deal with the exponentially rising risks of HIV and HSV-2 infection is to increase efforts to prevent them both, particularly by increasing condom use.

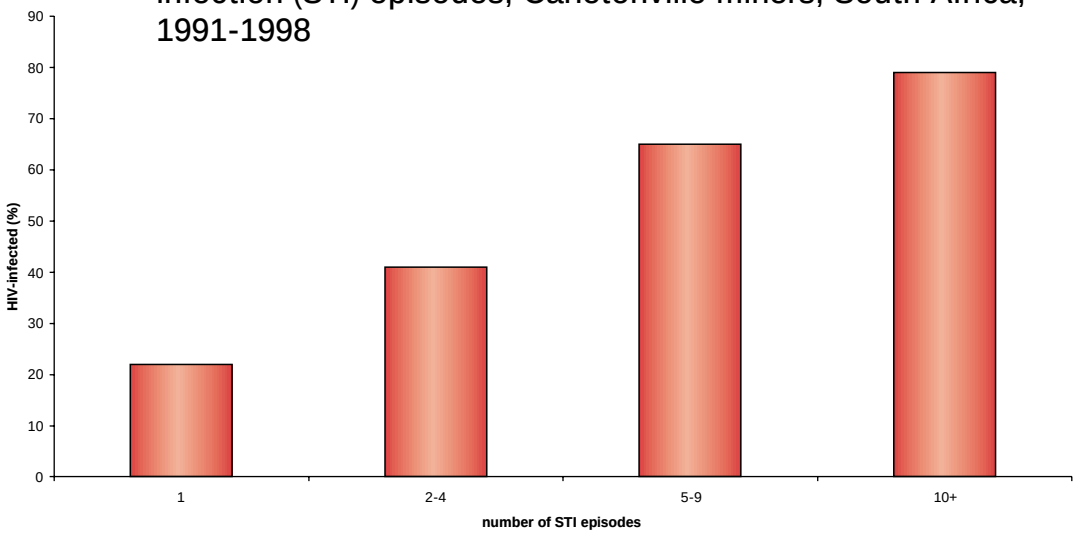
Turning past failure into future success

Patients seeking health care for a sexually transmitted infection should be a primary target for renewed prevention efforts. This is especially true of people who are experiencing their first such infection. It is often difficult to reach young, sexually active men with information about safe sexual behaviour, because they generally have little contact with health services apart from seeking care for a sexually transmitted infection. Men can also refer the women with whom they have had sex to the clinic; an infected woman often has no symptoms of illness and may therefore not seek care, even though her untreated sexually transmitted infection puts her at high risk for HIV as well as for infertility and other ill-health.

In many countries, the opportunity of using such clinics to deliver HIV prevention services to populations at high risk for HIV transmission is being lost, in part because health systems emphasize curative services over prevention, and in part because the clients are thought of as "prevention failures". Clearly, people with a sexually transmitted infection have by definition engaged in unprotected sex with someone who also has other high-risk partners. But a past failure can be translated into a future success. These patients stand to gain more from prevention counselling than people with no risk behaviour.

Analysis of data from a large treatment programme in South Africa shows just how great the potential impact of prevention might be among patients with sexually transmitted infection. As Figure 26 shows, less than a quarter of miners presenting for the first time with one of these infections at a free clinic provided by employers are infected with HIV. This is very nearly the HIV prevalence rate recorded in the general male population in this area of South Africa. Of those who have further bouts of sexually transmitted infections and come back for treatment a second, third or fourth time, over two-fifths are infected with HIV. By the time men are being treated for their tenth episode or more – new infections that can only have been acquired through unprotected sex – four out of five are HIV-positive. And since most of those interviewed said they never used condoms in their primary relationship, many of these infections will have been acquired or passed on through sex with a spouse or regular partner.

Figure 26. HIV prevalence rate and frequency of sexually transmitted infection (STI) episodes, Carletonville miners, South Africa, 1991-1998



Source: *Ballard R, 2000 (unpublished data)*

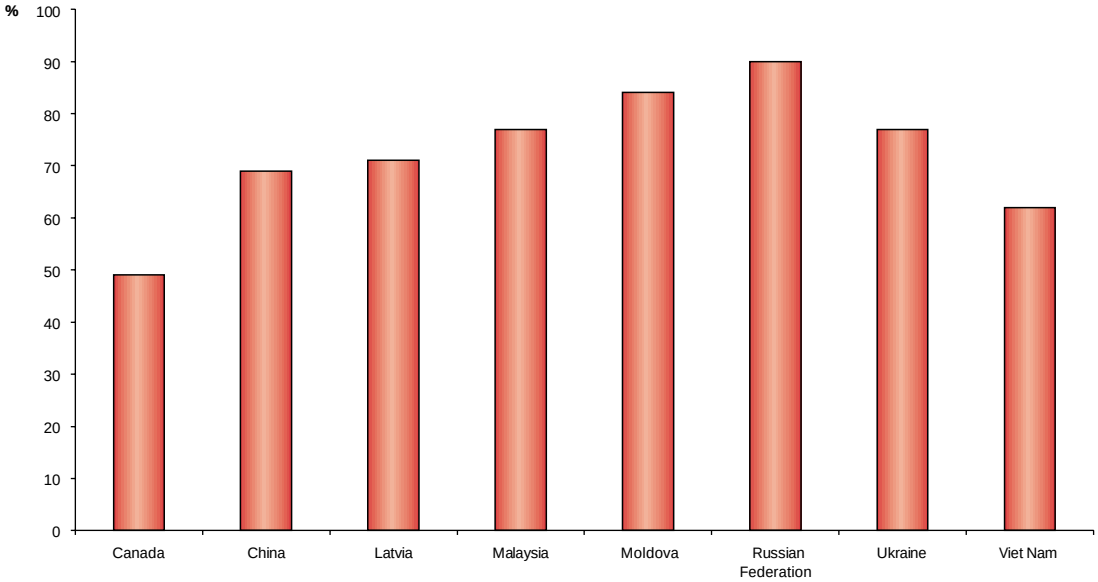
If effective prevention measures were directed at men presenting with their first episode of sexually transmitted infection, many would be able to prevent subsequent episodes and avoid becoming infected with HIV. Standard guidelines for the management of such patients do call for counselling patients about prevention, including the use of condoms and the referral of sex partners for treatment. But service providers regularly score very poorly on this part of patient management. Referral for HIV testing has rarely if ever been assessed, but anecdotal evidence suggests that it is rare.

Fortunately, good training can make a big difference in performance in the area of prevention. A recent study in Zambia found that 61% of trained health-care providers – but only 35% of those who had not been trained – performed adequately in providing prevention advice to patients with a sexually transmitted infection. The Zambian study found that training did not make much difference to already good performance in other aspects of patient care, such as history-taking and physical examination. Depressingly, however, only one-fifth of the cases were correctly treated – probably because the correct drugs were rarely available. Almost all the service providers reported serious shortages of drugs in the past year, and almost all were out of stock of at least one essential drug at the time of the study. A study in India showed that only 10% of all men and women presenting with urethritis were satisfactorily managed in public and private health facilities. Thus, while a greater emphasis on prevention is desperately needed, much also remains to be done to ensure the proper diagnosis and treatment of curable infections such as syphilis and gonorrhoea.

Injecting drug use: the other HIV epidemic

Globally, sex between men and women is by far the most common way of passing on HIV. But a second epidemic drives the virus in many, if not most, countries outside of Africa. That is the epidemic among men and women who inject drugs. Over half of all AIDS cases are attributed to injecting drug use in countries including Bahrain, Georgia, Italy, Kazakhstan, Portugal, Spain and Yugoslavia, and over two-fifths in Argentina and the Islamic Republic of Iran. Figure 27 shows the proportion of HIV infections attributable to drug use in a number of countries. In total, 114 countries and territories had reported HIV transmission between injecting drug users by mid-1999, up from just 52 seven years earlier.

Figure 27. Proportion of all new HIV infections that are in injecting drug users, selected countries, 1998-1999



Source: *National AIDS Programmes*

Injection of any sort is an even more efficient way of spreading HIV than sexual intercourse. Since injecting drug users are often linked in tight networks and commonly share injecting equipment with other people without cleaning it, HIV can spread very rapidly in these populations. Because injecting drug use is illegal in most countries, it is hard to know exactly how many people inject drugs and how many share their equipment; it is harder still to gauge how many are infected with HIV. Many of the estimates of HIV infection rates among injecting drug users come from tests of drug users who have been arrested or who are registered at treatment centres. However, information collected by outreach services – which take HIV prevention and other

health and social services to drug-using communities – suggest that the official figures underestimate the true rates of infection in this population. New data from clients contacted by outreach programmes for drug users in the Russian city of St Petersburg show that 12% of those tested are infected with HIV, whereas the rate is just 0.2% in registered drug users. In the Ukrainian city of Poltava, some 40% of clients of prevention projects are infected with HIV, compared with around 10% of registered drug users.

While precise figures may be hard to come by, it is clear that HIV can explode through drug-using populations with remarkable speed and can stabilize at very high rates. For example, HIV infection among injecting drug users in various cities in the Ukraine rose from virtually zero in 1994 to 31–57% in less than two years. In 1999, there was a massive outbreak of HIV infection among injecting drug users in the Russian capital, Moscow, with over three times as many new cases of HIV reported in that year as in all previous years combined. HIV prevalence rates ranging between 30% and 70% have been found among injecting drug users in Argentina, Brazil, India, Spain, Thailand and the USA (Puerto Rico). Risk behaviour in these populations remains common. Recent studies in various cities have found that close to a third of injecting drug users in Brazil and two-thirds in Thailand regularly share injecting equipment, while in Argentina three-quarters of those surveyed said they had shared syringes at some time.

Some countries – including several in central and eastern Europe – are recording a rise in the absolute number of injecting drug users, with a distressing fall in the age at which people start injecting drugs. In Slovakia, 2% of 15–16-year-olds said they had injected drugs. In St Petersburg, over 40% of drug users attending a treatment centre in 1999 were young people, up from just 13% two years earlier. In one study, some Thai girls said they started injecting before they turned 16, on average two years earlier than boys.

Drug injection poses a threat of HIV infection not only to the individuals who engage in it but also to their sex partners. In the USA, it is estimated that 9 out of 10 cases of heterosexual transmission of HIV in New York City are related to sex with a drug user. In some places, including much of China and parts of India and Myanmar, more women are infected through sex with drug users than in any other way. Fully 83% of injecting drug users in Brazil's Rio de Janeiro said they did not use condoms with their regular partners, and 63% never used them even with casual partners. Injecting drug use also contributes to mother-to-child transmission of HIV. In Uruguay, 40% of babies with HIV are born to mothers who inject drugs.

When injecting drug users sell sex to pay for drugs, the prospect of sexual transmission obviously looms large. But because both commercial sex and drug use are hidden, they are doubly hard to quantify. In studies of injecting drug users in Argentina (Buenos Aires), Brazil (Rio de Janeiro) and Canada, a third or more of respondents of both sexes said they had exchanged sex for drugs at least once. The overlap appears to increase the risk of infection. In a study among 212 male inject-

ing drug users in Quebec City, Canada, the prevalence of HIV infection was close to 30% among users who were also sex workers and just under 10% among men who did not report sex work.

Despite the great uncertainties about the number of injecting drug users and the proportion already infected with HIV, enough is known to move ahead quickly with comprehensive programming that can help reduce the high risk of new infections. This must include the primary prevention of drug use, especially among young people, and HIV prevention activities among drug users.

Reducing HIV transmission among drug users: interventions are effective but not politically popular

If large-scale, comprehensive HIV prevention programmes can be implemented among injecting drug users before the prevalence rate exceeds 5%, infections can be contained at a low level. Such programmes should include AIDS education, condom promotion, needle exchange and drug treatment. These comprehensive programmes are sometimes referred to as “harm reduction”. Yet the term “harm reduction” is politically sensitive, and some aspects of the approach are also politically sensitive in most countries. For example, at least six government-funded studies of HIV infection among drug users in the United States concluded that needle exchange programmes significantly reduce new HIV infections among drug users, without encouraging drug use. Despite these results, however, federal funding of needle-exchange programmes is still prohibited because of political opposition. In one study it was estimated that failure to implement widespread needle-exchange programmes in the United States between 1987 and 1995 will cost the country at least US$ 244 million in medical care for HIV cases that could have been prevented.

Harm reduction programmes, especially those aimed at preventing HIV infection, have been shown to work in transitional economies as well as in high-income countries. In Belarus, an HIV prevention programme among drug users in Svetlogorsk, which included education about safe injecting and safe sex and which provided clean syringes, seems to have led to far safer behaviour among drug users. In 1997, before the prevention programme began, 92% of those surveyed said they shared syringes. By 1999, this percentage had dropped precipitously to 35%. While some people did continue to reuse syringes, the proportion who cleaned them before using them again rose to 55%, from just 16% before the prevention campaign. The prevention project also included distribution of condoms to help reduce HIV transmission from infected drug users to their sex partners. And the users appear to be taking advantage of them: by 1999 nearly two-thirds said they sometimes or always used condoms, twice as many as two years earlier. The programme, which cost around US$ 0.36 per disposable syringe distributed, is estimated to have prevented over 2000 cases of HIV infection by its second year of operation, at a cost of around US$ 29 per infection prevented – far below the cost of an AIDS case to a family or a health system.

The Belarus campaign was bolstered by a change in the law, which made it legal to carry syringes. A legislative change that facilitated the funding and implementation of AIDS education and needle exchange among drug users has also been brought about in Brazil.

Drug treatment is another approach to preventing HIV infection among injecting drug users. This includes helping users to switch to substances that do not need to be injected. Methadone treatment, which involves giving oral doses of methadone as a substitute for the injection of heroin, has been associated with reduced risk behaviour and lower HIV infection rates. In an 18-month study of 255 drug users in Philadelphia (USA) in the early 1990s, only 3.5% of the drug users on stable methadone treatment became infected with HIV, compared with 22% of those who were not being treated.

Clearly, greater efforts are needed to reduce both injecting drug use and the risk of HIV infection among drug users, especially in the many countries where drug injection is a major driving force for the spread of HIV. Like other marginalized groups, drug users can often be reached more easily by nongovernmental organizations. National AIDS programmes in some countries, including several in central and eastern Europe and a few in Latin America and Asia, are actively supporting such organizations in their efforts to prevent HIV infection among injecting drug users and transmission from them to their sex partners. Their prevention efforts should be applauded, but above all they must be expanded.

Opening new doors with counselling and testing

Most of the 34.3 million people worldwide now living with HIV do not know they are carrying the virus. The proportion is highest in the countries worst affected by the HIV epidemic.

There are many reasons for this state of affairs, including ignorance about HIV, lack of suitable counselling and testing services, and the still widespread stigma attached to AIDS which can result in rejection and even violence against people known to be HIV-positive. People also fear that a positive result means an immediate death sentence, although this is not true. In a developing country someone who has just been infected with HIV can expect to live nine years on average before falling seriously ill and to survive up to a year beyond that, even in the absence of antiretroviral therapy.

As daunting as the barriers to HIV testing are, it is important to tackle them. When people learn their infection status early on, there can be important benefits for both prevention and care. People who discover they are HIV-negative can take more energetic measures to remain uninfected, including negotiating with their partner to go for testing or use condoms. People in a stable relationship who test positive for HIV can take steps to protect their partner from becoming infected through sexual transmission and avoid mother-to-child transmission of the virus. Access to life-prolonging treatment is an incentive for testing: new research shows that, even in developing countries, inexpensive medication can improve survival and help an HIV-positive person to stay healthy and productive longer (see pages 105-106). The family also stands to benefit when an infection is discovered early enough to permit advance planning for the financial security of the survivors. Finally, important benefits to the community flow from HIV counselling and testing, especially when people with HIV feel safe enough to be open about their infection and become involved in the fight against the epidemic – the GIPA principle (see page 87). People living with HIV can bring first-hand experience to AIDS action and help neighbours, institutions and policy-makers face up to the reality of the epidemic.

When properly carried out, voluntary HIV testing and counselling can help break the vicious circle of fear, stigma and denial. The benefits are both individual and collective and extend beyond the immediate value of knowing one's own infection status. An interesting example comes from Uganda's AIDS Information Centre, an organization that has provided confidential counselling and HIV testing to 350 000 clients

over the past decade. Thousands of HIV-positive and HIV-negative people tested at the Centre have joined the Post Test Club, which not only offers its members health care and other services, but sends them into the community to spread information about HIV prevention. Between 1992 and 1998, Club members, trained during four-day courses to become peer educators, have reached 180 000 people and distributed 1.2 million condoms. Individuals like these combat the invisibility of the epidemic by giving it a human face.

Unfortunately, HIV testing facilities in the developing world are still far from adequate. In many places, especially in rural areas, it is simply not possible to get a test. In others, the quality of the counselling is poor. Often, clients have reason to fear that their results will not be kept confidential. People may be tested for HIV without their knowledge or against their will, and employers or family members may be told of a person's HIV status – all flagrant violations of human rights. Testing without prior counselling is especially common in medical facilities; doctors sometimes choose not to inform infected patients that they have HIV for fear of depressing them. Perhaps surprisingly, the middle class and the wealthy may be especially poorly served. One thorough inventory of HIV counselling, testing, care and support services in the Kenyan capital of Nairobi found that slums and low-income areas were relatively well provided with HIV support services. Almost all of these services are donor-funded and are run by nongovernmental and community organizations. No such services exist for the better-off.

Even where testing and counselling services of reasonable quality are available, the stigma may be so strong that people choose not to know their infection status – which is their right. Improving the quality and availability of testing services must therefore go hand in hand with efforts to diminish the fear and rejection of people with AIDS, and with the establishment of policies and practices to ensure confidentiality of HIV test results and related information. Countries in the developed and developing world have had some success in combating the stigma of AIDS through public campaigns urging solidarity with HIV-affected persons and through public statements by respected leaders.

The challenge of prevention for couples

Voluntary counselling and testing can help prevent HIV transmission in long-term relationships when other prevention options – abstinence, fidelity and condom use – may be problematic.

Few if any individuals in a stable partnership are willing to abstain permanently from sexual intercourse. Not many will remain satisfied with a lifetime of sex that does not involve penetration. As for fidelity, people can be sure of their own behaviour but many have doubts about whether their partner is always faithful. In any case, fidelity

– even when mutual – is protective only when both partners have entered the relationship without HIV infection.

Condoms are commonly used in some areas for family planning purposes, but in most populations, despite vigorous promotion campaigns, the use of condoms with spouses is very low. Low condom rates in marriage are common even when either or both partners also have unprotected sex outside marriage. In a large national survey in Zambia, married men who reported extramarital partners were no more likely to use condoms with their wives than men who said they were faithful. Since just one-third of men with extramarital partners had used a condom the last time they had casual sex, many married women are put at risk for HIV by their husbands' behaviour.

In the light of these prevention challenges, it is hardly surprising that the scale of HIV transmission within marriage and other stable relationships is considerable. Studies confirm that this is the case, especially in areas where infection rates are high.

Just as voluntary HIV testing and counselling can be a first step in helping HIV-positive women reduce their chances of having an infected baby (see page 81), it can serve the same purpose for couples in which one partner might be infected and the other one vulnerable to sexual transmission of the virus. Studies of the preventive effectiveness of voluntary counselling and testing have yielded conflicting findings in different populations and places. Encouragingly, however, there is increasing evidence that this measure can successfully prevent the onwards transmission of the virus in heterosexual partnerships, especially when the two partners choose to come as a couple for counselling and testing.

While HIV testing can be useful for people who are already married and even once a woman is pregnant, as described below, some argue that "premarital" counselling and testing would be even more helpful, given the high risk in some places of entering marriage when already infected and the general failure of condom promotion campaigns to encourage open discussion and use of condoms for HIV prevention within stable relationships. In a number of countries, including two developing countries with striking successes in prevention – Thailand and Uganda – an increasing number of people are choosing to be tested for HIV before getting married. At Uganda's AIDS Information Centre, the proportion of those getting tested because they are considering marriage or a new relationship has risen steadily over time, from 6% in 1992 to 33% in 1997. Two-thirds of these men and women came with their prospective partners, and the vast majority tested negative. Indeed, people taking these "precautionary" tests were far less likely to be infected with HIV than people tested for other reasons. In 1997, just 6% of premarital tests were positive, compared with a quarter of those tested for other reasons.

Voluntary counselling and testing will never appeal to all individuals or couples, whether heterosexual or homosexual, and it will never successfully prevent onwards transmission in all those who are tested. However, it is an important option to include

among prevention approaches. As with family planning, no single method will work for all people at all stages of their lives. The more preventive methods available, the broader the choice for individuals and couples and the greater the likelihood that all will find at least one acceptable approach to preventing the spread of HIV.

Preventing mother-to-child transmission of HIV

Since the start of the HIV epidemic, it is estimated that 3.8 million children have died of AIDS before their 15th birthday, nearly 0.5 million of them in 1999 alone. Another 1.3 million children are currently living with HIV, and most will die before they reach their teens. The vast majority of these children were born to HIV-infected mothers: they acquired the virus in the womb, around the time of childbirth or during breast-feeding.

For many years, not enough was known about transmission from mother to child to take steps to help HIV-infected women have uninfected babies. In the absence of any intervention, around a third of HIV-positive mothers pass the virus to their new-borns. In the late 1990s, it was found that around half of all these infections occur during breastfeeding.

In recent years, much has been learnt about how to prevent transmission of HIV from infected mothers to their babies. This knowledge has been applied in high-income countries, where most HIV-positive pregnant women choose to take antiretroviral drugs that reduce the risk of transmission and afterwards avoid breastfeeding their newborn. These two measures, in combination with delivery by caesarean section, have dramatically decreased mother-to-child transmission of HIV.

The developing world, and especially sub-Saharan Africa, stands to gain even more from large-scale programmes for reducing mother-to-child transmission because women have more children and have far higher rates of HIV infection. Over nine-tenths of all children worldwide infected before birth or during infancy in 1999 were born in sub-Saharan Africa. Making HIV counselling and testing services widely available so that infected women can decide whether to take preventive drugs during pregnancy is a measure that could save the lives of hundreds of thousands of children while offering broader benefits as well, as discussed on page 78.

However, the challenges in developing countries are also greater than in the high-income countries. First, higher rates of HIV and of childbearing mean that prevention programmes have to reach a much larger number of women. Secondly, there are fewer HIV counselling and testing facilities available. Thirdly, breastfeeding is almost universal, and safe alternatives to breast milk are harder to come by. Finally, the drug regimens used in high-income countries for reducing HIV transmission to infants are too expensive and complicated to be practical for widescale use in poor countries.

Some of these difficulties are being overcome. Studies in Thailand in early 1998 showed that a relatively simple drug regimen – a short one-month course of the antiretroviral drug zidovudine (AZT) – given to HIV-infected mothers late in pregnancy could halve the rate of HIV transmission to their infants so long as the women also avoided breastfeeding. In Côte d'Ivoire and Burkina Faso, it was shown that if women took the drug in the same way but then went on to breastfeed, the rate of transmission to their infants was still reduced by a third. In late 1999, a study in Uganda showed that similar results could be achieved by giving nevirapine to the mother at the onset of labour and then to the infant after delivery. This regimen costs about US$ 4 per HIV-infected woman – less than a tenth of the cost of a one-month course of AZT. As a result, nevirapine has been included in the WHO Model List of Essential Drugs as a drug for decreasing mother-to-child transmission of HIV. While there is debate about the toxicity of antiretroviral drugs and the effects they may have on the course of HIV infection in the mother, the evidence available today is that the benefits largely outweigh any risks linked to their use.

Several developing countries have recently set up pilot projects to help HIV-infected women give birth to healthy children, and are actively tackling some of the challenges involved. These experiences will also identify how to overcome the hurdles to implementing prevention programmes on a large scale in developing countries.

The first hurdle to be overcome is the lack of awareness that HIV can be transmitted from an infected mother to her child and that measures exist to reduce the risk of transmission. This means that counselling staff at antenatal clinics have to spend time explaining the options to their clients before offering them the possibility of being tested for HIV. Finding enough time for this kind of counselling is difficult in busy clinic settings. But this problem can be overcome: in Botswana, for example, a large information campaign was launched to ensure that women were aware of the possibilities for preventing transmission from mothers to infants before attending a clinic, thus decreasing the amount of counselling time needed to relay basic information.

A second challenge is women's reluctance to be tested for HIV infection. This reluctance may be driven in part by their fear of stigma and in part by fear that they will not get the social or medical support they need if they are found to be infected. When testing is offered, women show their reluctance in two ways: either they refuse to be tested, or they agree to be tested but do not come back for the test results. Nevertheless, the initial uptake of HIV testing is already relatively high, with rates of 46% in Botswana, 80% in Côte d'Ivoire and 92% in South Africa. While no data are available from Botswana on the proportion of women who returned for their test results, in Côte d'Ivoire and South Africa most HIV-infected women (60% and 92%, respectively) did so. The willingness to be tested increased in parallel with awareness within the general population that HIV infection in infants can be prevented. It should not be overlooked that knowing one's HIV status benefits not only HIV-infected women and their infants, but also, and perhaps more importantly, the women who turn out to be HIV-negative, who may be better enabled to remain uninfected.

Once a pregnant woman knows she has HIV and agrees to an antiretroviral regimen, she should take a full course of drugs, be counselled about options for feeding her infant and future reproductive options, and be supported in her choice of infant feeding and family planning method.

Starting and completing a full course of treatment, even a one-month course of AZT, has proved difficult in the pilot projects carried out so far. Those in Côte d'Ivoire and Cape Town reported starting rates of 37–85%, and in the latter only 18% of those who started AZT completed a full one-month course. The main explanation was that the duration of pregnancy was often underestimated and women started their drugs too late in pregnancy. These rates are likely to improve with the introduction of much shorter courses of antiretrovirals, such as the nevirapine regimen.

Infant feeding presents further dilemmas. Controversy surrounds the competing risks to the infant of HIV infection and replacement feeding in areas with poor access to sanitation, infant formula milk powder and education. Another dilemma, in countries where breastfeeding goes on in public, is that women and others in this setting may come to associate replacement feeding with being HIV-infected. Probably because of different perceptions about the risks of stigma and the health risks to the child, the proportion of women who chose replacement feeding ranged from 50% in Abidjan, Côte d'Ivoire, to 60% in Botswana and 92% in Cape Town, South Africa.

To decrease mother-to-child transmission more successfully, further information is needed about HIV transmission and other health risks associated with various types of infant feeding. A report from South Africa in 1999 argued for exclusive breastfeeding; infants given "mixed feeding" appeared to have a higher risk of HIV transmission than those given either breast milk alone or exclusive replacement feeding. A randomized controlled trial in Kenya, which followed the children of HIV-infected women until the age of two years, reported a lower mortality rate among those who had received replacement feeding, a difference due mainly to the higher HIV infection rates among the breastfed infants.

The results of these relatively small and somewhat conflicting studies cannot be regarded as final. Seven pilot projects that have been started in sub-Saharan Africa and Central America, with the support of UNICEF and the other members of the United Nations Interagency Task Team working on this issue (UNFPA, WHO and the UNAIDS Secretariat), should help to optimize infant-feeding approaches. At the same time, it is important to find ways of decreasing the risk of HIV transmission through breast milk, as it is likely that a substantial proportion of HIV-infected women will continue to wish to feed their infants in this way. Fortunately, at least one clinical study is being planned to assess the efficacy of antiretroviral prophylaxis administered to infants during the breastfeeding period.

The pilot projects will also need to learn how to provide care and support, not just for the HIV-infected mother and her infant but for the other members of her family.

This is largely uncharted territory in developing countries, where it will be necessary to create good referral links from mother and child health centres to other facilities and services in the health system and plan ahead for the increased case-load.

The biggest challenge of all will be to expand coverage beyond the pilot projects to reach all HIV-infected pregnant women and their families. As part of planning ahead for this expansion, health systems will have to rise to the considerable challenge of improving infrastructure, training, motivating and retaining the necessary health staff, and improving distribution systems so that HIV test kits, drugs and infant formula are consistently available to those who need them.

Care and support for people living with HIV/AIDS

HIV is a slow-acting virus that typically takes years to produce illness in an infected person, in contrast to most viruses, which cause disease in a matter of days or weeks. Over the decade or so during which an HIV-positive person's immune defences gradually become undermined, various pathogens in the environment – other viruses, bacteria, fungi and parasites – take advantage of this weakness to attack and cause illnesses of various kinds. This is why the infections and cancers seen in HIV-positive individuals are called "opportunistic".

Effective therapies exist to prevent, treat or even cure many of these opportunistic diseases, and to relieve the symptoms associated with them, which include fever, coughing, itching, difficulty in breathing or swallowing and chronic diarrhoea. Other drugs, developed much more recently, attack HIV itself – a so-called retrovirus, which explains why these new drugs are called antiretrovirals.

The needs of people with HIV or AIDS extend far beyond drugs and health care, however. Those who suspect or learn they are infected need psychological support to cope with the implications of having a life-threatening disease. The fear of being ostracized by one's family or community must be dealt with. People who are married or in a stable relationship need support in protecting loved ones from the virus, breaking the news to their partner and dealing with the issue of extramarital sex (women may find themselves under suspicion even when they have been infected by their stable partner). At the same time, those affected by the epidemic need social support to alleviate the many consequences of an HIV diagnosis, repeated bouts of illness and ultimately death, including the impoverishment of families already near or below the poverty line (see page 27).

Meeting the needs: challenges and achievements

In high-income countries, care and support are now taken more or less for granted. There is generally good access to antiretroviral drugs, which combat the virus directly and improve health and survival. People with HIV or AIDS and their organi-

zations have played a role in health care, for instance by putting pressure on the pharmaceutical industry to reduce the prices of drugs. AIDS service organizations, created early in the epidemic by pioneers in the gay community, are still bringing psychological and social support to people with HIV.

Even in this favoured part of the world, however, care and support are not universally optimal. People who are prescribed antiretroviral therapy may not get enough help to devise practical ways of adhering to their often-complicated drug regimens. Access to health care and especially to antiretroviral drugs can be problematic for illegal migrants, uninsured individuals in countries without national health insurance, and residents served by less-favoured health facilities in countries where expensive drugs are “rationed”. Some people have poor contact with the health system, or may not be trusted to take their drugs regularly. In a study of drug users in one city in the USA, half the people who met the criteria for treatment under national guidelines were receiving no antiretroviral therapy at all, and just 14% were on the more expensive three-drug combinations. A study of injecting drug users in Canada showed that 60% were not receiving any antiretrovirals nearly a year after becoming medically eligible for this therapy; women were more than twice as likely as men to be untreated. In some countries, there is also less social support available for injecting drug users.

The developing countries faced a radically different situation. By the time the enormous new challenge of AIDS appeared, the health services with their dwindling resources were already hard-pressed to cope with a host of older diseases. Using the 1991 guidance published by the World Health Organization (WHO), many countries did draw up clinical management guidelines for handling AIDS in children and adults by the mid-1990s. In practice, however, little action followed – apart from the strengthening of tuberculosis programmes in places where an explosion of TB cases followed in the wake of the expanding epidemic of HIV. Carriers of the tubercle bacillus who become infected with HIV face a 30–50-fold increase in their risk of developing active tuberculosis.

In part, the health sector’s failure to deliver care for people with HIV was linked to the widespread perception of AIDS as a hopeless, untreatable disease, even though drugs did exist to combat opportunistic diseases and distressing symptoms. Until the development of highly active antiretroviral therapy around 1995, it seemed that one could do very little about HIV infection. Investing in care was rarely given high priority. The need to invest in HIV prevention and other essential services often took precedence over the provision of care services in many developing countries.

As the suffering caused by the epidemic grew, community-based and nongovernmental organizations, including organizations of people living with HIV or AIDS, stepped into the vacuum. Using a creative mixture of social, psychological and health care approaches, these groups did whatever they could to meet the wide-ranging needs of the millions of people developing HIV-related illness and dying of AIDS. At the same time, they kept up pressure on the health system for more effective support and therapy. These demands were fuelled by the realization in the mid-

1990s that antiretrovirals were dramatically changing the prognosis of HIV infection for those fortunate enough to have access to these treatments.

As a result, health care for people with HIV has belatedly made its way onto the agenda of developing countries. In Uganda, for example, the new medium-term plan on HIV/AIDS for the first time includes a comprehensive section on care and support.

In parallel, for the reasons discussed below, donor agencies are increasingly looking on HIV/AIDS care as a good investment.

The interlocking benefits of care and prevention

Activist pressure is not the only force driving the increased governmental investment in care and support. There is also growing recognition that care and support for people living with HIV or AIDS help protect the wider community.

As discussed earlier (see page 78), individuals who know they are infected and receive care can break through the denial about HIV by talking with their friends and neighbours and reducing the discomfort associated with the subject. Care providers who look after HIV-positive people demonstrate to others in the community that there is no reason to fear becoming infected through everyday contact, and thus help dispel misguided beliefs about HIV transmission. Providing diagnosis and treatment for tuberculosis and sexually transmitted infections – diseases that are common among people with HIV – also helps decrease their spread among HIV-negative people.

Thus, care has important spin-offs for prevention, in much the same way that prevention measures such as voluntary HIV counselling and testing can result in improved access to care. Recognizing these interlocking benefits, development assistance agencies and other financers of AIDS programmes are increasingly seeing care and support for HIV-infected people as a powerful tool for expanding the response to the epidemic.

The community is key

In retrospect, our thinking about how to tackle the epidemic was revolutionized by the community-based groups, nongovernmental organizations and associations of people living with HIV that took up part or all of the challenge of care and support, and often the challenge of prevention too. Gradually, it was understood not merely that these groups had become key partners in the fight against the epidemic, but that their involvement would continue to be essential and needed to be strengthened. This is the principle known as the greater involvement of people living with HIV/AIDS (GIPA).

Greater involvement of people living with HIV/AIDS – the GIPA principle

If anything, the involvement of HIV-positive people has become even more visible and credible since 1995. This is when the community stepped up pressure to increase access to highly active antiretroviral therapy – in memory of those who had not survived long enough to benefit from it and out of solidarity with the millions who still could not afford it.

Already in 1994, the GIPA principle was formally enshrined in the Declaration signed by 42 nations at the Paris AIDS Summit. The signatory nations resolved to "support a greater involvement of people living with HIV/AIDS through an initiative to strengthen the capacity and coordination of networks of people living with HIV/AIDS and community-based organizations".

This resolution was prompted by recognition that these groups had played a leadership role in increasing society's acceptance of those living with HIV, in reducing their peers' infection rates, in mitigating the personal and social impact of the disease, and in fighting for their right to health care.

Community standards for care and support

Because community organizations play such an important role in care and support for people living with HIV, they and their clients have a stake in how health sector resources are allocated and distributed. Since 1997 UNAIDS has advocated that communities, alongside other stakeholders, should be involved in developing standards for HIV-related care and support. The goal of this working partnership between health planners and the local community (defined as a group of people sharing the same geographic, cultural and economic environment) is to reach a consensus on meeting the needs and expectations of people with HIV that is perceived as equitable and responsive to other equally important needs.

The process of discussing expectations and arriving at a consensus involves informing the participants about what support and resources the health system can potentially provide, sounding out the preferences of the community and identifying its potential for contributing to care.

Attempts to formulate community standards for care and support have been completed with some success in Burkina Faso, the Central African Republic, Malawi and in Phayao Province in northern Thailand. The process is not always easy; the inadequacy of knowledge about health care can be a limiting factor, for example. However, the approach has enormous potential. Formulating community standards makes it possible to identify the resources for care already available in the community and to determine how they could be used to better effect through support from the formal health system. It also breaks the silence surrounding HIV and discourages discrimination by sending the message that people with AIDS have a claim on solidarity and support.

Health care: where are the gaps?

Despite decades of effort by communities and governments to improve access to health care, and despite the help of WHO and other institutions, the health sector deficiencies in the developing world appear to be growing instead of shrinking.

Even before the epidemic, the health care system did not get a fair share of the national budget. Typically, health centres and hospitals were short-staffed, facilities for diagnosis were inadequate and drug supplies erratic, and training for health care providers was uneven and often poor. These deficiencies have worsened with the arrival of the HIV epidemic, which has increased the demands for health care and simultaneously reduced the health system's capacity to respond (see page 31).

In the poorer developing countries, local health centres and small hospitals lack adequate facilities to diagnose the opportunistic diseases of people with HIV. They repeatedly run out of supplies of essential drugs, including the ones needed to alleviate distressing symptoms and to manage opportunistic infections. For example, oral thrush – a fungal disease which causes pain on swallowing – could be treated relatively easily, but millions of patients continue to suffer for lack of a simple anti-fungal drug. Tuberculosis, which can be cured, often goes untreated for the same reason. In Zambia, for example, where the tuberculosis case-load increased sixfold between 1992 and 1998, proper treatment became increasingly problematic because health facilities kept running out of TB drugs.

Even big teaching hospitals affiliated with urban medical schools – supposedly the best-supplied part of the health system – have serious problems, to judge from a UNAIDS survey of 22 university teaching hospitals in 19 African and 3 Asian cities completed in 1997. The hospitals surveyed had suitable diagnostic facilities and the right drugs to treat three conditions – pneumonia, pulmonary tuberculosis and oral thrush. These are the only HIV-related conditions that are easy to diagnose and inexpensive to treat. For any other HIV-related illness, diagnostic capacity (X-ray and laboratory facilities) and drug supplies were so inadequate that a patient would have less than a 50% chance of being correctly diagnosed and treated. This was true, for instance, of Kaposi sarcoma (a frequent HIV-related cancer), serious fungal infections such as cryptococcal meningitis, and viral infections affecting the brain. Relief for difficulty in breathing was unavailable in half the hospitals. Strong painkillers were available in only two-fifths, despite the fact that most people with advanced HIV infection require pain control at some point.

The high costs of antiretroviral drugs, and the sophisticated medical facilities required to track patients' progress and monitor side-effects, have been major stumbling blocks to access for the vast majority of people with HIV in the developing world.

Enormous variations in access to antiretrovirals exist in middle-income countries. In most of Asia, people with HIV have limited access. In Thailand, for instance, the

Government subsidizes the cost of antiretroviral drugs for patients enrolled in clinical trials in a few centres of excellence, but this currently ensures access for only around 2000 of the approximately 70 000 new AIDS cases occurring annually.

A few projects in sub-Saharan Africa aim to promote the rational use of treatment for people with HIV, including antiretrovirals (see Box 19, page 103). Even within the projects it has repeatedly been problematic for patients with opportunistic infections to have access to the essential drugs they need. Outside these projects, antiretrovirals can only be purchased from a poorly regulated private sector where concerns about inefficiency and the potential for counterfeit loom large.

There are some Latin American and Caribbean countries where even treatment for opportunistic infections is problematic. However, other countries in the region have responded to demands from groups of patients, doctors and human rights organizations and now lead the developing world in providing access to antiretrovirals. Argentina, Brazil, Colombia, Costa Rica and Uruguay provide a legal right to some form of antiretroviral therapy, though the application of the law is somewhat patchy. Coverage of eligible patients has been reported to be 100% in Brazil, 70% in Argentina, 65% in Chile and Uruguay, 40% in Panama and 20% in Ecuador. Some countries operate with a lottery system or limit antiretroviral drug access to those with social security or private health insurance. Experience in Brazil shows that the costs of such therapy, although high, are offset to some extent by savings on treatment for opportunistic infections and on hospital stays (see Box 18, page 101). Nevertheless, some concern has been voiced over the risk that HIV prevention activities may suffer if too much effort and money is devoted to providing treatment.

Box 16. Strengthening "horizontal" collaboration on HIV and sexually transmitted infections in Latin America and the Caribbean

Building on a long tradition of joint collaboration in the region, and the desire for more self-reliance and less dependency on donors, the Directors of national AIDS programmes from 12 countries agreed in 1996 to set up a new process for "horizontal" interregional technical cooperation. As part of the reciprocal process of exchanging experience, information and technology on equal terms, for example, the Horizontal Technical Collaboration Group (HTCG) has encouraged intercountry visits so that members can see first-hand how to improve drug management and distribution in rural areas. Through a multicountry survey conducted by the Group on the prices being paid for HIV-related drugs and commodities, countries became aware of major price differences and were in a better position to negotiate price reductions with pharmaceutical companies. Argentina, for instance, was able to reduce the cost of measuring viral load from US$ 250 to US$ 70. The HTCG also provided the initial impetus for establishing a revolving fund for HIV-related drugs under the auspices of the Pan American Health Organization, WHO's Regional Office for the Americas. The fund is now in its initial trial phase.

As of May 1999, 21 countries belonged to the HTCG and efforts are now under way to incorporate national AIDS programme Directors from Central America and from the English-, Dutch- and French-speaking countries in the Caribbean.*

** Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.*

Comprehensive care and support strategy needed

In the early 1990s, WHO's Global Programme on AIDS advocated that care and support for people living with HIV or AIDS should be comprehensive – embracing the psychological/spiritual, social and medical dimensions – and integrated, with the various providers offering a "continuum of care" centred on the clients' needs.

This vision remains relevant today. As discussed earlier (see page 85), people with HIV infection need a range of measures to support them (and their families) in coping with their situation and to enable them to live healthy, productive lives for as long as possible. Counsellors, religious communities and family members should provide vital care and support at home and in the community. For diagnosis and therapy, patients and their carers must in turn be able to rely on the support of health services, such as home and community care programmes, private practitioners, local health centres, and clinics and hospitals.

Since this vision was formulated, UNAIDS has identified new opportunities for prioritizing action and accelerating progress. UNAIDS proposes to target action along five strategic axes. Two are dealt with elsewhere in this report, while the others are discussed in separate sections below:

- creating political will and mobilizing resources (see pages 107-115)
- increasing access to voluntary HIV counselling and testing: over and above the benefits for prevention, discussed earlier (see page 78), individuals who learn they have HIV can gain access to support at an earlier stage and, with new preventive regimens, may live longer and healthier lives (see pages 105–106)
- increasing access to psychosocial support and impact alleviation
- improving health service delivery
- increasing access to drugs of special interest to people living with HIV infection.

When possible, it is best for countries to develop plans for care and support as part of their strategic planning on HIV/AIDS, whether at national or district level. Health system reform can offer an opportunity to look at the range of care and support needs in a comprehensive manner (see Box 17).

Box 17. Health reforms and HIV: experience from Phayao Province, northern Thailand

The Phayao Health Office undertook a review of its efforts to reform the health sector in the light of the lessons learnt from reducing the spread of HIV and caring for people with AIDS in this badly affected province of the country. The Office posed a number of questions to see whether the reform was really improving the health sector's capacity to tackle the epidemic effectively.

Quality of life and autonomy are important concerns of people with HIV and their families.

- *Does the health reform aim only to reduce rates of sickness and death?*
- *Or is the reform also geared to better quality of life, less dependence and greater autonomy?*

People with HIV require comprehensive support, and not just medicines.

- *Does the health reform aim mainly at better provision of health care?*
- *Or does it also enable the health sector to catalyse community action and put health issues on the agenda of society and its decision-makers?*

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Care for people with HIV involves the health system at several levels.

- *Does the reform respect the three principles of health-care organization:*
  - *integrated care achieved through teamwork by care providers of different disciplines?*
  - *continuity of care throughout the levels of the health system?*
  - *a focus by the care provider on the client's priorities?*

Inclusion of HIV-positive people in society starts at the health centre and the hospital.

- *Does the health reform focus on the personal development of health personnel?*
- *Does it enable them to feel more comfortable about HIV/AIDS issues in their private life?*
- *Does it help them avoid discriminatory and judgemental attitudes when caring for HIV-infected patients?*

People with HIV have a great deal to contribute to the organization of the health care system.

- *Do key clients have a say in the design and implementation of health reforms?*

Psychological and social support and other measures to alleviate the impact of HIV/AIDS

People living with or affected by HIV need support in confronting the multiple challenges of a chronic, incurable and generally fatal condition that can result in social ostracism (see page 38) and economic disaster (see page 27).

Psychosocial support – an essential element of the care and support package (see Table 1, page 98) – ranges from purely psychological support to the social measures needed to create an environment in which those affected can cope and thrive. Some types of support straddle the line.

Family members, representatives of religious communities, health-care providers and counsellors are important sources of psychological and spiritual support for coping with HIV infection in oneself or the family. However, they are often in need of support themselves. There is growing evidence of the great stress associated with care-giving, particularly in relatives who form the majority of front-line carers in developing countries. While ways of managing this stress are becoming better understood, it is unclear how these coping mechanisms can be financed.

An important goal of social support is inclusion – enabling affected people to live without fear and to continue functioning as normal members of society. Among the

wide-ranging measures needed to bring this about are public statements by community and religious leaders urging solidarity with those affected, and legal and other mechanisms for protecting HIV-affected individuals and survivors from discrimination, loss of inheritance and property-grabbing.

Psychological and social support can help reduce stigma and other negative consequences of being HIV-positive and in this way make people less reluctant to seek HIV counselling and testing. In turn, the staff of counselling and testing facilities can contribute to psychological support, for example, by assisting individuals to share the news of their test result with their spouse or a trusted relative. Their contribution could be even greater if voluntary counselling and testing services were more widely accessible and more welcoming to certain categories of clients. In particular, these services need to be better geared to attracting young people, couples and men. Another challenge is time. In busy community health settings, where staff have too much to do, it is important to find ethically acceptable ways of reducing the time required for counselling.

Associations of people living with HIV are a good example of community mechanisms that provide both psychological and social support. Formed to counter the social isolation often experienced by HIV-positive people and to allow them to share and discuss their experiences and problems openly and safely, these mutual support mechanisms provide peer support and help members cope with discrimination and stigma. One such group, at an antenatal clinic in South Africa, was described by the women members as the only place where they could relax and be themselves.

However, support groups are generally unable to meet one of the most important challenges facing people in developing countries: lack of income. Most people with HIV or AIDS are or become unemployed, and the stark reality is that unless they can rely on broader support from government and society there is little a community group can do to alleviate this impact.

Alleviating economic impact

Many support organizations have discovered the pitfalls of trying to alleviate the economic hardship of their members. The AIDS Support Organization (TASO) of Uganda, which runs support groups for people living with HIV, asked members of one group how their home support could be improved. Three-fifths said they needed capital to start an income-generating activity and close to half asked for increased assistance of the kind already being provided, such as staple foodstuffs and cash for school fees, uniforms and books to enable their children to go to school.

In one scheme, selected TASO centres received funds to be given as revolving loans for income-generating projects. While 75% of the projects were later assessed as having been successful enough for the clients to repay their loans,

only 12% did so. It emerged that while some people understood the concept of a revolving loan, others perceived it as a grant that did not have to be repaid. The scheme soon collapsed.

Avenues for tackling the economic impact of the epidemic range from loans or grants to individuals with HIV, at one end, to complex societal measures for averting and alleviating the epidemic's impact on agriculture, the educational system and the private sector, for example (see pages 26–36). Alleviation measures may be directed at a well-defined problem, such as the increase in orphans, or may be more general in nature. In some cases the project's beneficiaries may be restricted to people living with HIV or AIDS.

There is no perfect or universally applicable solution. For example, restricting grants to people affected by AIDS may help channel severely limited resources to where they are badly needed, but it can also have negative consequences. Organizations bringing support to AIDS orphans learned early on that it was better to target all orphans as a group so that the project would not create resentment among those excluded or attach an AIDS stigma to specific children.

Micro-credit, also known as micro-finance, is an effective poverty-alleviation instrument promoted by the United Nations Development Programme (UNDP). These group lending schemes grant small loans to individuals who want to start up a small business and who seem likely to be able to repay. Communities with HIV-positive people generally meet the criteria for these schemes, including the presence of many poor people, the existence of market opportunities and infrastructure facilities, high population density, approval of local authorities, and the ability to build trust in the community. Experience has already shown that the schemes can work very successfully in high HIV-prevalence areas of Africa. In Malawi and Uganda, for example, the Foundation for International Community Assistance (FINCA) has achieved 100% recovery of its loans.

While some micro-finance organizations are closing their eyes to the AIDS epidemic or even excluding sick members, some are helping their clients to accumulate savings by serving as a bank or banking intermediary, assisting them to carry on their business when they fall ill, and providing survivors with advice on inheritance and legal protection. Some have even joined the front-line fight against the epidemic. For instance, FINCA in Uganda is working with organizations such as TASO to promote condoms and educate its clients about safer sex, while the Zimbabwe Opportunities Industrialization Centre (ZOIC), operating in small towns and rural communities affected by the epidemic, is organizing community-based orphan care programmes. These practical examples of an integrated response to AIDS illustrate why it can be artificial to make a distinction between prevention, care, support and impact alleviation.

UNDP estimates that micro-finance at present covers only 1% of the potential market, affording great potential for expansion. It has been suggested that proxy indicators of possible HIV spread – such as military conflict and population migration –

could be used to identify priority areas for expanding the coverage of micro-finance institutions.

In parallel, since the micro-credit approach will not be feasible everywhere, governments and other institutions should step up direct humanitarian aid to families in need through outright grants of food or cash. The two approaches must remain separate, however, if micro-credit schemes are to maintain their credibility.

Finally, in high-prevalence countries where the epidemic risks destroying the very fabric of society, the impact of AIDS has to be mitigated through intensified development strategies. Teachers, extension workers and other human resources who are crucial to development are falling ill and dying, sometimes at even higher rates than the general population. To minimize this impact, countries need urgently to establish human resource policies on absenteeism and recruitment while stepping up AIDS prevention and care programmes at the workplace. The coverage of social assistance programmes must be expanded to a wider group of households, defined by both poverty and AIDS indicators. And existing mechanisms for improving access to land, capital, education and other limited resources must be intensified and applied more widely. AIDS is a development problem.

Improve health service delivery

The inadequacy of health service delivery to people living with HIV can be redressed by rationally selecting the services to be offered, upgrading the human resources of the health system, improving its infrastructure (e.g. buildings and laboratory equipment), and ensuring the availability of HIV test kits, drugs and other essential commodities. These things have a cost, and therefore a prime consideration is to secure financing for the health system.

An in-depth study of total spending on AIDS – both public and private – in four countries and São Paulo State, Brazil, found that expenditure ranged from 60% of per capita gross domestic product in Tanzania to 300% in São Paulo, with average expenditure being about 150% of per capita GDP.

In Thailand, a policy of making zidovudine and didanosine (an antiretroviral regimen now recognized as suboptimal) available to patients free of charge would require a public subsidy amounting to six times that country's entire AIDS budget, and would therefore be unaffordable for the Government. Even with this subsidy patients would have to pay just under US$ 500 a year for the related health care required – a sum that only around half of them could afford.

An analysis presented at a WHO/UNAIDS workshop concluded that, in most developing countries, antiretroviral treatment programmes aiming at universal coverage

would not be affordable. For example, based on 1997 prices, the provision of triple combination therapy to all people with HIV in sub-Saharan Africa could consume between 9% and 67% of total GDP.

As these examples make clear, the ability to secure financing for health care, particularly for advanced care options such as antiretroviral therapy, is very limited in developing countries. Determining the best buy within the prevailing resource constraints – a recurring challenge for health system decision-makers – must go hand in hand with efforts to make health service delivery more efficient and to mobilize additional resources for the sector.

One of the critical factors for service delivery is the availability of people to deliver services. As mentioned earlier, AIDS increases the demand on the health sector (see page 31), and at the same time reduces the human resources available to it by causing illness and death in the sector's workforce. With fewer health care providers available to carry an ever-increasing workload, it is easy to understand why the remaining staff may experience burn-out, which results in a lower quality of service and further attrition in the workforce. It is urgent for governments to establish human resource policies aimed at mitigating these impacts on the health sector (see pages 94-96). The desirable response would be to increase the number of health care workers so as to maintain the sector's ability to deliver services. This requires decisions about the kinds and numbers of health care workers that will be needed, and a clear idea of how the cost of the mitigation efforts will be shouldered.

Care and support packages

The kind of care and support "package" made available to people living with HIV or AIDS will thus depend on the ability to mobilize human, infrastructure and financial resources. Where the ability to mobilize resources is extremely limited (such as in most of rural sub-Saharan Africa) or somewhat limited (as in northern Thailand), the package will necessarily be more limited than where resource availability is relatively unrestricted.

Examples of what the essential, intermediate and advanced packages could comprise are given in the Table 1, page 98.

It is important to emphasize that progress in improving health service delivery need not be strictly linear. For example, planners may discover an opportunity for expanding access to treatment for multiresistant tuberculosis (an option in the advanced package) in a region where people with HIV are receiving mainly the intermediate package. If so, they should not hesitate to push ahead with this option, in particular when the prospect for improving delivery of some of the less advanced options is poor.

In these examples of care and support packages, no consideration is given to improving health service delivery through greater efficiency and coverage.

For instance, possible expansion of community-based care and home care is not taken into account, nor are considerations of more efficient referral patterns. A further limitation is that they omit health sector activities that are not specific to "care and support".

In addition, even when resource constraints are very serious, health services everywhere should provide care for sexually transmitted infections, family planning services, HIV testing of blood for transfusion, and the promotion of universal precautions

Table 1. Care and support packages, according to resource availability

The essential package	• voluntary HIV counselling and testing • psychosocial support for HIV-positive people and their families • palliative care and treatment for pneumonia, oral thrush, vaginal candidiasis and pulmonary tuberculosis (DOTS) • prevention of infections with cotrimoxazole prophylaxis for symptomatic HIV-positive people • official recognition and facilitation of community activities that reduce the impact of HIV infection
The intermediate package	**All of the above PLUS one or more of the following:** • active case-finding (and treatment) of tuberculosis among HIV-positive people • preventive therapy for tuberculosis for HIV-positive people • systemic antifungals for systemic fungal infections (such as cryptococcosis) • treatment of Kaposi sarcoma with essential drugs • surgical treatment of cervical cancer • treatment of extensive herpes with acyclovir • funding for community activities that reduce the impact of HIV infection
The advanced package	**All of the above PLUS:** • triple antiretroviral therapy • diagnosis and treatment of opportunistic infections that are difficult to diagnose and/or expensive to treat, such as atypical mycobacterial infections, cytomegalovirus infection, multiresistant tuberculosis, toxoplasmosis, and HIV-associated cancers • specific public services that reduce the economic and social impacts of HIV, to supplement community efforts that reduce the impact of HIV infection

to be taken by health workers in the handling of body fluids. Other imperatives come under the general heading of health policy, such as the licensing of nurses or other practitioners to prescribe morphine, and the regulation of the supply of drugs (including antiretrovirals) in order to minimize the risk of drug resistance and counterfeiting.

Where an intermediate care and support package is feasible, one would expect that prevention activities requiring intermediate levels of technical and human resources would also be available. These include measures aimed at reducing mother-to-child transmission of HIV, and antiretroviral treatment to prevent HIV infection in health care workers who have been exposed occupationally to the virus (post-exposure prophylaxis).

Improve access to drugs

Improving access to drugs of special interest to people living with HIV infection is a priority strategy for UNAIDS, and is currently mobilizing much interest worldwide.

Making drugs more accessible requires a broad look at the underlying reasons for poor access. One factor is the cost of drugs. Another is inadequate information about the drugs needed to manage HIV-related illnesses. Finally, drug access is hampered by the poor capacity of health systems in developing countries to select and use drugs in a rational manner, to monitor patients' progress and side-effects, and to manage their drug supply. This is linked in turn to inadequate financing of the health system in general and of the drug supply in particular.

In the current context, attention has mainly focused on drug prices, and in particular the price of antiretroviral drugs still under patent in high-income countries, which makes them financially inaccessible to most people with HIV. However, for the reasons mentioned above, people with HIV also have inadequate access to the "essential drugs" for treating HIV-related illness, including drugs that are no longer under patent. The poor availability of drugs for pain relief or respiratory distress and for the treatment of many HIV-related diseases found in a survey of university teaching hospitals shows how inadequate this access is, even at the highest echelon of the health system (see page 89). Another indicator of inadequate drug access is the limited coverage of tuberculosis programmes, which, according to WHO, manage to diagnose and treat only around 40% of TB cases. Overall, WHO estimates that access to essential drugs for health conditions of all kinds is guaranteed for only 50% of the population in developing countries.

Through collaboration between the UNAIDS Secretariat, WHO and UNICEF, some of the obstacles to essential drug access are being tackled. First, beginning in 1997, 15 new drugs of interest to people with HIV were included in the WHO Model List of Essential Drugs. The next step was to pinpoint the reason why most wholesalers of generic drugs were not distributing the newly included drugs, and why even several

important older drugs were rarely on offer. Working with WHO and UNICEF, the Secretariat identified manufacturers and prices for 44 essential drugs whose procurement was being hampered by insufficient information on cost and availability. This information has been posted on the UNAIDS, UNICEF and WHO websites along with an offer to assist countries in locating generic drug suppliers and organizing drug procurement. Information of this kind is also used to help convince planners that it is feasible to include HIV care and support in national strategic plans on HIV/AIDS.

Strategies for cost and price reduction

One of the lessons learnt from the UNAIDS Drug Access Initiative in Côte d'Ivoire and Uganda (see Box 19, page 103) is that, with determination and good will, it is possible to negotiate a significant reduction in drug prices and improve the delivery of health care. End-user prices of antiretroviral drugs in both Côte d'Ivoire and Uganda decreased after negotiation with the pharmaceutical companies holding the patents on those drugs. The companies that participated in the initiative either donated a percentage of the drugs or agreed to sell them at a reduced price. Similar decreases in drug prices were achieved through a national drug access initiative conducted in Senegal.

Price reductions can be achieved through avenues other than negotiation with patent holders. One strategy is to produce or import generic alternatives to proprietary drugs. UNAIDS' analysis of the patent situation of HIV-related drugs with WHO and UNICEF has shown that most proprietary drugs used in the treatment of people with HIV are not patent-protected in the majority of developing countries.

Table 2 shows the prices of proprietary antiretrovirals in the USA, Côte d'Ivoire and Uganda, and some generic equivalents in Brazil and Thailand. The lower price of generic products is partly explained by the lack, or low level, of investment in research and development by the manufacturers.

Table 2. Price (US$) of a defined daily dose of selected antiretrovirals in five countries

Drug	Defined daily dose	USA [1]	Côte d'Ivoire [2]	Uganda [3]	Brazil	Thailand [6]
zidovudine 100 mg	600 mg	10.12	2.43	4.34	1.08 [4]	1.74
didanosine 100 mg	400 mg	7.25	3.48	5.26	2.04 [4]	2.73 [7]
stavudine 40 mg	80 mg	9.07	4.10	6.19	0.56 [4]	0.84
indinavir 400 mg	2400 mg	14.93	9.07	12.79	10.32 [5]	NA
saquinavir 200 mg	1200 mg	6.50	4.82	7.37	6.24 [5]	NA
efavirenz 200 mg	600 mg	13.13	6.41	NA	6.96 [5]	NA

(1) Prices, 2 April 2000, from www.globalrx.com, a US mail-order pharmacy that offers proprietary antiretrovirals with a minimum mark-up (shipping not included).

(2) End-user prices, UNAIDS Drug Access Initiative, Côte d'Ivoire, March 2000.

(3) End-user prices, UNAIDS Drug Access Initiative, Uganda, March 2000.

(4) Generic drugs produced in Brazil (US$1 = R$ 1.8).

(5) January 2000 cost to the Brazilian Government of imported drugs (US$ 1= R$ 1.8).

(6) Generic drugs produced by Government Pharmaceutical Organization, Thailand (US$ 1 = 38 baht).

(7) 115 mg powder formulation, equivalent to 100 mg tablet.

Box 18. Experience in Brazil with generic alternatives to proprietary antiretrovirals

The Government of Brazil has a policy of universal access to antiretroviral drugs that currently benefits nearly all AIDS patients in the country (about 85 000). The introduction of combination antiretroviral therapy nearly halved the annual number of AIDS deaths between 1996 and 1999 and reduced the incidence of opportunistic infections by 60-80% over the same period.

The universal access programme would not have been possible without significant decreases in the cost of antiretroviral drugs. The Government decided to start local manufacture of drugs that were not patent-protected, and for which it had the know-

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how and infrastructure. Local production, combined with bulk purchases of imported antiretrovirals, led to significant decreases in the programme's drug costs. The annual cost of double therapy with nucleoside analogues decreased on average by 80% between 1996 and 2000, from US$ 3812 to US$ 763. For triple therapy with two nucleosides and one protease inhibitor, the cost reduction was 36% over the same period (from US$ 7342 to US$ 4717) and for triple therapy with two nucleosides and one non-nucleoside it was 34% (from US$ 4584 to US$ 3009).

The programme's annual drug costs were approximately R$ 611 million (US$ 339 million) in 1999, and are expected to rise to R$ 831 million (US$ 462 million) for the year 2000, taking into account both a higher proportion of patients on triple therapy and a larger overall number of patients. Between 1997 and 1999, approximately 146 000 AIDS-related hospitalizations were averted, resulting in savings of approximately R$ 521 million (US$ 289 million); this has partly offset the high cost of antiretroviral therapy. At the same time, condom sales increased by nearly half (from 216 million to 320 million pieces) between 1996 and 1999, and demand for voluntary HIV counselling and testing rose 35% between 1996 and 1998.

Yet another approach is to utilize a safeguard incorporated into the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), an international treaty that protects patent rights, including those for drugs. Patent protection provides an important incentive for innovative research and development of new HIV/AIDS drugs and, hopefully, the discovery of HIV vaccines, in particular, vaccines suitable for use in developing countries (see Box 14, page 68).

The TRIPS agreement sets out minimum standards in relation to intellectual property for Member States of the World Trade Organization (WTO). Countries that wish to be members of WTO must comply with the TRIPS standards, where necessary by changing their national laws and regulations. In practice, for many developing countries, this will mean giving patent protection for the first time to pharmaceutical inventions (both products and processes). Under TRIPS, patent protection must be available for a minimum period of 20 years. However, the TRIPS agreement also foresees that in certain circumstances, such as national emergencies, governments may grant third parties the right to produce and sell a patented product even without the consent of the patent holder, according to carefully prescribed conditions.

This safeguard, known as "compulsory licensing", was incorporated into the TRIPS agreement through negotiations by developing countries. Its maintenance as part of TRIPS has been vigorously defended by nongovernmental organizations and activist groups, such as Act Up, the Consumer Project on Technology and *Médecins Sans Frontières,* who have conducted international campaigns for improved drug access. These organizations have also sought to obtain compulsory licences on drugs of interest to people with HIV/AIDS in South Africa and Thailand. The campaigns did not result in the issuing of compulsory licences. However, access to the target drugs

improved when the pharmaceutical companies involved donated the drug free of charge to some patients (as was the case for fluconazole in South Africa), or agreed to a significant price reduction around the same time that non-patented alternative formulations were put on the market (as was the case for didanosine in Thailand).

The fact that pharmaceutical companies have not yet decreased their prices enough to make their products affordable to the majority of people in developing countries does not preclude future progress. To achieve prices even lower than those available from small suppliers of generic drugs, it will be necessary to pursue discussion and collaboration with the pharmaceutical companies that developed the products. "Differential pricing" of HIV/AIDS drugs and other pharmaceutical products is gaining increasing acceptance in industry and should help in making these products affordable in countries with limited local purchasing power.

At the same time, governments should increase access to drugs by reducing import duties, customs and taxes on HIV-related goods and lowering their cost, and by removing unduly restrictive regulations that impede drug availability. More broadly, at a time when the epidemic is increasing the demand for health services, governments and donor agencies should improve the affordability of drugs by giving higher priority and greater financial support to the health sector.

Box 19. Lessons from the UNAIDS Drug Access Initiative

The Drug Access Initiative enrolled its first patients in Uganda and Côte d'Ivoire in 1998. In Chile and Viet Nam, the initiative became operational in early 2000. The initiative aims to evaluate ways of overcoming obstacles to the provision of drugs, using access to antiretrovirals as an entry point for wider access to a comprehensive package of HIV care in developing countries.

Some important lessons have already been learnt about the operational aspects of the initiative from the experience of Côte d'Ivoire and Uganda, where currently about 600 and 900 patients respectively are receiving antiretroviral therapy.

Rational drug selection and drug use

Advisory boards in both countries defined treatment policy, and training efforts were successful in ensuring physician compliance with the proposed treatment guidelines in the referral centres participating in the initiative. The guidelines and training took a comprehensive approach to the management of patients with HIV, including their opportunistic infections and diseases. However, the procurement guidelines focused almost exclusively on antiretroviral therapy until 1999. Since then, at the insistence of UNAIDS, both countries have shown a greater interest in the management of opportunistic diseases. Anticipating the March 2000 consultation on cotrimoxazole prophylaxis (see Box 20, page 106), Côte d'Ivoire and Uganda adopted guidelines on using this drug combination for the prevention of opportunistic infections in people with HIV. The increased emphasis on drugs for opportunistic infections will make the

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Drug Access Initiative more relevant to clients who cannot afford antiretroviral drugs, and to follow-up centres where antiretrovirals are not prescribed.

Efforts to increase drug affordability

Drug price negotiations led to a significant decrease in the price of antiretroviral drugs in the region, both within the Drug Access Initiative and beyond. However, a comparison of these prices with those obtained by Brazil or Thailand (see Table 2) makes it clear that further price reductions should be possible to achieve, if need be through the introduction of generic competition.

Uganda, a relatively poor country, opted not to use any public funds to subsidize antiretrovirals supplied through the initiative (the cost being borne by the patients). In Côte d'Ivoire, a richer country, the Government committed itself to shoulder part of the cost for selected patients; however, the allocation of treatment subsidies was very slow. While an in-depth analysis of the use of antiretrovirals outside the initiative was not conducted, the fact remains that the programme in Côte d'Ivoire attracted fewer clients than that in Uganda.

Strengthening the health sector

The educational efforts of the initiative were assessed as positive in both countries. In Uganda, laboratory follow-up was strengthened by the donation of CD4 counting equipment. The growing interest of the countries' advisory boards in opportunistic disease management has resulted in more operational follow-up centres.

Three challenges to be met in the months ahead are: integrating the advisory boards' guidance on HIV management into national treatment guidelines; regulating antiretrovirals and advanced drugs for the treatment of opportunistic infections as part of the countries' national drug management policy; and preparing to make the initiative sustainable after UNAIDS reduces its subsidy.

Societal impact

In both countries, the presence of the initiative galvanized people with HIV and AIDS by holding out some hope for them, and led to a wide mobilization of health sector staff around HIV and AIDS. It also resulted in a great deal of discussion of AIDS in the media – not only about the cost of HIV treatment but also HIV prevention. By raising the visibility of the epidemic, this level of discussion may enhance prevention efforts and yield significant benefits that extend beyond the clients and health care providers of the initiative.

Better prospects for preventing infections in those with HIV

Given the limited diagnostic facilities available in developing countries and the high costs of many drugs for treating opportunistic infections, let alone antiretrovirals, the option of prevention is receiving renewed attention. The bulk of evidence now suggests that a few relatively inexpensive drugs could help ward off severe illness and add months, if not years, to the lives of HIV-positive people in even the poorest developing countries. Indeed, preventive drugs had begun to prolong survival in the high-income countries even before antiretroviral therapy was available.

One drug is isoniazid, which has been shown to be effective in warding off 60% of active tuberculosis episodes in people with HIV. In at least one study, isoniazid prevention prolonged life significantly for those who were infected with both HIV and the bacillus that causes tuberculosis. A simple regimen costs on average just a few cents a day for both the medicine and the health services involved.

Tuberculosis prophylaxis is especially important because in half the cases HIV-infected individuals develop a form of TB which cannot be easily diagnosed and which thus goes untreated. Diagnosing disseminated tuberculosis requires sophisticated laboratory equipment that is largely unavailable in many of the poorer developing countries. This is why UNAIDS and WHO have recommended since 1998 that a simple and inexpensive regimen for preventing tuberculosis should be part of the essential care package for people with HIV (see Table 1, page 98).

New developments point the way to preventing other severe infections. Cotrimoxazole – a pill combining an antibiotic and a sulfa drug which has helped prevent *Pneumocystis carinii* pneumonia, the biggest AIDS-related killer in high-income countries – was tested for its preventive impact in Côte d'Ivoire. In one study in Abidjan, where the drug costs of a 12-month regimen were just US$ 17.50, cotrimoxazole prophylaxis resulted in significantly fewer severe infections (as measured by hospital admissions). In another study, cotrimoxazole warded off infections so successfully that it extended life by half a year. The drug combination appeared to be effective in preventing some bacterial pneumonias, diarrhoeal diseases and infections of the blood, and possibly toxoplasmosis (a parasitic brain disease) and isosporiasis (a parasitic infection of the intestines).

In the light of these hopeful findings it is urgent to implement cotrimoxazole regimens in sub-Saharan Africa as part of the essential care package for adults and children living with HIV (see Box 20). At the same time, scientists will need to keep careful watch so that the value of this drug combination is not undermined by the development of resistance to it.

Box 20. Use of cotrimoxazole prophylaxis in people with HIV/AIDS in Africa

In March 2000, UNAIDS and WHO brought together clinicians, public health specialists, national AIDS programme managers, people living with HIV/AIDS, donors and AIDS activists to discuss the use of cotrimoxazole as preventive therapy for HIV-positive individuals in Africa. The outcome of this consultative workshop in Harare, Zimbabwe, was that cotrimoxazole prophylaxis for people who have already developed symptoms of HIV infection should be part of the essential care and support package. The participants recommended dosages, defined criteria for patient eligibility, and issued recommendations for training, education and capacity development in countries.

The UNAIDS Secretariat is working with WHO to ensure rapid implementation of these recommendations through resource mobilization efforts. By July 2000, through consultative meetings with national governments, 14 African countries participating in the US Government's LIFE Initiative will have considered making cotrimoxazole prophylaxis part of their care package.

A new incentive for testing?

Experience from around the world shows that seeking counselling and HIV testing is not an easy step to take. In the high-income countries, the hope of benefiting from early treatment created a major incentive for people to find out whether they were infected. As therapies improved – even before the advent of antiretrovirals – people who suspected they might have HIV saw that they stood to gain months or years of life by getting tested.

Isoniazid and cotrimoxazole prophylaxis – which can only be offered to people with proven HIV infection, in contrast to some other forms of health care described in this chapter – may similarly increase people's interest and willingness to be tested for HIV. If these preventive regimens are made more widely available along with HIV counselling and testing services, the survival benefits for individuals and their families are likely to be compounded by the benefits of large-scale testing, including reduced HIV transmission to partners and to infants, and greater visibility of the insidious HIV epidemic.

National responses to the epidemic: factors that make a difference

This report demonstrates that the AIDS epidemic is a true development crisis that threatens the social and economic fabric, and the political stability, of whole nations. Yet this report also shows that the epidemic is not out of control everywhere; some countries and communities have managed to stabilize HIV rates or achieve a turn-around, and some have maintained very low prevalence rates, due to a range of factors that are not yet fully understood. Other communities have made significant progress on care and support for people both infected and affected. A closer look at individual country responses, and at the corresponding achievements and failures, helps pinpoint some of the factors behind these successes.

Looking back over past efforts against the epidemic the initial reaction of many countries was to try to persuade individuals and selected groups to change their behaviour by providing information about HIV/AIDS. Gradually, however, behaviour change was understood to require more than mere information; the importance of decision-making and negotiation skills, accessibility of commodities and services, and supportive peer norms became increasingly apparent.

By the mid-1980s, it was well appreciated that individuals do not always control their own risk situations. This led to the development of prevention programmes aimed at enabling particular groups or communities such as sex workers and men who have sex with men to adopt safer behaviour. At the same time, as individuals infected with HIV earlier in the epidemic gradually fell ill and died, challenging family and community structures alike, the need to provide health care and cushion the epidemic's impact became increasingly obvious. Simultaneously, the importance of work on non-discrimination, protection and promotion of human rights, and against the stigmatization brought by HIV/AIDS, was more widely recognized, including the importance of involving different sectors of society.

With the mid-1990s, and deepening epidemics in many countries, came a growing realization that HIV/AIDS is also a development challenge. To the extent that people's vulnerability to infection has social and economic roots, often including marginalization, poverty and women's subordinate status, these conditions need to be tackled as a way of making society as a whole less vulnerable to HIV over the long term.

Advancing other social goals such as education, empowerment of women and human rights protection are important for reducing overall societal vulnerability to infection, as well as critical in their own right. At the same time, planners need to bear in mind that development projects such as the construction of a major highway or the creation of free-trade zones may exacerbate the epidemic by promoting rapid urbanization, splitting families and depriving individuals of familiar social support systems. These negative effects need to be anticipated and actively countered.

Common features of effective national responses

Analysis of effective programmes shows that a number of features characterize the responses of communities and countries which have already managed to stabilize or reverse their epidemic trends. This is not to say that there is one ideal expanded response or universal blueprint, but some basic, common principles of effective response can be identified. It is important for each country to find locally relevant pathways to a response that are likely to include most, if not all, of the elements summarized below.

Successful national responses have generally comprised the following features:

1. Political will and leadership

Political will expresses the national commitment and provides overall leadership to the nation in response to AIDS. Effective responses are characterized by political commitment from community leadership up to a country's highest political level. Such commitment leads to high-profile advocacy and helps bring in all the sectors and players, along with the necessary human and financial resources. It is also critical for making the hard political choices often involved in adopting intervention methods that really work – such as making sex work safer – and can lead to helpful policy changes and supportive legislation.

Ultimately, the success of a programme is determined by the dedication and efforts of the change agents who are closest to its level of impact. They, however, need to be constantly motivated, supervised and supported by the political leadership.

2. Societal openness and determination to fight against stigma

To be effective, programmes need to make HIV visible and the factors leading to its spread, discussible. Programmes need to make people aware of the existence of HIV and how it is spread, without stigmatizing the behaviours that lead to its transmission. They also need to facilitate discussion about an individual or community's own vulnerability, and how to reduce it. This involves dissipating fear and prejudice against people who are already living with HIV or AIDS.

Successful programmes impart knowledge, counter stigma and discrimination, create social consensus on safer behaviour, and boost AIDS prevention and care skills. These can be accomplished cost-effectively through mass media campaigns, and through peer/outreach education and life-skills programmes in schools and workplaces. Programmes such as TASO in Uganda have demonstrated the enormously positive impact of openness and honesty in facing HIV. Ensuring that counselling and voluntary HIV testing are available, so that an individual can find out her or his HIV status, is a further critical ingredient in counteracting denial.

3. A strategic response

A single, powerful national AIDS plan involving a wide range of actors – government, civil society, the private sector and (where appropriate) donors – is a highly valuable starting point. The development of a country strategy begins with an analysis of the national HIV/AIDS situation, risk behaviours and vulnerability factors, with the resulting data serving to prioritize and focus initial action. It is essential to find out where people in the country are already infected, where they are most vulnerable, and why. Effective strategy development then involves drawing on evidence-based methods of HIV/AIDS prevention, care and impact alleviation – "best practices" – recognizing that some of these may be culturally sensitive (e.g. sex education in schools) or require hard political choices (e.g. needle exchange for injecting drug users). At the same time, attention needs to be given to ensuring that the relevant services and commodities such as condoms or STD services are acceptable, affordable and available. Given the resource constraints facing many countries, the development of a strategy will also involve some prioritization.

Effective strategies offer both prevention and care. As illness mounts in the epidemic, so does the need for health care and social support. Care services have benefits that extend beyond caring for sick individuals. They help convince others that the threat of HIV is real and they therefore make prevention messages more credible. Messages and programmes that build compassion and skills in health care settings, communities and families are needed right from the start, and combined training for prevention and care helps reduce costs.

An important point about programme elements is that they tend to work in synergy. Individual features of effective action can be found in most programmes. The tragedy is that in many countries, action remains sporadic and patchy rather than comprehensive. "Boutique" projects may provide services for one or two communities, while large areas of the countryside have nothing. Many programmes have yet to become comprehensive in either geographical coverage or content. The national response may focus solely on sex workers, for example; elsewhere, efforts may go into AIDS and life skills education among the young in schools and out of schools, but the risks and vulnerability of men who have sex with men are ignored. While human and other resource constraints may hamper

efforts to scale up, a sound strategic plan based on epidemiological evidence and best practices will at least ensure basic coverage.

Strategic planning of national responses is neither easy nor quick. But as the experience of a number of countries has proved – for example, Botswana, Cambodia, China, Côte d'Ivoire, Dominican Republic, Guatemala, Honduras, Malawi, Mozambique, Papua New Guinea, Romania and the United Republic of Tanzania – it can be done effectively, and the process itself is critical in bringing on board a wide range of actors whose commitment is key to successful outcomes.

4. Multisectoral and multilevel action

Successful programmes involve multisectoral and multilevel partnerships between government departments and between government and civil society, with AIDS being routinely factored into individual and joint agendas. Only a combined effort will "mainstream" AIDS and establish it firmly on the development agenda.

Multisectoral and multilevel partnerships make sense for all stakeholders. Government sectors and businesses are affected in multiple ways by a serious epidemic and hence have an important stake in participating in AIDS prevention, care and support at all levels, but especially in ensuring sustained, large-scale programmes. Ministries of Labour for example can mandate workplace prevention programmes in the private sector. Ministries of Defence can use their budgets to implement programmes for the military, and Ministries of Education for teachers, schoolchildren and their parents. Private firms can contribute in cash and in kind. While Ministries of Health undoubtedly have a critical role to play in responding to the epidemic, leaving the management of the overall national response to them is unlikely to prove effective in the longer term. NGOs, who are trusted by vulnerable populations, are best positioned to support prevention programmes in collaboration with these communities themselves. The mass media can promote safer behaviour and tolerance through their own channels.

5. Community-based responses

The eventual outcome of the AIDS epidemic is decided within the community. People, not institutions, ultimately decide whether to adapt their sexual, economic and social behaviour to the threat of HIV infection. They are the subjects of the response to AIDS, not merely the objects of outside interventions. Therefore, responses to HIV are in the first instance local: they imply the involvement of people where they live – in their homes, their neighbourhoods and their workplaces.

Community members are also indispensable for mobilizing local commitment and resources for effective action. In particular, people living with HIV/AIDS must play a prominent role and bring their unique experience and perspective into programmes, starting from the planning stage.

Community mobilization against HIV/AIDS is taking place successfully all over the world. The activities carried out in community projects are as diverse as the peoples and cultures that make up these communities. Some are entirely "home-grown" and self-sufficient, while others have benefited from external advice and funding. Some are based in religious centres, others in medical institutions, and still others in neighbourhood meeting places. Many concentrate on public education, others on providing care, and still others on prevention and other goals.

6. Social policy reform to reduce vulnerability

HIV transmission is associated with specific risk-taking behaviours. These behaviours are influenced by personal and societal factors that determine people's vulnerability to infection. To be effective, risk-reduction programmes must be designed and implemented in synergy with other programmes, which, in the short and long term, increase the capacity and autonomy of those people particularly vulnerable to HIV infection. Therefore, the question is how to address directly the societal forces which determine, more than anything else, vulnerability to HIV/AIDS. Issues such as gender imbalance and the inability of women to negotiate when, how and with whom they have sex is a social policy issue. The chronic and acute poverty of urban households that leads to their eventual breakdown and the migration of children to the street is not an issue that can be easily addressed at a household or community level alone.

Addressing the societal forces which determine vulnerability to HIV requires engagement at the policy level and political will and resources. Effective social policy reform is a long-term agenda, but even small-scale and incremental steps can send important messages about political commitment to reducing the vulnerability of individuals and communities to infection.

7. Longer-term and sustained response

Even a comprehensive response to HIV/AIDS does not yield immediate results. Measurable impact may take four to five years to develop. Therefore, a long-term approach must be taken, which involves building societal resistance to HIV. Beginning with the youngest generation, the reinforcement of safer attitudes and behaviour will gradually fortify a generation against the spread of AIDS, and in time have a significant impact on incidence.

Effective programmes are characterized by focused action and steadily expanding coverage. To begin with, using existing resources, it makes strategic sense to focus on important vulnerable populations and geographic areas where rapid HIV spread takes on the characteristics of an emergency. Planners must nevertheless take into account the need to reach many different populations, including those who will become exposed tomorrow: individual risk and vulnerability change over the life cycle as children mature into adolescence and adulthood.

There is also evidence that continued vigilance is critical even when behaviour change appears to have become established. The use of condoms among a newly sexually active generation of men who have sex with men for example cannot be assumed, just because an older generation changed its behaviour.

Gradually, without losing focus, action must expand steadily until complete country coverage is achieved.

8. Learning from experience

The last 15 years of HIV prevention and care have led to the development of a rich body of experience and expertise. While it is essential that individual countries "own" their response there is a great deal of evidence that some policies, strategies and technologies are particularly effective: that which UNAIDS calls "best practice". Drawing on best practice and adapting it to local circumstances is valuable both at the outset, and as the response matures. Learning within a national context is also important.

District bureaucracies provide the critical link between local and national activities. The district level is well placed in many countries to analyse, document and disseminate what they learn from the local responses. They can then press for, and negotiate with, the national authorities the changes and reforms needed in key sectors to sustain local responses. There are multiple examples of good HIV "projects" – successful interventions that have identified the recipe for success in a given environment. They can provide valuable insights to national programmes.

Similarly, national programmes are in a strong position to scale up local responses to the national level by incorporating local lessons into their strategic planning and reform processes. For example, governments can effectively adopt policy changes and programme approaches that have "passed the test" at the local level.

Box 21. International support for national responses

Donor assistance to HIV/AIDS has increased substantially over time. In 1998, 14 of the largest donors in the OECD Development Assistance Committee provided US$ 300 million for HIV/AIDS activities. In 1987 – soon after it was first recognized that HIV had spread massively in many developing countries – levels of official development assistance (ODA) funding to AIDS were only at 20% of the levels seen a decade later. This increase has occurred at the same time that overall ODA contributions to developing countries have steadily declined.

Unfortunately, as spectacular as this increase appears, it has not kept pace with the spread of the epidemic – or even the most basic requirements for HIV programmes of the most-affected countries. During the same period, the number of infections has risen from 4 million to over 34 million, a figure that continues to grow given the more

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than 5 million new infections annually. Furthermore, increases in donor support had begun to level off between 1996 and 1998, and it remains less than just 1% of donor countries' total annual ODA budgets. Against the backdrop of soaring infection rates, this trend is of critical concern.

However, recent indications from donors are encouraging. For example, funding by the United States for global HIV/AIDS activities increased by US$ 65 million in 2000 and is set to increase by as much as an additional US$ 100 million in 2001. The donor response to the International Partnership Against AIDS in Africa has also been positive. This important new initiative – the objectives of which are to curtail the spread of HIV, reduce its impact on human suffering and halt the reversal of social and economic development in Africa – includes donors as one of its five key constituencies. Representatives of donor countries are participating in all phases of its development, and their greater understanding of, and involvement in, national planning processes are paying off in increased support.

In addition, there is increasing recognition that HIV/AIDS is not only a major threat to development, but also a threat to peace-building and human security in Africa. This has resulted in higher levels of political awareness and more substantial financial commitments. An additional US$ 180 million in donor funding for activities in Africa was announced at the historic Security Council meeting in January 2000. The challenge is to ensure that this growing enthusiasm results in a steady increase in concrete support to national HIV/AIDS prevention and control programmes – in Africa and elsewhere. To do this, emphasis must be placed on building partnerships between donors and the most-affected countries. In this way a sense of shared responsibility can be created both for improving prevention and care as well as for addressing the formidable, multifaceted development challenges this epidemic presents.

9. Adequate resources

The reassignment of national priorities must be reflected in a reallocation of budgets. There are success stories in developing countries where government budgets for AIDS have been increased significantly; for example in Brazil, China, India and Thailand. At the same time, however, it is a fallacy to assume that because designated AIDS funding is limited, so must AIDS action be. Effective programmes identify opportunities to involve partners with similar goals and objectives, and capitalize on synergies between AIDS and other programmes. If the action needed for risk-reduction and vulnerability-reduction becomes part of the mainstream of national life, direct costs will be less, the benefits will have many spin-offs, and programmes are more likely to be sustainable. For example, including information on HIV/STDs and life skills in a school curriculum has only marginal costs, but the resulting decision-making and negotiation skills may bring about extra benefits such as declines in STDs, unwanted pregnancies and drug use. Similarly, boosting the educational

and economic opportunities of young girls in rural areas not only reduces HIV transmission by providing alternatives to commercial sex, but also contributes to sustainable rural development and an improvement in the status of women.

Redirecting to AIDS existing project resources already programmed for social funds, education and health projects, infrastructure and rural development is fully justified, as the AIDS epidemic is undermining the very goals of these other investments.

Even though international financial assistance is not always necessary, international assistance is crucial in many poor countries with limited public budgets.

Box 22. Debt relief

Some 95% of HIV-infected people live in developing countries, most of them in sub-Saharan Africa. And of the 39 so-called heavily indebted poor countries identified by the World Bank, 32 are in Africa. Together they owe more than US$ 2.2 trillion in debt.

Lack of funds for an expanded response to AIDS has been worsened by these high levels of foreign indebtedness. Across Africa, national governments pay out four times more in debt service than they spend on health and education.

In order to mount effective national AIDS prevention programmes, countries in Africa will need to spend at least US$ 1–2 billion a year, far more than is currently being invested. Sources that might be tapped for these additional resources include increased donations from the private sector and foundations, expansion and redirection of development assistance, and reallocations within countries' own public budgets.

Relieving countries' debt burden is one of the more promising new approaches that could increase the funds flowing into programmes to roll back the AIDS epidemic in Africa. By relieving debt in the poorest countries – which, often, are the ones with the highest HIV and AIDS figures – money now exported to service debt could be reinvested into AIDS prevention and care.

A major initiative to reduce debt over the next few years will take place under the Highly Indebted Poor Country initiative (HIPC), supported by all the major creditor governments from the OECD countries and implemented by the World Bank and International Monetary Fund.

In a typical debt relief agreement, portions of a country's debt will be cancelled in exchange for the debtor government's commitment to mobilize domestic resources for specific purposes, such as a poverty eradication scheme or an intensified national AIDS effort.

Such transactions have succeeded since the 1980s in the field of environmental conservation, for instance, by protecting rainforests from logging.

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At the heart of debt reduction deals under HIPC lies the challenge of agreeing on significant goals in poverty reduction and on measurable indicators of progress towards these goals. Lending countries will have greater incentives to reduce debt if there are clear and measurable ways of assessing the benefits. For example, a medium-term AIDS-related target might be to provide low-cost treatments to a specific percentage of the population suffering from the most common opportunistic infections. Measurable indicators for monitoring progress would likely include the availability of specific generic medicines in primary health care centres.

During the first months of 2000, several countries in Africa have started to feature HIV/AIDS more prominently in their poverty-reduction strategies and in related HIPC debt relief agreements. This is encouraging. But a concerted effort by a coalition of interested African government officials, civil society representatives, creditor governments, and United Nations and multilateral agencies will be required to ensure that debt relief is actually used to mobilize substantially increased funding for AIDS.

Conclusion

Two decades of action against the epidemic have generated important insights into an effective response. While international political, financial and technical support are important, lowering incidence and mitigating the epidemic's impacts must be a nationally driven agenda. To be effective and credible, national responses require the persistent engagement of the highest levels of government. Countries that have adopted forward-looking strategies to fight the epidemic are reaping the rewards in falling incidence. Other countries are yet to see the fruits of their efforts, and in the absence of rapid and visible results, sustaining a response becomes more difficult. However, evidence shows that the combination of approaches described in this chapter have brought about a lowering of incidence in some countries. At present, and until the arrival of a vaccine, these approaches are the strongest weapons in our fight back against HIV/AIDS.

Annex 1.

How reliable are estimates of HIV infection and AIDS deaths?

It is important to stress that the estimates given in the table in Annex 2 (see pages 124-135) and many of the country- and regional-level figures given elsewhere in this report are *estimates* rather than *exact counts* of infections or deaths. Every time new estimates of HIV infections or AIDS deaths are released, questions are asked about the source and validity of the data, the methods used to arrive at estimates, and whether the figures reflect the "reality" of the epidemic.

These questions arise for all diseases, especially those common in developing countries, where reporting systems are poor and many births and deaths – and most illnesses – go unrecorded. In fact, in many countries, the information on which HIV estimates are based is better than the information available for most other diseases.

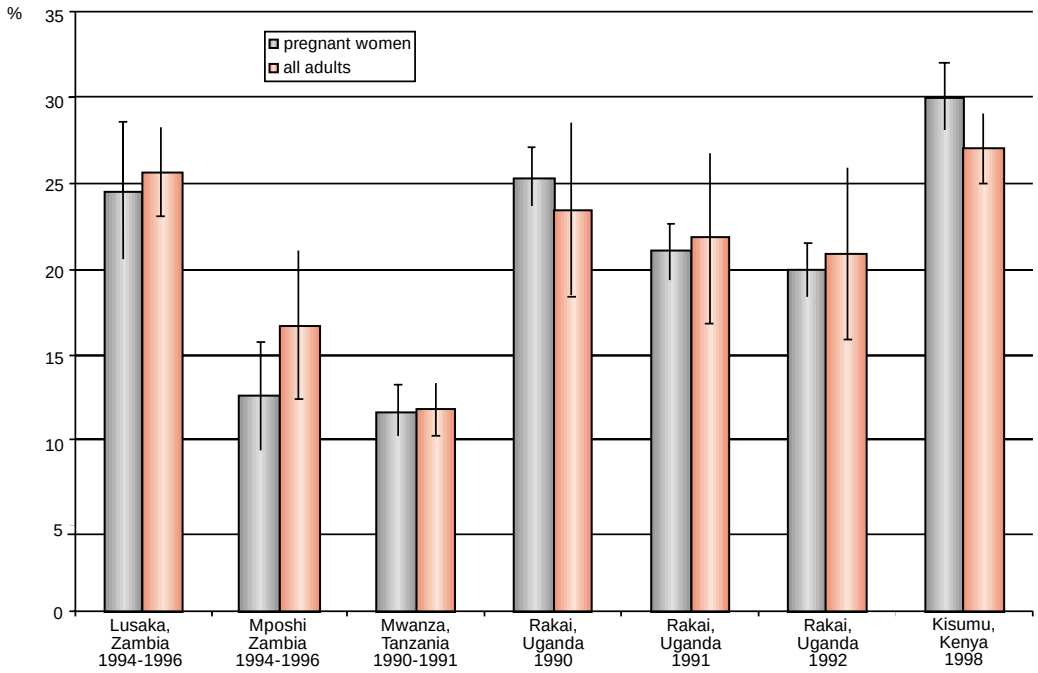
The approach to estimating HIV prevalence and AIDS deaths varies according to whether the HIV epidemic has reached the general population, or whether it is still largely concentrated in groups with high-risk behaviour.

In largely heterosexually driven epidemics where there is evidence that men and women in the general population have become infected with HIV in significant numbers, HIV surveillance is based mostly on tests performed among pregnant women attending antenatal clinics that have been selected as sentinel surveillance sites. Anonymous specimens of blood left over from tests performed as part of routine care for pregnant women are tested for antibodies to HIV. Many countries with heterosexual epidemics in sub-Saharan Africa and a few countries in Asia and the Caribbean have conducted HIV prevalence studies in selected antenatal clinics more or less regularly since the end of the 1980s. The more regular the studies, the clearer the picture of current prevalence. Where data are not available for the current year, all available data points are plotted on a curve, and an estimate for the current year is made according to what is known about the course of epidemics with predominantly heterosexual transmission. To account for differences in the spread of HIV, this is generally done separately for urban and for rural areas.

Pregnant women seeking antenatal care are chosen for HIV surveillance because they provide easy access to left-over blood samples, and because they are fairly representative of the general population. Even in the least developed countries the coverage of antenatal care is high. In recent years a series of population-based stud-

ies in urban and rural communities have made it possible to validate the results of sentinel surveillance in pregnant women. These studies offer important insights into the differentials of HIV infection by age and sex. They also confirm that sentinel surveillance in pregnant women yields remarkably robust estimates for HIV prevalence in the general population of reproductive age, as shown in Figure 28.

Figure 28. HIV prevalence rates among pregnant women and among all adults aged 15-49



Source: *Sentinel surveillance data from antenatal clinics and population-based studies, selected African countries, 1990-1998*

In countries where the HIV epidemic is concentrated in a few groups with high-risk behaviour – mostly drug injectors and men who have sex with men, as well as sex workers and their clients – the methods for estimating HIV prevalence are different. This is the case in most countries in Asia, the Americas and Europe. Here, because there are very few HIV infections in the general population, and because many of the infections are in groups largely or entirely made up of men, data from pregnant women are of very limited use. Rather, HIV estimates in such cases are based on information on HIV prevalence in each group of people with high-risk behaviour, together with estimates of the size of each of these populations. Since these behaviours are often socially unacceptable and sometimes illegal, information on both HIV prevalence levels and the size of the population affected can be much harder to come by. Consequently, uncertainties around these estimates may well be greater for countries where the epidemic is concentrated in specific groups.

In the industrialized world, where the availability of antiretroviral therapy provides a powerful incentive to get tested for HIV for anyone who thinks he or she may have been exposed to the virus, surveillance systems increasingly include data from HIV testing and – where available – HIV reporting. In addition, robust AIDS case registration systems with reporting rates of up to 80% and higher allow for the use of statistical back-calculation methods. However, such methods have become less useful since the introduction of antiretroviral therapies, because it is no longer easy to define the relationship between initial HIV infection and the onset of AIDS in patients in treatment.

In regions where life-prolonging therapy is not widely available, simple back-calculation procedures are used to generate estimates of new HIV infections and of HIV-related deaths. These procedures are based on the well-known natural course of HIV infection which determines the relationship between HIV incidence, prevalence and mortality. Similarly, estimates for HIV infections through mother-to-child transmission (including breastfeeding) and HIV mortality in children can be calculated. These estimates are based on age-specific fertility rates in countries and on region-specific rates of mother-to-child transmission which are documented in numerous studies.

The estimates published in this report (apart from those specifically referenced otherwise) are based on the information available in March 2000. They are provisional. WHO and UNAIDS, together with staff at national AIDS programmes and research institutions, keep HIV/AIDS 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.

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

Annex 2.
HIV/AIDS estimates and data, end 1999

The estimates and data provided in the following table relate to the end of 1999 unless stated otherwise. They are given in rounded numbers. However, unrounded numbers were used in the calculation of rates and regional totals, so there may be small discrepancies between the regional/global totals and the sum of the country figures.

Adults in this report are defined as men and women aged 15–49. This age range captures those in their most sexually active years. While the risk of HIV infection obviously continues beyond 50, the vast majority of those with substantial risk behaviour are likely to have become infected by this age. Since population structures differ greatly from one country to another, especially for children and the upper adult ages, the restriction of "adults" to 15–49-year-olds has the advantage of making different populations more comparable. This age range was used as the denominator in calculating the adult HIV prevalence rate.

The methodology used to produce the country-specific estimates in the table has been described in full elsewhere (Schwartländer et al. *AIDS 1999*; 13:2445–2458).

Notes on specific indicators listed in the table

1. People living with HIV/AIDS, end 1999

These estimates include all people with HIV infection, whether or not they have developed symptoms of AIDS, alive at the end of 1999.

For country estimates marked with an asterisk, not enough data were available to produce an estimate of HIV prevalence for end 1999. For each of these countries the 1994 prevalence rate published by the WHO Global Programme on AIDS (*Weekly epidemiological record 1995*; 70:353–360) was applied to the country's 1999 adult population to produce the estimates given in the table. No country-specific models were produced for countries marked with an asterisk. For data columns containing few or no country estimates, the regional totals were calculated on the basis of a regional model.

Adults and children

Estimated number of adults and children living with HIV/AIDS at the end of 1999. Children are defined as those aged 0–14.

Adults (15–49)

Estimated number of adults living with HIV/AIDS at the end of 1999.

Adult rate (%)

To calculate the adult HIV prevalence rate, the estimated number of adults living with HIV/AIDS at the end of 1999 was divided by the 1999 adult population (aged 15–49).

Women (15–49)

Estimated number of women living with HIV/AIDS at the end of 1999.

Children (0–14)

Estimated number of children under age 15 living with HIV/AIDS at the end of 1999.

2. AIDS orphans

Orphans, cumulative

Estimated number of children as of end 1999 having lost their mother or both parents to AIDS before age 15 since the epidemic began. Some of the orphaned children included in this cumulative total are no longer alive; others are no longer under age 15.

3. AIDS deaths, 1999

Adults and children

Estimated number of adults and children who died of AIDS during 1999.

4. Population, 1999

Total (thousands)

Total population in 1999 (UN Population Division, Department of Economic and Social Affairs, United Nations Secretariat).

Adult (thousands)

Population aged 15–49 in 1999 (UN Population Division, Department of Economic and Social Affairs, United Nations Secretariat).

5. Ranges of uncertainty around prevalence and mortality estimates

The best estimates of HIV prevalence and AIDS deaths are given under indicators 1 and 3 (see above). Depending on the reliability of the data available, there may be more or less uncertainty surrounding each such estimate. Indicator 5 therefore presents both low and high estimates for certain variables. The wider the range, the greater the uncertainty surrounding the country's estimates, which in turn depends mainly on the quality, coverage and consistency of the country's surveillance system.

While a measure of uncertainty applies to all estimates, in this report ranges of uncertainty are presented for the following key variables:

- **the estimated number of adults and children living with HIV/AIDS at the end of 1999**
- **the estimated number of AIDS deaths in adults (15–49) during 1999**
- **the estimated number of AIDS deaths in children (0–14) during 1999.**

6. Estimated HIV prevalence rate (%) in young people, end 1999

The estimated number of young people (15–24) living with HIV/AIDS at the end of 1999 divided by the 1999 population of young people (15–24). These country-specific estimates are expressed as a range generated by regional modelling.

7. HIV prevalence rate (%), data from selected populations

Percentage of people tested in each group who were found to be infected with HIV. Most of these data are from routine sentinel surveillance (see Annex 1).

For each of the groups the table gives the year of the most recent report, the median for all surveillance sites, the minimum and the maximum.

Data from surveillance among pregnant women at antenatal care clinics are broken down into urban populations and populations living outside major urban areas. Truly rural areas often have no sentinel surveillance sites at all.

Nearly all the data on groups with high-risk behaviour such as injecting drug use and sex work come from studies in urban areas. Data marked with an "r" are from rural studies, often conducted in small towns outside major urban centres. An "n" denotes a nationwide number that does not allow for a rural–urban breakdown.

Women in antenatal care clinics – major urban areas

Women in antenatal care clinics – outside major urban areas

Male patients with a sexually transmitted infection (STI) – major urban areas

Female sex workers – major urban areas

Injecting drug users – major urban areas

8. Prevention indicators

Condom availability

- *condoms available per capita*

  Total number of condoms available for distribution, during the 12 months preceding the report, per adult (15–49). This includes imports, local manufactures, private-sector condoms and socially marketed condoms. The year indicates the date of the most recent report.

- *condom access (%)*

  The percentage of adults (15–49) that have access to condoms. The year indicates the date of the most recent survey.

Reported non-regular sexual partnerships (%)

The percentage of adults who report having had at least one sex partner other than their regular sex partner(s) in the 12 months preceding the report. An “a” denotes the proportion for both sexes combined. Urban samples are marked with a “u”. A “y” denotes the proportion for those not living with a spouse or other stable partner. The year indicates the date of the most recent survey.

Reported condom use with non-regular partner (%)

The percentage of adults who report having used a condom during the most recent intercourse with a non-regular sex partner. An “a” denotes the proportion for both sexes combined. Urban samples are marked with a “u”. The year indicates the date of the most recent report. The age range indicates the age group of the population included in the survey.

Table of country-specific HIV/AIDS estimates and data, end 1999

Global surveillance of HIV/AIDS and sexually transmitted infections (STIs) is a joint effort of the World Health Organization (WHO) and the Joint United Nations Programme on HIV/AIDS (UNAIDS). The UNAIDS/WHO Working Group on Global HIV/AIDS and STI Surveillance, initiated in November 1996, is the main coordination and implementation mechanism through which UNAIDS and WHO compile the best information available and help improve the quality of data needed for informed decision-making and planning at national, regional and global levels. This work is done in close collaboration with national AIDS programmes worldwide and with other national and international experts and institutions.

	HIV/AIDS estimates								
	1. People living with HIV/AIDS, end 1999					2. AIDS orphans	3. AIDS deaths, 1999	4. Population, 1999	
Country	*Adults and children*	*Adults (15-49)*	*Adult rate (%)*	*Women (15-49)*	*Children (0-14)*	*Orphans, cumulative*	*Adults and children*	*Total (thousands)*	*Adult (thousands)*
Global Total	**34 300 000**	**33 000 000**	**1.07**	**15 700 000**	**1 300 000**	**13 200 000**	**2 800 000**	**5 958 865**	**3 083 265**
sub-Saharan Africa	**24 500 000**	**23 400 000**	**8.57**	**12 900 000**	**1 000 000**	**12 100 000**	**2 200 000**	**596 272**	**273 488**
Angola	160 000	150 000	2.78	82 000	7 900	98 000	15 000	12 497	5 389
Benin	70 000	67 000	2.45	37 000	3 000	22 000	5 600	5 945	2 730
Botswana	290 000	280 000	35.80	150 000	10 000	66 000	24 000	1 592	775
Burkina Faso	350 000	330 000	6.44	180 000	20 000	320 000	43 000	11 633	5 116
Burundi	360 000	340 000	11.32	190 000	19 000	230 000	39 000	6 587	3 006
Cameroon	540 000	520 000	7.73	290 000	22 000	270 000	52 000	14 704	6 723
Central African Republic	240 000	230 000	13.84	130 000	8 900	99 000	23 000	3 550	1 649
Chad	92 000	88 000	2.69	49 000	4 000	68 000	10 000	7 462	3 283
Comoros	…	400*	0.12*	…	…	…	…	676	327
Congo	86 000	82 000	6.43	45 000	4 000	53 000	8 600	2 867	1 277
Côte d'Ivoire	760 000	730 000	10.76	400 000	32 000	420 000	72 000	14 534	6 785
Dem. Republic of Congo	1 100 000	1 100 000	5.07	600 000	53 000	680 000	95 000	50 407	21 564
Djibouti	37 000	35 000	11.75	19 000	1 500	7 200	3 100	631	299
Equatorial Guinea	1 100	1 000	0.51	560	<100	860	120	442	200
Eritrea	…	49 000*	2.87*	…	…	…	…	3 717	1 705
Ethiopia	3 000 000	2 900 000	10.63	1 600 000	150 000	1 200 000	280 000	61 123	26 931
Gabon	23 000	22 000	4.16	12 000	780	8 600	2 000	1 196	527
Gambia	13 000	12 000	1.95	6 600	520	9 600	1 400	1 266	616
Ghana	340 000	330 000	3.60	180 000	14 000	170 000	33 000	19 699	9 164
Guinea	55 000	52 000	1.54	29 000	2 700	30 000	5 600	7 375	3 414
Guinea-Bissau	14 000	13 000	2.50	7 300	560	6 100	1 300	1 188	532
Kenya	2 100 000	2 000 000	13.95	1 100 000	78 000	730 000	180 000	29 507	14 217
Lesotho	240 000	240 000	23.57	130 000	8 200	35 000	16 000	2 108	998
Liberia	39 000	37 000	2.80	21 000	2 000	31 000	4 500	2 941	1 335
Madagascar	11 000	10 000	0.15	5 800	450	2 600	870	15 502	7 199
Malawi	800 000	760 000	15.96	420 000	40 000	390 000	70 000	10 674	4 733
Mali	100 000	97 000	2.03	53 000	5 000	45 000	9 900	10 976	4 770
Mauritania	6 600	6 300	0.52	3 500	260	…	610	2 602	1 209
Mauritius	…	500*	0.08*	…	…	…	…	1 149	647
Mozambique	1 200 000	1 100 000	13.22	630 000	52 000	310 000	98 000	19 222	8 607
Namibia	160 000	150 000	19.54	85 000	6 600	67 000	18 000	1 689	790
Niger	64 000	61 000	1.35	34 000	3 300	31 000	6 500	10 414	4 524
Nigeria	2 700 000	2 600 000	5.06	1 400 000	120 000	1 400 000	250 000	108 995	50 705
Reunion	…	…	…	…	…	…	…	690	370
Rwanda	400 000	370 000	11.21	210 000	22 000	270 000	40 000	7 238	3 338
Senegal	79 000	76 000	1.77	40 000	3 300	42 000	7 800	9 251	4 268
Sierra Leone	68 000	65 000	2.99	36 000	3 300	56 000	8 200	4 721	2 164
Somalia	…	…	…	…	…	…	…	9 718	4 280
South Africa	4 200 000	4 100 000	19.94	2 300 000	95 000	420 000	250 000	39 796	20 630
Swaziland	130 000	120 000	25.25	67 000	3 800	12 000	7 100	981	480
Togo	130 000	120 000	5.98	66 000	6 300	95 000	14 000	4 515	2 013
Uganda	820 000	770 000	8.30	420 000	53 000	1 700 000	110 000	21 209	9 222
United Rep. of Tanzania	1 300 000	1 200 000	8.09	670 000	59 000	1 100 000	140 000	32 799	15 068
Zambia	870 000	830 000	19.95	450 000	40 000	650 000	99 000	8 974	4 137
Zimbabwe	1 500 000	1 400 000	25.06	800 000	56 000	900 000	160 000	11 509	5 771
East Asia & Pacific	**530 000**	**530 000**	**0.06**	**66 000**	**5 200**	**5 600**	**18 000**	**1 477 678**	**821 647**
China	500 000	500 000	0.07	61 000	4 800	4 500	17 000	1 266 150	715 375
Hong Kong S.A.R.	2 500	2 500	0.06	630	<100	…	<100	6 786	3 918
Dem. Peo. Rep. of Korea	<100	<100*	<0.01*	…	…	…	…	23 679	13 270
Fiji	…	300	0.07	…	…	…	…	807	429
Japan	10 000	10 000	0.02	1 300	<100	…	150	126 466	58 098
Mongolia	<100	<100	<0.01	…	…	…	…	2 620	1 411
Papua New Guinea	5 400	5 200	0.22	2 600	220	1 100	450	4 706	2 336
Republic of Korea	3 800	3 800	0.01	490	<100	<100	180	46 465	26 810
Australia & New Zealand	**15 000**	**15 000**	**0.13**	**1 100**	**190**	**<500**	**120**	**22 522**	**11 482**
Australia	14 000	14 000	0.15	900	140	…	100	18 698	9 543
New Zealand	1 200	1 200	0.06	180	<100	…	<100	3 824	1 939

	5. Ranges of uncertainty around estimates						6. Estimated HIV prevalence rate (%) in young people, end 1999			
	Adults and children living with HIV/AIDS, end 1999		Deaths in adults (15-49), 1999		Deaths in children (0-14), 1999		Females (15-24)		Males (15-24)	
Country	*Low Estimate*	*High Estimate*	*Low Estimate*	*High Estimate*	*Low Estimate*	*High Estimate*	*from*	*to*	*from*	*to*
Global Total	**25 800 000**	**41 800 000**	**1 600 000**	**2 900 000**	**330 000**	**670 000**				
sub-Saharan Africa	**19 000 000**	**29 900 000**	**1 300 000**	**2 200 000**	**300 000**	**610 000**				
Angola	110 000	200 000	8 700	15 000	2 400	4 400	2.58	2.86	1.08	1.43
Benin	56 000	84 000	3 500	5 200	1 000	1 600	1.58	2.91	0.50	1.29
Botswana	230 000	350 000	17 000	25 000	3 700	5 100	32.55	36.07	13.68	18.00
Burkina Faso	280 000	420 000	23 000	46 000	6 000	12 000	4.07	7.51	1.28	3.33
Burundi	260 000	460 000	11 000	38 000	3 000	18 000	9.86	13.34	3.80	7.59
Cameroon	430 000	650 000	27 000	50 000	7 000	16 000	6.61	8.94	2.54	5.09
Central African Republic	190 000	280 000	13 000	23 000	3 000	5 500	11.96	16.18	4.61	9.21
Chad	60 000	120 000	5 500	11 000	1 100	2 300	2.55	3.51	1.52	2.31
Comoros	…	…	…	…	…	…	…	…	…	…
Congo	56 000	120 000	5 000	9 000	870	2 600	5.49	7.43	2.12	4.23
Côte d'Ivoire	610 000	910 000	45 000	79 000	10 000	15 000	6.68	12.33	2.10	5.47
Dem. Republic of Congo	830 000	1 500 000	50 000	100 000	10 000	25 000	4.31	5.84	1.66	3.32
Djibouti	24 000	50 000	1 600	3 300	430	920	11.70	16.13	6.99	10.61
Equatorial Guinea	690	1 400	<100	130	<100	<100	0.46	0.63	0.18	0.36
Eritrea	…	…	…	…	…	…	…	…	…	…
Ethiopia	2 200 000	3 800 000	140 000	280 000	35 000	91 000	9.98	13.75	5.96	9.04
Gabon	15 000	31 000	1 100	2 300	220	460	4.01	5.42	1.54	3.09
Gambia	8 200	17 000	760	1 600	140	300	1.52	2.82	0.48	1.25
Ghana	280 000	410 000	12 000	35 000	2 600	7 700	2.40	4.44	0.76	1.97
Guinea	40 000	70 000	3 200	5 700	830	1 500	1.01	1.86	0.32	0.82
Guinea-Bissau	9 000	19 000	690	1 400	150	330	1.74	3.22	0.55	1.43
Kenya	1 600 000	2 500 000	120 000	180 000	27 000	41 000	11.07	14.98	4.26	8.52
Lesotho	160 000	330 000	7 900	16 000	2 300	4 900	23.94	28.85	8.04	16.07
Liberia	26 000	53 000	2 400	4 900	540	1 200	1.51	2.78	0.47	1.23
Madagascar	8 700	13 000	540	810	150	240	0.12	0.14	0.02	0.06
Malawi	640 000	960 000	45 000	79 000	12 000	22 000	14.48	16.04	6.08	8.00
Mali	66 000	140 000	5 000	10 000	1 400	3 000	1.74	2.40	1.04	1.58
Mauritania	4 300	8 900	330	680	<100	160	0.50	0.69	0.30	0.45
Mauritius	330	690	<100	<100	…	…	0.04	0.05	0.02	0.06
Mozambique	860 000	1 500 000	40 000	100 000	11 000	32 000	13.36	16.11	4.49	8.97
Namibia	130 000	190 000	12 000	18 000	2 300	3 500	18.78	20.82	7.89	10.38
Niger	42 000	87 000	3 300	6 800	920	2 000	1.26	1.73	0.75	1.14
Nigeria	2 100 000	3 200 000	150 000	260 000	41 000	64 000	4.35	5.89	1.68	3.35
Reunion	…	…	…	…	…	…	…	…	…	…
Rwanda	320 000	480 000	12 000	43 000	3 900	18 000	9.04	12.23	3.48	6.96
Senegal	63 000	95 000	5 200	7 700	1 100	1 700	1.12	2.07	0.39	1.02
Sierra Leone	44 000	92 000	4 400	9 200	910	2 000	2.05	3.79	0.65	1.68
Somalia	…	…	…	…	…	…	…	…	…	…
South Africa	3 400 000	5 100 000	180 000	250 000	36 000	74 000	22.51	27.13	7.56	15.11
Swaziland	100 000	150 000	4 400	6 500	1 300	2 000	25.88	31.19	8.69	17.37
Togo	100 000	150 000	9 400	14 000	2 100	3 300	3.89	7.18	1.22	3.18
Uganda	650 000	980 000	75 000	120 000	18 000	32 000	6.65	8.99	2.56	5.12
United Rep. of Tanzania	1 000 000	1 500 000	75 000	120 000	20 000	30 000	6.85	9.27	2.64	5.28
Zambia	690 000	1 000 000	60 000	100 000	14 000	24 000	16.86	18.68	7.08	9.32
Zimbabwe	1 200 000	1 800 000	100 000	160 000	19 000	38 000	23.25	25.76	9.77	12.85
East Asia & Pacific	**390 000**	**680 000**	**12 000**	**21 000**	**650**	**1200**				
China	370 000	650 000	12 000	20 000	580	1000	0.02	0.03	0.07	0.18
Hong Kong S.A.R.	2 000	3 000	<100	<100	<100	<100	0.04	0.05	0.05	0.14
Dem. Peo. Rep. of Korea	<100	<100	<100	<100	…	…	…	…	…	…
Fiji	…	…	<100	<100	<100	<100	…	…	…	…
Japan	8 000	12 000	110	170	<100	<100	0.01	0.01	0.02	0.04
Mongolia	<100	<100	<100	<100	…	…	…	…	…	…
Papua New Guinea	3 500	7 300	230	470	<100	130	0.16	0.33	0.03	0.13
Republic of Korea	3 000	4 600	140	210	<100	<100	<0.01	0.01	0.01	0.03
Australia & New Zealand	**12 000**	**18 000**	**<100**	**120**	**<100**	**<100**				
Australia	11 000	17 000	<100	120	<100	<100	0.01	0.02	0.07	0.21
New Zealand	960	1 400	<100	<100	<100	<100	0.01	0.02	0.03	0.08

	7. HIV prevalence rate (%), data from selected populations															
	Women in antenatal care clinics – major urban areas				Women in antenatal care clinics – outside major urban areas				Male STI patients – major urban areas				Female sex workers – major urban areas			
Country	Year	Median	Min.	Max.	Year	Median	Min.	Max.	Year	Median	Min.	Max.	Year	Median	Min.	Max.
Global Total																
sub-Saharan Africa																
Angola	1995	1.2	1.2	1.2	1996	8.5	8.5	8.5	1992	2.5	2.5	2.5	…	…	…	…
Benin	1998	3.7	2.9	5.9	1998	1.5	0	13.9	1998	2.8	2.8	2.8	1996	53.5	48.9	58.1
Botswana	1998	43	39.1	49.9	1998	30.0	22.3	37.5	1998	60.4	54.2	64.0	…	…	…	…
Burkina Faso	1998	7.4	5.9	8.3	1998	4.3	4.0	6.6	1992	41.8	41.8	41.8	1994	58.2	57.2	59.2
Burundi	1998	18.6	18.6	18.6	1998	19.7	19.7	19.7	…	…	…	…	1993	42.2	42.2	42.2
Cameroon	1998	5.5	5.5	5.5	1998	9.2	3.5	14.8	1996	16	16	16	1995	16.5	15.2	17.7
Central African Republic	1997	12.8	10.8	15.2	1997	12.2	5.3	22.0	1997	27.3	16	28.8	1989	18.9	18.9	18.9
Chad	1999	6.2	3.6	7.3	1999	4.7	4.1	5.5	…	…	…	…	1995	13.4	13.4	13.4
Comoros	1996	0	0	0	…	…	…	…	1996	0	0	0	1994	56.8	56.8	56.8
Congo	1996	5.2	5.2	5.2	1993	4	2	13.6	1990	18	16.4	19.6	1987	49.2	34.3	64.1
Cote d'Ivoire	1998	10.6	10.6	10.6	1998	10	8.1	12.8	1992	18.4	18.4	18.4	1995	68.4	67.6	69.2
Dem. Republic of Congo	1999	4.1	2.7	5.4	1999	8.5	8.5	8.5	1997	12.2	12.2	12.2	1997	29.0	29.0	29.0
Djibouti	1996	2.9	2.9	2.9	…	…	…	…	1996	22.2	22.2	22.2	1998	27.5	27.5	27.5
Equatorial Guinea	1996	0.7	0.4	1.0	1995	0.3	0.3	0.3	1996	15.9	3.2	28.6	…	…	…	…
Eritrea	…	…	…	…	1994	3	3	3	1994	9.5	9.5	9.5	1994	25r	25	25
Ethiopia	1997	17.6	14.1	20.0	1998	9.2	0.8	14.5	1992	37.5	32	43	1991	67.5r	65.6	69.4
Gabon	1995	4.0	2.1	5.4	1993	1.2	1.2	1.2	1988	3.7	3.7	3.7	…	…	…	…
Gambia	1997	1.0	1.0	1.0	1997	2.4	0.7	3.5	1996	5.6	5.6	5.6	1993	13.6	13.6	13.6
Ghana	1998	3.4	2.2	6.6	1998	3.4	2	12.4	1998	16.7	6.3	27.1	1997	72.6	72.6	72.6
Guinea	1996	1.5	1.5	1.5	1996	1.4	1.3	1.8	1995	4.5	4.5	4.5	1996	27.0	17	38
Guinea-Bissau	1995	2.7	2.7	2.7	…	…	…	…	…	…	…	…	…	…	…	…
Kenya	1997	15.2	14.4	15.9	1997	12.7	5.9	34.9	1998	29	29	29	1995	55.2	55.2	55.2
Lesotho	1994	31.3	31.3	31.3	1999	27.1	27.1	27.1	1994	30.5r	21	48.3	…	…	…	…
Liberia	1993	4.0	4.0	4.0	1998	10.1	10.1	10.1	1993	8	8	8	…	…	…	…
Madagascar	1996	0.0	0.0	0.0	1996	0	0	1	1998	0.9	0	1.7	1998	1.3	1.3	1.3
Malawi	1998	26.0	18.5	30.4	1998	18.2	6.4	25.2	1996	54.8	54.8	54.8	1994	70	70	70
Mali	1997	2.7	2.7	2.7	1994	2.9	2.9	4.5	…	…	…	…	1995	55.5	55.5	55.5
Mauritania	1994	0.5	0.5	0.5	1988	0	0	0	1994	0.9	0.9	0.9	…	…	…	…
Mauritius	1998	0	0	0	…	…	…	…	1998	7.5	7.5	7.5	1990	0.8	0.8	0.8
Mozambique	1998	11.2	9.9	12.5	1998	17.0	5	18.3	1998	9	9	9	…	…	…	…
Namibia	1998	25.9	22.7	29	1998	15	5.9	34.4	1998	42.2	39.9	44.6	…	…	…	…
Niger	1993	1.3	1.3	1.3	1997	4.7	4.7	4.7	1992	4.1	4.1	4.1	1997	23.6	23.6	23.6
Nigeria	1999	4.5	2.7	8.0	1999	4.9	0.5	21.0	1996	3	3	3	1996	30.5	30.5	30.5
Reunion	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Rwanda	1997	19	10	28	1997	7.5	6	12	1996	41.8	29.1	54.5	…	…	…	…
Senegal	1998	0.5	0.5	0.5	1998	0.5	0.2	0.7	1998	3	0	4.1	1998	7.0	6.1	13.3
Sierra Leone	1992	2	2	2	…	…	…	…	1992	3.3	3.3	3.3	1995	26.7	26.7	26.7
Somalia	1985	0	0	0	1997	2.0	1.0	3.0	1990	0	0	0	1990	2.4	2.4	2.4
South Africa	1998	19.2	5.2	32.5	1998	21.3	9.9	30.0	1994	21.8	18.8	24.7	1998	61.1	61.1	61.1
Swaziland	1998	30.3	30.3	30.3	1998	31.5	29.6	34.8	1998	49.8	47.4	52.7	…	…	…	…
Togo	1997	6.8	6.8	6.8	1997	4.6	3.0	8.2	1992	45.2	45.2	45.2	1992	78.9	78.9	78.9
Uganda	1998	13.8	13.4	14.2	1998	7.7	1.3	11.5	1998	29.4	29.4	29.4	…	…	…	…
United Rep. of Tanzania	1996	13.7	13.7	13.7	1998	18.6	12.3	24.0	1997	13.2	13.2	13.2	1993	49.5	49.5	49.5
Zambia	1998	27	25.9	29.1	1998	13.9	5.2	31.0	1992	58	58	58	…	…	…	…
Zimbabwe	1997	29.7	24	33.3	1997	30.0	7.0	53.3	1995	71	50.7	71.2	1995	86.0	86.0	86.0
East Asia & Pacific																
China	…	…	…	…	1998	0.4	0.4	0.4	1998	0	0	0.4	1998	0	0	2.3
Hong Kong S.A.R.	…	…	…	…	…	…	…	…	1998	0.07n	…	…	1988	0	0	0
Dem. Peo. Rep. of Korea	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Fiji	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Japan	1993	0	0	0	1996	0	0	0	1989	0	0	0	1992	0	0	0
Mongolia	…	…	…	…	…	…	…	…	1990	0	0	0	1990	0	0	0
Papua New Guinea	1996	0.2	0.2	0.2	1992	0	0	0	1998	6	6	6	1998	9.9	3.1	16.7
Republic of Korea	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Australia & New Zealand																
Australia	…	…	…	…	…	…	…	…	1996	0.6	0.5	0.7	…	…	…	…
New Zealand	…	…	…	…	…	…	…	…	1997	0.15	0.1	0.2	…	…	…	…

	7. HIV prevalence (%) (cont.)				8. Prevention indicators										
	Injecting drug users – major urban areas				Condom availability				Reported non-regular sexual partnerships (%)			Reported condom use with non-regular partner (%)			
Country	Year	Median	Min.	Max.	Condoms available per capita	Year	Condom access (%)	Year	Male	Female	Year	Male	Female	Year	Age range
Global Total															
sub-Saharan Africa															
Angola	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Benin	...	...	...	...	...	...	...	...	33.7a	11.9a	1996	...	...	...	15-49
Botswana	...	...	...	...	...	...	...	...	...	...	...	85a	...	1996	18-25
Burkina Faso	...	...	...	...	...	...	...	...	61.3	31.4	1992	...	...	...	15-24
Burundi	...	...	...	...	1.8	1997	...	...	8.9	3.1	1990	...	...	...	15-50
Cameroon	...	...	...	...	...	...	...	...	...	...	...	6.6	...	1998	15-59
Central African Republic	...	...	...	...	...	...	...	...	22.7	10.7	1995	...	...	...	15-49
Chad	...	...	...	...	...	...	...	...	...	...	...	5.3	...	1997	15-54
Comoros	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Congo	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Côte d'Ivoire	...	...	...	...	1.0	1997	...	...	15	8.6	1989	...	...	...	15-49
Dem. Republic of Congo	...	...	...	...	9.0	1996	3	1996	...	...	...	...	...	...	...
Djibouti	...	...	...	...	...	...	...	...	15	3	1995	71.7	67.4	1995	15-49
Equatorial Guinea	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Eritrea	...	...	...	...	3.0	1996	...	...	29	9	1995	...	...	...	15-49
Ethiopia	...	...	...	...	0.9	1994	80	1994	18.2	5.2	1994	47.9	47.1	1994	15-49
Gabon	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Gambia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ghana	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Guinea	...	...	...	...	1.0	1996	1	1996	...	...	...	28	15	1992	15-49
Guinea-Bissau	...	...	...	...	...	...	...	...	50.3	29.5	1990	...	...	...	15+
Kenya	...	...	...	...	...	...	...	...	19	5	1998	42.5	15.1	1998	15-49
Lesotho	...	...	...	...	...	...	...	...	52.6	28.4	1989	...	...	...	15+
Liberia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madagascar	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Malawi	...	...	...	...	...	...	...	...	...	...	...	42.7	23.7	1996	15-49
Mali	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mauritania	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mauritius	1990	0	0	0	...	...	...	...	1.5a	...	1996	26.3a	...	1996	15-49
Mozambique	...	...	...	...	3.0	1997	...	...	37	14	1997	31	19	1997	15-49
Namibia	...	...	...	...	..	...	...	...	...	...	...	...	...	...	...
Niger	...	...	...	...	...	...	...	...	9.9	...	1998	1.9	...	1998	15-59
Nigeria	...	...	...	...	1.5	1994	...	...	18a	...	1990	7.5a	...	1994	15+
Reunion	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Rwanda	...	...	...	...	0.1	1997	...	...	...	...	...	...	...	...	...
Senegal	...	...	...	...	...	...	...	...	33u	10u	1997	67	45	1997	15-49
Sierra Leone	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Somalia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
South Africa	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Swaziland	...	...	...	...	...	...	...	...	19.2	6.1	1991	...	...	...	14+
Togo	...	...	...	...	...	...	...	...	18.4	...	1998	35.2	...	1998	15-64
Uganda	...	...	...	...	6.0	1997	50	1995	25.2	12.6	1995	64	49	1995	15-49
United Rep. of Tanzania	...	...	...	...	3.0	1996	3	1996	29.1	12.9	1996	34.8	17.2	1996	15-49
Zambia	...	...	...	...	...	...	...	...	39.3	16.8	1998	30.1	17.6	1998	15-49
Zimbabwe	...	...	...	...	15.0	1996	...	...	21	12	1994	60	38	1994	15-49
East Asia & Pacific															
China	1998	0	0	40.5	...	...	13u	1995	...	...	...	...	...	...	...
Hong Kong S.A.R.	1998	0	0	0	...	...	...	...	...	...	...	...	...	...	...
Dem. Peo. Rep. of Korea	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Fiji	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Japan	1993	0	0	0	...	...	...	...	23.7	16.3	1996	...	...	...	20-24
Mongolia	...	...	...	...	1.0	1996	...	...	...	...	...	...	...	...	...
Papua New Guinea	...	...	...	...	...	...	...	...	15	12	1994	38	12	1994	15-49
Republic of Korea	...	...	...	...	...	...	100	1996	...	...	...	...	...	...	...
Australia & New Zealand															
Australia	1996	1.7	1.7	1.7	...	...	100	1997	...	...	...	...	...	...	...
New Zealand	1997	0.4	0.3	0.5	...	...	...	...	...	...	...	...	...	...	...

	HIV/AIDS estimates								
	1. People living with HIV/AIDS, end 1999					2. AIDS orphans	3. AIDS deaths, 1999	4. Population, 1999	
Country	Adults and children	Adults (15-49)	Adult rate (%)	Women (15-49)	Children (0-14)	Orphans, cumulative	Adults and children	Total (thousands)	Adult (thousands)
South & South-East Asia	**5 600 000**	**5 400 000**	**0.54**	**1 900 000**	**200 000**	**850 000**	**460 000**	**1 920 326**	**993 466**
Afghanistan	…	<100	<0.01*	…	…	…	…	22 109	10 148
Bangladesh	13 000	13 000	0.02	1 900	130	610	1 000	127 047	68 021
Bhutan	<100	<100	<0.01	…	…	…	…	2 069	938
Brunei Darussalam	<100	<100	0.2*	…	…	…	…	321	178
Cambodia	220 000	210 000	4.04	71 000	5 400	13 000	14 000	10 931	5 253
India	3 700 000	3 500 000	0.70	1 300 000	160 000	…	310 000	997 663	509 007
Indonesia	52 000	52 000	0.05	13 000	680	2 000	3 100	209 178	113 960
Iran (Islamic Republic of)	…	1000*	<0.01*	…	…	…	…	66 626	34 486
Lao People's Dem. Rep	1 400	1 300	0.05	650	<100	280	130	5 301	2 402
Malaysia	49 000	48 000	0.42	4 800	550	680	1 900	21 817	11 449
Maldives	…	<100*	0.05*	…	…	…	…	279	131
Myanmar	530 000	510 000	1.99	180 000	14 000	43 000	48 000	45 064	25 768
Nepal	34 000	33 000	0.29	10 000	930	2 500	2 500	23 398	11 259
Pakistan	74 000	73 000	0.10	15 000	1 600	7 900	6 500	152 435	72 468
Philippines	28 000	26 000	0.07	11 000	1 300	1 500	1 200	74 444	38 428
Singapore	4 000	3 900	0.19	790	<100	120	210	3 518	2 027
Sri Lanka	7 500	7 300	0.07	2 200	200	600	490	18 646	10 367
Thailand	755 000	740 000	2.15	305 000	13 900	75 000	66 000	60 841	35 166
Viet Nam	100 000	99 000	0.24	20 000	2 500	3 200	2 500	78 639	42 009
Eastern Europe & Central Asia	**420 000**	**410 000**	**0.21**	**110 000**	**15 000**	**500**	**8 500**	**391 537**	**195 811**
Armenia	<500	<500	0.01	<100	<100	…	<100	3 531	1 910
Azerbaijan	<500	<500	<0.01	<100	<100	…	<100	7 700	4 158
Belarus	14 000	14 000	0.28	3 500	<100	…	400	10 267	5 068
Bosnia and Herzegovina	…	750*	0.04*	…	…	…	<100	3 861	2 117
Bulgaria	…	300*	0.01*	…	…	…	<100	8 280	3 971
Croatia	350	350*	0.02*	<100	<100	…	<100	4 477	2 153
Czech Republic	2 200	2 200	0.04	500	<100	…	<100	10 260	5 079
Estonia	<500	<500	0.04	<100	<100	…	<100	1 414	679
Georgia	<500	<500	<0.01	<100	<100	…	<100	5 024	2 457
Hungary	2 500	2 500	0.05	270	<100	…	<100	10 074	4 852
Kazakstan	3 500	3 500	0.04	<100	<100	…	<100	16 280	8 479
Kyrgyzstan	<100	<100	<0.01	<100	<100	…	<100	4 673	2 340
Latvia	1 250	1 200	0.11	250	<100	…	<100	2 393	1 126
Lithuania	<500	<500	0.02	<100	<100	…	<100	3 681	1 777
Poland	…	13 000	0.07	…	…	…	<100	38 734	19 871
Republic of Moldova	4 500	4 500	0.20	1 000	100	…	<100	4 379	2 262
Romania	7 000	2 000	0.02	750	5 000	…	350	22 408	11 423
Russian Federation	130 000	130 000	0.18	32 500	1 800	…	850	147 167	73 907
Slovakia	400	400	<0.01	<100	<100	…	<100	5 381	2 797
Tajikistan	<100	<100	<0.01	<100	<100	…	<100	6 100	2 959
Turkmenistan	<100	<100	0.01	<100	<100	…	<100	4 383	2 226
Ukraine	240 000	230 000	0.96	70 000	7 500	…	4 000	50 651	23 999
Uzbekistan	<100	<100	<0.01	<100	<100	…	<100	23 950	12 114
Western Europe	**520 000**	**520 000**	**0.23**	**130 000**	**4 100**	**9 000**	**6 800**	**401 691**	**192 558**
Albania	…	<100	<0.01	…	…	…	<100	3 126	1 662
Austria	9 000	9 000	0.23	2 000	<100	…	<100	8 169	3 965
Belgium	7 700	7 400	0.15	2 600	300	…	<100	10 146	4 801
Denmark	4 300	4 300	0.17	900	<100	…	<100	5 279	2 469
Finland	1 100	1 100	0.05	300	<100	…	<100	5 162	2 401
France	130 000	130 000	0.44	35 000	1 000	…	2000	58 868	28 245
Germany	37 000	37 000	0.10	7 400	500	…	600	82 108	38 328
Greece	8 000	8 000	0.16	1 600	<100	…	<100	10 614	5 122
Iceland	200	200	0.14	<100	<100	…	<100	278	142
Ireland	2 200	2 000	0.10	600	170	…	<100	3 706	1 924
Italy	95 000	95 000	0.35	30 000	700	…	1000	57 306	27 083
Luxembourg	…	330	0.16	…	…	…	<100	426	209
Malta	…	220	0.12	…	…	…	<100	386	191
Netherlands	15 000	15 000	0.19	3 000	100	…	100	15 721	7 794
Norway	1 600	1 600	0.07	360	<100	…	<100	4 442	2 092

	5. Ranges of uncertainty around estimates						6. Estimated HIV prevalence rate (%) in young people, end 1999			
	Adults and children living with HIV/AIDS, end 1999		Deaths in adults (15-49), 1999		Deaths in children (0-14), 1999		Females (15-24)		Males (15-24)	
Country	*Low Estimate*	*High Estimate*	*Low Estimate*	*High Estimate*	*Low Estimate*	*High Estimate*	*from*	*to*	*from*	*to*
South & South-East Asia	**3 600 000**	**6 600 000**	**270 000**	**500 000**	**29 000**	**54 000**				
Afghanistan	…	…	…	…	…	…	…	…	…	…
Bangladesh	9 200	16 000	680	1 200	<100	<100	<0.01	0.01	<0.01	0.02
Bhutan	<100	<100	…	…	…	…	…	…	…	…
Brunei Darussalam	<100	<100	…	…	…	…	…	…	…	…
Cambodia	170 000	260 000	9 500	14 000	1 900	2 900	2.31	4.70	0.94	3.77
India	2 100 000	4 300 000	160 000	340 000	16 000	33 000	0.40	0.82	0.14	0.58
Indonesia	42 000	63 000	2 200	3 400	240	360	0.02	0.04	0.01	0.04
Iran (Islamic Republic of)	…	…	…	…	…	…	…	…	…	…
Lao People's Dem. Rep	1 000	1 800	<100	110	<100	<100	0.05	0.05	0.02	0.05
Malaysia	39 000	59 000	1 300	2 400	<100	110	0.08	0.10	0.32	0.82
Maldives	…	…	…	…	…	…	…	…	…	…
Myanmar	420 000	630 000	34 000	50 000	4800	7400	1.13	2.30	0.42	1.67
Nepal	22 000	45 000	1 400	2 900	260	550	0.13	0.26	0.06	0.23
Pakistan	48 000	100 000	3 800	7 900	450	970	0.03	0.06	0.02	0.10
Philippines	22 000	33 000	800	1 200	150	230	0.04	0.08	0.01	0.05
Singapore	3 200	4 800	160	240	<100	<100	0.10	0.21	0.09	0.35
Sri Lanka	6 000	9 000	370	550	<100	<100	0.03	0.07	0.02	0.07
Thailand	620 000	930 000	48 000	72 000	4700	7300	1.53	3.11	0.47	1.89
Viet Nam	81 000	120 000	2 200	3 200	300	460	0.09	0.10	0.15	0.38
Eastern Europe & Central Asia	**310 000**	**530 000**	**4 100**	**7 200**	…	…				
Armenia	200	300	<100	<100	…	…	…	…	…	…
Azerbaijan	180	320	<100	<100	…	…	…	…	…	…
Belarus	9 100	19 000	260	540	…	…	0.14	0.23	0.29	0.51
Bosnia and Herzegovina	…	…	<100	<100	…	…	…	…	…	…
Bulgaria	…	…	<100	<100	…	…	…	…	…	…
Croatia	230	470	<100	<100	…	…	0.01	0.01	0.02	0.03
Czech Republic	1 800	2 600	<100	<100	…	…	0.03	0.03	0.05	0.07
Estonia	180	320	<100	<100	…	…	…	…	…	…
Georgia	160	340	<100	<100	…	…	…	…	…	…
Hungary	1 800	3 200	<100	<100	…	…	0.01	0.02	0.07	0.10
Kazakstan	2 500	4 500	<100	<100	…	…	…	…	0.05	0.09
Kyrgyzstan	<100	<100	<100	<100	…	…	…	…	…	…
Latvia	1 000	1 500	<100	<100	…	…	0.05	0.08	0.13	0.22
Lithuania	160	340	<100	<100	…	…	…	…	…	…
Poland	…	…	…	…	…	…	…	…	…	…
Republic of Moldova	2 900	6 100	<100	<100	…	…	0.08	0.14	0.20	0.35
Romania	4 600	9 500	230	470	…	…	0.02	0.02	0.02	0.02
Russian Federation	100 000	160 000	680	1 000	…	…	0.09	0.15	0.19	0.32
Slovakia	320	480	<100	<100	…	…	0.01	0.01	0.02	0.02
Tajikistan	<100	<100	<100	<100	…	…	…	…	…	…
Turkmenistan	<100	<100	<100	<100	…	…	…	…	…	…
Ukraine	170 000	310 000	2 900	5 100	…	…	0.60	0.98	0.95	1.63
Uzbekistan	<100	<100	<100	<100	…	…	…	…	…	…
Western Europe	**410 000**	**620 000**	**5 300**	**7 900**	…	…				
Albania	…	…	<100	<100	…	…	…	…	…	…
Austria	7 200	11 000	<100	<100	…	…	0.07	0.13	0.10	0.29
Belgium	6 200	9 200	<100	<100	…	…	0.07	0.14	0.05	0.16
Denmark	3 400	5 200	<100	<100	…	…	0.05	0.10	0.08	0.24
Finland	890	1 300	<100	<100	…	…	0.02	0.03	0.02	0.05
France	100 000	150 000	1 600	2 400	…	…	0.15	0.30	0.16	0.49
Germany	30 000	44 000	480	720	…	…	0.03	0.05	0.05	0.14
Greece	6 400	9 600	<100	<100	…	…	0.04	0.07	0.06	0.18
Iceland	160	240	<100	<100	…	…	0.04	0.08	0.05	0.15
Ireland	1 800	2 600	<100	<100	…	…	0.03	0.06	0.03	0.09
Italy	76 000	110 000	800	1 200	…	…	0.16	0.31	0.14	0.43
Luxembourg	…	…	<100	<100	…	…	…	…	…	…
Malta	…	…	<100	<100	…	…	…	…	…	…
Netherlands	12 000	18 000	80	120	…	…	0.06	0.11	0.09	0.27
Norway	1 200	1 900	<100	<100	…	…	0.02	0.04	0.03	0.09

	7. HIV prevalence rate (%), data from selected populations															
	Women in antenatal care clinics – major urban areas				Women in antenatal care clinics – outside major urban areas				Male STI patients – major urban areas				Female sex workers – major urban areas			
Country	Year	Median	Min.	Max.	Year	Median	Min.	Max.	Year	Median	Min.	Max.	Year	Median	Min.	Max.
South & South-East Asia																
Afghanistan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Bangladesh	…	…	…	…	1989	0	0	0	1998	0.2	0	0.3	1998	0.3	0	0.6
Bhutan	…	…	…	…	1993	0	0	0	…	…	…	…	…	…	…	…
Brunei Darussalam	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Cambodia	1998	3.8	3.8	3.8	1998	2.3	0.2	5.9	1994	8.5	8.5	8.5	1998	61.3	61.3	61.3
India	1999	2	0	3.3	1999	0.3	0	6.5	1999	3.6	0.8	64.4	1998	5.3	5.3	5.3
Indonesia	…	…	…	…	1996	0	0	0	…	…	…	…	1998	0.2	0.2	0.2
Iran (Islamic Republic of)	1993	0	0	0	1994	0	0	0	1994	0	0	0	1994	0r	0	0
Lao People's Dem. Rep	1996	0.4	0.4	0.4	…	…	…	…	…	…	…	…	1992	1.2	1.2	1.2
Malaysia	1998	0.03	0.01	0.04	1996	0.05	0	0.8	1998	2	1	5	1998	3	1.5	5.8
Maldives	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Myanmar	1997	0.65	0	1.3	1997	1.5	0	4.8	1997	13.2	6.9	19.5	1997	25.5	17.5	33.5
Nepal	1992	0	0	0	1992	0	0	0	1997	5.0	0	9.9	1998	15.4	9.3	21.4
Pakistan	1995	0	0	0.6	1999	0	0	0	1995	2.0	0.2	3.7	…	…	…	…
Philippines	…	…	…	…	…	…	…	…	1994	0	0	0	1998	0.07n	…	…
Singapore	…	…	…	…	…	…	…	…	1998	1.3n	…	…	1996	0.09n	…	…
Sri Lanka	1996	0	0	0	1996	0	0	0	1998	0.05	0	0.1	1998	0.0	0	0
Thailand	1997	1.28	1.28	1.28	1997	1.71	0	5.5	1997	6.8	6.8	6.8	1997	13.0	13.0	13.0
Viet Nam	1999	0.17	0.14	0.2	1999	0	0	0.25	1999	2.0	1.0	5.5	1999	4.9	2.6	6
Eastern Europe & Central Asia																
Armenia	1998	0.13	0.06	0.19	1998	0	0	0	1998	0	0	0	…	…	…	…
Azerbaijan	…	…	…	…	…	…	…	…	1995	0n	…	…	…	…	…	…
Belarus	…	…	…	…	1996	0.04n	…	…	1996	0.04n	…	…	…	…	…	…
Bosnia and Herzegovina	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Bulgaria	…	…	…	…	1997	0.01n	…	…	1997	0.09n	…	…	…	…	…	…
Croatia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Czech Republic	…	…	…	…	1996	0.005n	…	…	1996	0n	…	…	…	…	…	…
Estonia	…	…	…	…	…	…	…	…	1996	0.03n	…	…	…	…	…	…
Georgia	1997	0	0	0	…	…	…	…	…	…	…	…	…	…	…	…
Hungary	…	…	…	…	1996	0n	…	…	…	…	…	…	…	…	…	…
Kazakstan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Kyrgyzstan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Latvia	…	…	…	…	1996	0.06n	…	…	1996	0.05n	…	…	1998	11.0	…	…
Lithuania	1996	0	0	0	1993	0n	…	…	1996	0.01	…	…	…	…	…	…
Poland	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Republic of Moldova	…	…	…	…	1995	0n	…	…	1996	0.04n	…	…	…	…	…	…
Romania	…	…	…	…	…	…	…	…	1996	0.5	…	…	…	…	…	…
Russian Federation	…	…	…	…	1998	0.005n	…	…	1998	0.02n	…	…	…	…	…	…
Slovakia	…	…	…	…	1995	0n	…	…	1996	0n	…	…	…	…	…	…
Tajikistan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Turkmenistan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Ukraine	1996	0.15	0	0.24	1996	0.05n	…	…	1996	13.3	0.5	22.7	1995	0n	…	…
Uzbekistan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Western Europe																
Albania	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Austria	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Belgium	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Denmark	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Finland	1994	0	0	0	1996	0.01n	…	…	1996	0.05	…	…	…	…	…	…
France	1994	0.4	0	0.49	…	…	…	…	1993	4.2	3.7	8	1991	2.3	…	…
Germany	1997	0.06	…	…	1997	0.01	…	…	…	…	…	…	…	…	…	…
Greece	…	…	…	…	…	…	…	…	…	…	…	…	1991	0	…	…
Iceland	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Ireland	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Italy	1992	0.15	…	…	1993	0.1n	…	…	1992	11n	…	…	…	…	…	…
Luxembourg	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Malta	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Netherlands	1996	0.33	0	0.6	…	…	…	…	1996	3.3	…	…	1991	1.5	1.5	2.3
Norway	…	…	…	…	1996	0.01n	…	…	1992	0.07	…	…	…	…	…	…

	7. HIV prevalence (%) (cont.)				8. Prevention indicators										
	Injecting drug users – major urban areas				Condom availability				Reported non-regular sexual partnerships (%)			Reported condom use with non-regular partner (%)			
Country	Year	Median	Min.	Max.	Condoms available per capita	Year	Condom access (%)	Year	Male	Female	Year	Male	Female	Year	Age range
South & South-East Asia															
Afghanistan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Bangladesh	1998	2.5	2.5	2.5	…	…	…	…	…	…	…	…	…	…	…
Bhutan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Brunei Darussalam	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Cambodia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
India	1999	24.5	1.3	68.4	…	…	…	…	…	…	…	…	…	…	…
Indonesia	…	…	…	…	5.0	1997	…	…	…	…	…	…	…	…	…
Iran (Islamic Republic of)	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Lao People's Dem. Rep	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Malaysia	1998	18	15	20	…	…	…	…	…	…	…	…	…	…	…
Maldives	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Myanmar	1997	69	65.5	72.5	…	…	…	…	…	…	…	…	…	…	…
Nepal	1997	49.7	49.7	49.7	2.0	1997	80	1997	…	…	…	…	…	…	…
Pakistan	1996	1.1	0.4	1.8	…	…	…	…	…	…	…	…	…	…	…
Philippines	1994	0	0	0	…	…	…	…	16.1	1.3	1990	…	…	…	15-49
Singapore	1994	0.2	0.2	0.2	…	…	…	…	16.2	1	1991	…	…	…	15-49
Sri Lanka	…	…	…	…	1.0	1997	…	…	4.5	0.6	1997	44.4	…	1997	15-49
Thailand	1997	33.1	33.1	33.1	…	…	…	…	7.4	3.1	1990	…	…	…	15-49
Viet Nam	1999	26.9	13.5	64.0	…	…	…	…	12a	…	1995	30a	…	1995	15-49
Eastern Europe & Central Asia															
Armenia	1998	6.25	6.25	6.25	…	…	…	…	…	…	…	…	…	…	…
Azerbaijan	1995	0n	…	…	…	…	…	…	…	…	…	…	…	…	…
Belarus	1996	6.7n	…	…	…	…	…	…	…	…	…	…	…	…	…
Bosnia and Herzegovina	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Bulgaria	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Croatia	1996	0n	…	…	…	…	100	1997	…	…	…	…	…	…	…
Czech Republic	1996	0n	…	…	5.1	1997	…	…	30.5	21.7	1994	41.3	35	1994	15+
Estonia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Georgia	…	…	…	…	…	…	…	…	51.6u	0.8u	1997	79.1u	…	1997	15-19
Hungary	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Kazakstan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Kyrgyzstan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Latvia	1997	0n	…	…	…	…	…	…	20	10	1997	69	66.3	1997	15-49
Lithuania	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Poland	1996	5n	…	…	0.4	1996	…	…	…	…	…	…	…	…	…
Republic of Moldova	1996	1.1n	…	…	…	…	…	…	…	…	…	…	…	…	…
Romania	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Russian Federation	1998	0.4n	…	…	…	…	…	…	…	…	…	…	…	…	…
Slovakia	1996	0n	…	…	…	…	100	1996	…	…	…	…	…	…	…
Tajikistan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Turkmenistan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Ukraine	1998	8.6n	…	…	…	…	…	…	…	…	…	…	…	…	…
Uzbekistan	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Western Europe															
Albania	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Austria	1990	27	13.5	44	…	…	…	…	…	…	…	38a	…	1992	15-49
Belgium	1989	4	4	4	…	…	…	…	…	…	…	…	…	…	…
Denmark	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Finland	1995	0.1n	…	…	…	…	…	…	…	…	…	…	…	…	…
France	1990	3	…	…	5.3	1996	…	…	13.3	5.6	1990	64.7	50.2	1993	18-69
Germany	…	…	…	…	…	…	100	1997	12	5	1990	…	…	…	16-74
Greece	1995	0.4	…	…	…	…	…	…	22.1	5.8	1990	…	…	…	15+
Iceland	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Ireland	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Italy	1993	33.6	7	36.8	…	…	…	…	…	…	…	…	…	…	…
Luxembourg	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Malta	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Netherlands	1996	5.1	…	…	…	…	…	…	18	7	1989	…	…	…	18-50
Norway	…	…	…	…	4.3	1995	100	1997	14.5	8.8	1992	8.4	5.3	1992	15-49

	HIV/AIDS estimates								
	1. People living with HIV/AIDS, end 1999					2. AIDS orphans	3. AIDS deaths, 1999	4. Population, 1999	
Country	Adults and children	Adults (15-49)	Adult rate (%)	Women (15-49)	Children (0-14)	Orphans, cumulative	Adults and children	Total (thousands)	Adult (thousands)
Portugal	36 000	36 000	0.74	7 000	500	…	280	9 871	4 872
Slovenia	200	200	0.02	<100	<100	…	<100	1 987	1 008
Spain	120 000	120 000	0.58	25 000	<100	…	2000	39 634	20 779
Sweden	3 000	3 000	0.08	800	<100	…	<100	8 888	3 925
Switzerland	17 000	17 000	0.46	5 500	<100	…	150	7 337	3 582
TFYR Macedonia	<100	<100	<0.01	<100	<100	…	<100	2 012	1 034
United Kingdom	31 000	30 000	0.11	6 700	500	…	450	58 726	27 390
Yugoslavia	…	5000*	0.10*	…	…	…	…	10 625	5 202
North Africa & Middle East	**220 000**	**210 000**	**0.12**	**42 000**	**8 000**	**15 000**	**13 000**	**336 496**	**171 943**
Algeria	…	11 000*	0.07*	…	…	…	…	30 788	15 998
Bahrain	…	500*	0.15*	…	…	…	…	605	337
Cyprus	400	400	0.10	<100	<100	…	<100	778	382
Egypt	…	8 100*	0.02*	…	…	…	…	67 232	34 342
Iraq	…	300*	<0.01*	…	…	…	…	22 511	10 850
Israel	2 400	2 400	0.08	700	<100	…	<100	6 087	3 024
Jordan	…	660*	0.02*	…	…	…	…	6 482	3 120
Kuwait	…	1300*	0.12*	…	…	…	…	1 916	1 051
Lebanon	…	1500*	0.09*	…	…	…	…	3 227	1 729
Libyan Arab Jamahiriya	…	1400*	0.05*	…	…	…	…	5 477	2 790
Morocco	…	5000*	0.03*	…	…	…	…	27 874	15 147
Oman	…	1200*	0.11*	…	…	…	…	2 465	1 094
Qatar	…	300*	0.09*	…	…	…	…	589	308
Saudi Arabia	…	1100*	0.01*	…	…	…	…	20 936	9 539
Sudan	…	140 000	0.99*	…	…	…	…	28 915	14 226
Syrian Arab Republic	…	800*	0.01*	…	…	…	…	15 740	7 766
Tunisia	…	2200*	0.04*	…	…	…	…	9 457	5 179
Turkey	…	2500*	0.01*	…	…	…	…	65 528	36 198
United Arab Emirates	…	2300*	0.18*	…	…	…	…	2 395	1 250
Yemen	…	900*	0.01*	…	…	…	…	17 494	7 613
North America	**900 000**	**890 000**	**0.58**	**180 000**	**11 000**	**70 000**	**20 000**	**306 931**	**153 738**
Canada	49 000	49 000	0.30	5 600	500	1 000	400	30 841	15 969
United States of America	850 000	840 000	0.61	170 000	10 000	70 000	20 000	276 090	137 769
Caribbean	**360 000**	**350 000**	**2.11**	**130 000**	**9 600**	**85 000**	**30 000**	**32 024**	**16 860**
Bahamas	6 900	6 800	4.13	2 200	150	970	500	302	164
Barbados	1 800	1 700	1.17	570	<100	190	130	269	147
Cuba	1 950	1 950	0.03	450	<100	190	120	11 154	6 076
Dominican Republic	130 000	130 000	2.80	59 000	3 800	7 900	4 900	8 361	4 468
Haiti	210 000	200 000	5.17	67 000	5 200	74 000	23 000	8 090	3 917
Jamaica	9 900	9 700	0.71	3 100	230	1 200	650	2 561	1 366
Trinidad and Tobago	7 800	7 600	1.05	2 500	180	930	530	1 288	722
Latin America	**1 300 000**	**1 200 000**	**0.49**	**300 000**	**28 000**	**110 000**	**48 000**	**473 388**	**252 270**
Argentina	130 000	120 000	0.69	27 000	4 400	8 900	1 800	36 579	17 880
Belize	2 400	2 400	2.01	590	<100	420	170	235	117
Bolivia	4 200	4 100	0.10	680	<100	260	380	8 146	3 943
Brazil	540 000	530 000	0.57	130 000	9 900	41 000	18 000	167 961	93 252
Chile	15 000	15 000	0.19	2 600	260	770	1 000	15 011	7 833
Colombia	71 000	70 000	0.31	10 000	900	2 800	1 700	41 565	22 412
Costa Rica	12 000	11 000	0.54	2 800	290	1 300	750	3 929	2 080
Ecuador	19 000	19 000	0.29	2 700	330	1 500	1 400	12 409	6 534
El Salvador	20 000	19 000	0.60	4 800	560	2 600	1 300	6 155	3 170
Guatemala	73 000	71 000	1.38	28 000	1 600	5 200	3 600	11 103	5 152
Guyana	15 000	15 000	3.01	4 900	140	1 100	900	855	489
Honduras	63 000	58 000	1.92	29 000	4 400	19 000	4 200	6 319	3 043
Mexico	150 000	150 000	0.29	22 000	2 400	14 000	4 700	97 334	52 327
Nicaragua	4 900	4 800	0.20	1 200	<100	520	360	4 944	2 388
Panama	24 000	23 000	1.54	9 400	670	2 100	1 200	2 811	1 499
Paraguay	3 000	2 900	0.11	520	<100	400	220	5 362	2 649
Peru	48 000	47 000	0.35	12 000	640	8 900	4 100	25 236	13 325
Suriname	3 000	2 900	1.26	950	110	480	210	415	228
Uruguay	6 000	5 900	0.33	1 500	<100	330	150	3 313	1 561
Venezuela	62 000	61 000	0.49	9 200	580	1 100	2 000	23 705	12 388
Global Total	**34 300 000**	**33 000 000**	**1.07**	**15 700 000**	**1 300 000**	**13 200 000**	**2 800 000**	**5 958 865**	**3 083 265**

	5. Ranges of uncertainty around estimates						6. Estimated HIV prevalence rate (%) in young people, end 1999			
	Adults and children living with HIV/AIDS, end 1999		Deaths in adults (15-49), 1999		Deaths in children (0-14), 1999		Females (15-24)		Males (15-24)	
Country	***Low Estimate***	***High Estimate***	***Low Estimate***	***High Estimate***	***Low Estimate***	***High Estimate***	***from***	***to***	***from***	***to***
Portugal	29 000	43 000	220	340	…	…	0.17	0.33	0.29	0.86
Slovenia	130	270	<100	<100	…	…	0.01	0.01	0.03	0.04
Spain	96 000	140 000	1 600	2 400	…	…	0.15	0.30	0.24	0.71
Sweden	2 400	3 600	<100	<100	…	…	0.03	0.05	0.03	0.09
Switzerland	13 000	20 000	120	180	…	…	0.22	0.43	0.18	0.55
TFYR Macedonia	<100	<100	<100	<100	…	…	…	…	…	…
United Kingdom	24 000	37 000	360	540	…	…	0.03	0.06	0.05	0.14
Yugoslavia	3 300	6 800	…	…	…	…	…	…	…	…
North Africa & Middle East	**140 000**	**300 000**	**7 800**	**16 000**	**650**	**1400**				
Algeria	…	…	…	…	…	…	…	…	…	…
Bahrain	…	…	…	…	…	…	…	…	…	…
Cyprus	290	510	<100	<100	<100	<100	0.06	0.08	0.08	0.12
Egypt	…	…	…	…	…	…	…	…	…	…
Iraq	…	…	…	…	…	…	…	…	…	…
Israel	1 900	2 900	<100	<100	<100	<100	0.05	0.06	0.05	0.07
Jordan	…	…	…	…	…	…	…	…	…	…
Kuwait	…	…	…	…	…	…	…	…	…	…
Lebanon	…	…	…	…	…	…	…	…	…	…
Libyan Arab Jamahiriya	…	…	…	…	…	…	…	…	…	…
Morocco	…	…	…	…	…	…	…	…	…	…
Oman	…	…	…	…	…	…	…	…	…	…
Qatar	…	…	…	…	…	…	…	…	…	…
Saudi Arabia	…	…	…	…	…	…	…	…	…	…
Sudan	…	…	…	…	…	…	…	…	…	…
Syrian Arab Republic	…	…	…	…	…	…	…	…	…	…
Tunisia	…	…	…	…	…	…	…	…	…	…
Turkey	…	…	…	…	…	…	…	…	…	…
United Arab Emirates	…	…	…	…	…	…	…	…	…	…
Yemen	…	…	…	…	…	…	…	…	…	…
North America	**720 000**	**1 100 000**	**16 000**	**24 000**	**250**	**380**				
Canada	39 000	59 000	320	480	<100	<100	0.05	0.09	0.15	0.44
United States of America	680 000	1 000 000	16 000	24 000	250	380	0.16	0.30	0.25	0.75
Caribbean	**260 000**	**470 000**	**18 000**	**35 000**	**2000**	**3800**				
Bahamas	4 500	9 300	320	650	<100	<100	2.41	2.93	3.15	4.55
Barbados	1 200	2 400	<100	170	<100	<100	0.76	0.92	0.99	1.43
Cuba	1 300	2 600	<100	130	<100	<100	0.02	0.03	0.05	0.07
Dominican Republic	100 000	150 000	3 500	5 200	470	710	2.44	3.11	2.08	3.08
Haiti	130 000	280 000	13 000	28 000	1400	3000	2.56	3.26	3.94	5.83
Jamaica	7 900	12 000	500	750	<100	<100	0.36	0.44	0.48	0.70
Trinidad and Tobago	5 100	10 000	330	690	<100	<100	0.53	0.64	0.69	1.00
Latin America	**950 000**	**1 600 000**	**35 000**	**60 000**	**2600**	**4600**				
Argentina	100 000	150 000	1 700	2 500	<100	120	0.23	0.34	0.68	1.04
Belize	1 600	3 300	100	220	<100	<100	0.77	0.98	1.75	2.59
Bolivia	2 700	5 600	240	490	<100	<100	0.03	0.04	0.10	0.15
Brazil	430 000	650 000	14 000	21 000	800	1200	0.23	0.33	0.55	0.84
Chile	9 700	20 000	630	1 300	<100	<100	0.06	0.09	0.23	0.35
Colombia	46 000	96 000	1 500	3 100	<100	160	0.08	0.12	0.35	0.53
Costa Rica	7 500	16 000	460	970	<100	<100	0.22	0.33	0.51	0.78
Ecuador	12 000	26 000	850	1 800	<100	<100	0.06	0.09	0.29	0.45
El Salvador	13 000	27 000	800	1 700	<100	<100	0.24	0.31	0.55	0.81
Guatemala	47 000	98 000	1 800	3 800	460	970	0.81	1.03	0.93	1.38
Guyana	9 700	20 000	550	1 100	<100	<100	2.03	2.58	3.12	4.62
Honduras	50 000	75 000	2 900	4 400	450	680	1.46	1.86	1.13	1.68
Mexico	110 000	190 000	4 200	7 400	210	380	0.05	0.08	0.33	0.48
Nicaragua	3 200	6 600	220	450	<100	<100	0.05	0.08	0.17	0.26
Panama	17 000	30 000	830	1 500	<100	120	1.20	1.52	1.33	1.97
Paraguay	2 000	4 100	140	290	<100	<100	0.03	0.04	0.11	0.16
Peru	35 000	61 000	2 800	4 800	200	360	0.14	0.21	0.31	0.48
Suriname	1 900	4 000	130	270	<100	<100	0.70	0.89	1.07	1.59
Uruguay	4 200	6 300	150	230	<100	<100	0.17	0.25	0.33	0.49
Venezuela	40 000	83 000	1 200	2 600	<100	120	0.12	0.17	0.52	0.79
Global Total	**25 800 000**	**41 800 000**	**1 600 000**	**2 900 000**	**330 000**	**670 000**				

	7. HIV prevalence rate (%), data from selected populations															
	Women in antenatal care clinics – major urban areas				Women in antenatal care clinics – outside major urban areas				Male STI patients – major urban areas				Female sex workers – major urban areas			
Country	Year	Median	Min.	Max.	Year	Median	Min.	Max.	Year	Median	Min.	Max.	Year	Median	Min.	Max.
Portugal	1995	0.2	…	…	…	…	…	…	1992	5.78	…	…	1991	3.9	…	…
Slovenia	…	…	…	…	1995	0n	…	…	1996	0n	…	…	…	…	…	…
Spain	1997	0.13	0.1	0.15	1996	0.15n	…	…	1995	5.8n	0.7	7.8	1995	2n	…	…
Sweden	…	…	…	…	1995	0.01n	…	…	1991	0.17n	…	…	…	…	…	…
Switzerland	…	…	…	…	…	…	…	…	1997	1.8	0	10.3	…	…	…	…
TFYR Macedonia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
United Kingdom	1997	0.19	0	0.51	1997	0.02	0	0.1	1997	0.72	…	…	1991	0	…	…
Yugoslavia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
North Africa & Middle East																
Algeria	…	…	…	…	…	…	…	…	…	…	…	…	1988	1.2	0.4	1.9
Bahrain	1998	0.1	0	0.2	…	…	…	…	1998	0	0	0	…	…	…	…
Cyprus	…	…	…	…	1999	0	0	0	…	…	…	…	…	…	…	…
Egypt	1996	0	0	0	1993	0	0	0	1999	0	0	0	1999	0	0	0
Iraq	…	…	…	…	1999	0	0	0	…	…	…	…	…	…	…	…
Israel	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Jordan	1994	0n	0	0	1994	0	0	0	1994	0	0	0	1994	0	0	0
Kuwait	1998	0	0	0	1999	0	0	0	1997	0	0	0	…	…	…	…
Lebanon	…	…	…	…	1995	0	0	0	1993	0	0	0	1993	0.09	0.09	0.09
Libyan Arab Jamahiriya	…	…	…	…	1998	0	0	0	1990	0	0	0	…	…	…	…
Morocco	1996	0.02n	0.02	0.02	1997	0	0	0.01	1997	0.9	0.2	1.6	…	…	…	…
Oman	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Qatar	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Saudi Arabia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Sudan	1998	0.5	0.5	0.5	1998	3.8	3.5	4	1994	6.6	6.6	6.6	…	…	…	…
Syrian Arab Republic	1994	0	0	0	…	…	…	…	1999	0	0	0	1999	0	0	0
Tunisia	1991	0	0	0	1999	0	0	0	…	…	…	…	1999	0	0	0
Turkey	…	…	…	…	…	…	…	…	1992	0.13	…	…	1995	0n	…	…
United Arab Emirates	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Yemen	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
North America																
Canada	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
United States of America	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Caribbean																
Bahamas	1993	3.6	3.6	3.6	…	…	…	…	…	…	…	…	…	…	…	…
Barbados	1996	1.1	1.1	1.1	…	…	…	…	1988	4.7	4.7	4.7	…	…	…	…
Cuba	1996	0	0	0	…	…	…	…	…	…	…	…	…	…	…	…
Dominican Republic	1998	1.4	1.4	1.4	1998	2.1	0.3	2.2	1998	3.3	3.3	3.3	1998	2.4	1.1	6.5
Haiti	1996	10	10	10	1996	4.8	4	13.1	1992	19.2	13.0	25.4	1989	41.9	41.9	41.9
Jamaica	1997	1	1	1	…	…	…	…	1997	6.6	5.6	7.5	1997	5	5	5
Trinidad and Tobago	1996	1	1	1	…	…	…	…	1996	5.8	5.8	5.8	1988	13	13	13
Latin America																
Argentina	1995	1.8	0.8	2.8	1999	0.24	0.05	1.21	1998	10.8	10.8	10.8	1998	2.6	0.6	6.0
Belize	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Bolivia	1997	0.5	0.5	0.5	1988	0	0	0	1997	2	2	2	1997	0	0	0
Brazil	1996	0.7	0.6	2.6	1998	0.4	0.4	0.4	1996	1.4	1	1.9	1998	17.8	17.8	17.8
Chile	1997	0.1	0.1	0.1	1997	0	0	0	1997	3	3	3	…	…	…	…
Colombia	1994	0.5	0.1	1.1	1999	0.1	0.05	0.15	1999	0.26	0.05	0.26	1994	1.1	1.1	1.1
Costa Rica	1997	0.3	0.3	0.3	1997	0.1	0.1	0.1	1994	3.1	3.1	3.1	1995	0.9	0.9	0.9
Ecuador	…	…	…	…	1992	0.3	0.3	0.3	…	…	…	…	1990	0	0	0
El Salvador	1995	0	0	0	…	…	…	…	…	…	…	…	1991	2.2	2.2	2.2
Guatemala	1999	2.9	2	3.8	1999	1.9	1	2.8	…	…	…	…	1999	6.8	2.6	11
Guyana	1997	3.8	3.8	3.8	…	…	…	…	1997	21.5	17.9	25	1997	44.3	43.5	45
Honduras	1998	2.9	0.7	5	1998	3	3	3	…	…	…	…	1997	13.3	13	13.5
Mexico	1996	0	0	0	1998	0.36	0	8.7	…	…	…	…	1998	0.6	0	3.05
Nicaragua	…	…	…	…	…	…	…	…	…	…	…	…	1999	0.8n	…	…
Panama	1994	0.3	0.3	0.3	1997	0.9	0.9	0.9	…	…	…	…	1986	0	0	0
Paraguay	1992	0	0	0	…	…	…	…	…	…	…	…	1989	0.1	0.1	0.1
Peru	1999	0.3n	…	…	1999	0.04n	…	…	1990	18.7	18.7	18.7	1990	0.7	0.7	0.7
Suriname	1991	0.8	0.8	0.8	…	…	…	…	…	…	…	…	1990	2.6	2.6	2.6
Uruguay	1991	0	0	0	1991	0	0	0	1991	1.3	1.3	1.3	1997	0.5	0.5	0.5
Venezuela	1996	0	0	0	1996	0	0	0	…	…	…	…	1994	0	0	0
Global Total																

	7. HIV prevalence (%) (cont.)				8. Prevention indicators										
	Injecting drug users – major urban areas				Condom availability				Reported non-regular sexual partnerships (%)			Reported condom use with non-regular partner (%)			
Country	Year	Median	Min.	Max.	Condoms available per capita	Year	Condom access (%)	Year	Male	Female	Year	Male	Female	Year	Age range
Portugal	1996	15.2	…	…	…	…	…	…	…	…	…	…	…	…	…
Slovenia	1996	0.6	…	…	…	…	…	…	12.4	6.2	1996	16.9	17.9	1996	15-45
Spain	1996	31	…	…	8.5	1996	…	…	18	4.8	1995	49.4	33	1995	15-49
Sweden	1995	5.3	…	…	…	…	…	…	13	7	1989	…	…	…	16-44
Switzerland	1997	1.4	0	16.7	…	…	…	…	15.9	8.1	1994	56.7	36.9	1994	17-45
TFYR Macedonia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
United Kingdom	1997	3.4	…	…	5.5	1995	100	1997	26.9	6.8	1991	23.2	17.5	1991	16-49
Yugoslavia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
North Africa & Middle East															
Algeria	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Bahrain	1999	0	0	0	…	…	…	…	…	…	…	…	…	…	…
Cyprus	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Egypt	1999	0	0	0	…	…	…	…	…	…	…	…	…	…	…
Iraq	…	…	…	…	0.2	1996	…	…	…	…	…	…	…	…	…
Israel	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Jordan	1993	0	0	0	…	…	…	…	…	…	…	…	…	…	…
Kuwait	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Lebanon	1993	2.2	2.2	2.2	1.7	1996	90	1996	22.4a	…	1996	69.3a	…	1996	15-49
Libyan Arab Jamahiriya	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Morocco	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Oman	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Qatar	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Saudi Arabia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Sudan	…	…	…	…	…	…	…	…	3	1	1995	20	16.7	1995	15-49
Syrian Arab Republic	1999	0	0	0	…	…	…	…	…	…	…	…	…	…	…
Tunisia	1997	0.3	0.3	0.3	…	…	…	…	…	…	…	…	…	…	…
Turkey	1992	0	0	0	0.6	1996	…	…	…	…	…	…	…	…	…
United Arab Emirates	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Yemen	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
North America															
Canada	…	…	…	…	…	…	…	…	8.4	6	1997	72.3	71.9	1997	20-45
United States of America	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Caribbean															
Bahamas	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Barbados	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Cuba	…	…	…	…	8.2	1997	…	…	48.6	14.4	1996	…	…	…	15-49
Dominican Republic	…	…	…	…	…	…	…	…	…	…	…	47.5a	…	1997	15-49
Haiti	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Jamaica	…	…	…	…	…	…	…	…	…	…	…	…	38.3	1997	15-49
Trinidad and Tobago	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Latin America															
Argentina	1998	18.8	18.8	18.8	…	…	…	…	…	…	…	<55a	…	1995	15-49
Belize	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Bolivia	…	…	…	…	0.1	1994	…	…	…	…	…	65.1	33.4	1994	15-49
Brazil	1998	28	28	28	2.4	1996	…	…	…	7.5	1996	14.7	4.3	1996	15-49
Chile	…	…	…	…	…	…	83	1997	28	6	1997	33	18	1997	15-49
Colombia	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Costa Rica	…	…	…	…	…	…	96	1995	21.4	12.5	1995	55.3	42	1995	15-49
Ecuador	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
El Salvador	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Guatemala	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Guyana	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Honduras	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Mexico	1998	0.07	0	4.4	1.1	1997	…	…	15.4	…	1997	62.8a	…	1997	15-49
Nicaragua	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Panama	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Paraguay	…	…	…	…	0.6	1995	…	…	…	…	…	…	79.1	1996	15-49
Peru	1990	28.1	28.1	28.1	…	…	…	…	13.6	1.5	1996	32.6	35.3	1996	15-49
Suriname	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Uruguay	1997	24.4	24.4	24.4	…	…	…	…	…	…	…	…	…	…	…
Venezuela	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…
Global Total															

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The Joint United Nations Programme on HIV/AIDS (UNAIDS) brings together seven United Nations system organizations to help the world prevent new HIV infections, care for those already infected and mitigate the epidemic's impact. The UNAIDS Cosponsors are:

The United Nations Children's Fund (UNICEF), acting within the framework of the Convention on the Rights of the Child, works with governments and nongovernmental organizations in the fields of health, nutrition, basic education, safer water and sanitation to improve the lives of children, youth and women. It brings to UNAIDS its operational field capacity in over 160 countries. UNICEF's priority programme areas for HIV/AIDS focus on prevention of infection, especially of adolescents, school AIDS education, children and families affected by AIDS, and mother-to-child HIV transmission.

The United Nations Development Programme (UNDP) works to increase understanding of the social and economic impact of HIV/AIDS on development; to create effective gender-sensitive multisectoral HIV/AIDS policies and poverty reduction strategies; and to strengthen institutional management, aid coordination and disbursement mechanisms. UNDP advocates for increased development funding and for actions to break the silence surrounding the epidemic. It promotes discussion and implementation of policies that integrate HIV/AIDS into national development strategies, poverty reduction strategies and institutional reform. UNDP acts as an honest broker in bringing together effective community-based programmes with potential sources of funding.

The mandate of the United Nations Population Fund (UNFPA) is, *inter alia*, to build the knowledge and capacity of countries to respond to needs in the area of population, with a major focus on reproductive health, including family planning and sexual health. UNFPA contributes to UNAIDS' mandate through its worldwide network of country offices; its expertise in reproductive health promotion and service delivery; its experience in logistics and management of reproductive health commodities, including condoms; and its experience in working with nongovernmental organizations, in organizing technical assistance and in strengthening national capacity-building.

The United Nations International Drug Control Programme (UNDCP) is entrusted with exclusive responsibility for coordinating and providing effective leadership for all United Nations drug control activities. In this context UNDCP is active in supporting HIV/AIDS prevention in programmes to reduce the demand for illicit drugs. Its primary focus is on youth and high-risk groups. UNDCP operates from its headquarters in Vienna, Austria, as well as from a field network currently serving 121 countries and territories.

The mandate of the United Nations Educational, Scientific and Cultural Organization (UNESCO) is to foster international cooperation in intellectual activities designed to promote human rights, help establish just and lasting peace, and further the general welfare of mankind. UNESCO contributes to UNAIDS by virtue of the scope of its fields of competence, its interdisciplinary and cross-disciplinary approaches, and its experience, and by bringing the vast network of institutions with which it collaborates into the fight against AIDS.

As a leading international health authority, the World Health Organization (WHO) supports countries to strengthen their health system's response to the epidemics of HIV/AIDS and sexually transmitted infections. Its major focus is on prevention of HIV and sexually transmitted infections; vaccines and microbicides; prevention of mother-to-child transmission of HIV; blood safety; epidemiological and behavioural surveillance; safe injection practice; strengthening of health systems; voluntary counselling and testing; management of HIV-related illnesses; alternatives and complements to hospital care; and access to drugs.

The mandate of the World Bank is to alleviate poverty and improve the quality of life. Between 1986 and late 1999, the World Bank committed over US$ 980 million for more than 75 HIV/AIDS projects worldwide. Most of the resources have been provided on highly concessional terms. To more effectively address the devastating consequences of HIV/AIDS on development, the Bank is strengthening its response to the epidemic, working in partnership with UNAIDS, donor agencies and governments. The Bank's "Intensifying Action against HIV/AIDS in Africa" strategic plan aims to rapidly increase action and available resources and to bring to scale the interventions needed for prevention and impact mitigation.

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