



chapter one

## a global emergency: a combined response

**This chapter outlines the current state of the global HIV/AIDS pandemic and explains why an international response is needed. It describes some of the tragic social and economic consequences of the disease, including its destructive impact on health systems. The response must embrace prevention, support, treatment and long-term care. Together, these components can effectively combat the seemingly inexorable progress of HIV/AIDS epidemics, offering the worst-affected countries and populations their best hope of survival. Comprehensive action will accelerate progress towards all the Millennium Development Goals while offering an opportunity to help strengthen health systems.**

### THE GLOBAL SITUATION

Although it has seemed a familiar enemy for the last 20 years, HIV/AIDS is only now beginning to be seen for what it is: a unique threat to human society, whose impact will be felt for generations to come. Today, an estimated 34–46 million people are living with HIV/AIDS. Already, more than 20 million people have died from AIDS, 3 million in 2003 alone (1). Four million children have been infected since the virus first appeared. Of the 5 million people who became infected with the virus in 2003, 700 000 were children, almost entirely as the result of transmission during pregnancy and childbirth, or from breastfeeding.

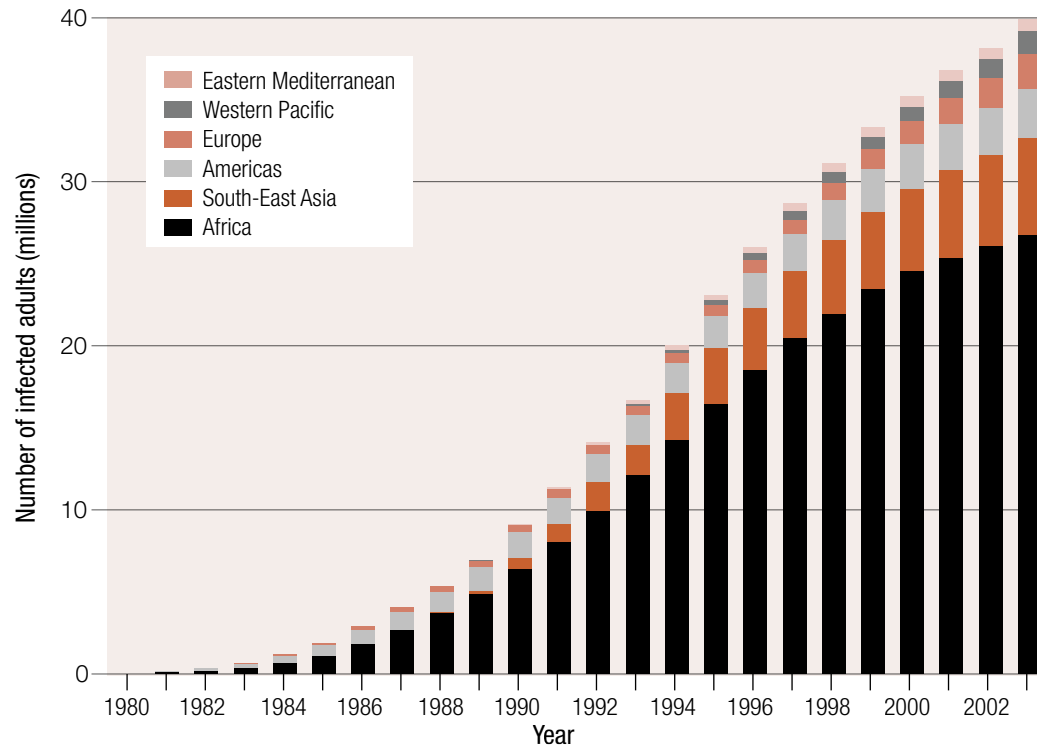
The most explosive growth of the epidemic occurred in the mid-1990s, especially in Africa (see Figure 1.1). In 2003, Africa was home to two-thirds of the world's people living with HIV/AIDS, but only 11% of the world's total population. Today, about one in 12 African adults

is living with HIV/AIDS. One-fifth of the people infected with HIV live in Asia.

Globally, unprotected sexual intercourse between men and women is the predominant mode of transmission of the virus. In sub-Saharan Africa and the Caribbean, women are at least as likely as men to become infected.

Other important modes of transmission include unprotected penetrative sex between men, injecting drug use, and unsafe injections and blood transfusions. In many countries, including most countries in the Americas, Asia and Europe, HIV infection is mainly concentrated in populations engaging in high-risk behaviour, such as unprotected sex (particularly in the context of commercial sex work or between men) and sharing of drug injection

Figure 1.1 Estimated number of adults infected with HIV, by WHO region, 1980–2003



equipment. In such situations, however, there is a persistent threat that localized epidemics will spill over into the wider population. In some countries, rapid growth of the size of the vulnerable populations – as a result of civil unrest, a rise in poverty or other social and economic factors – triggers epidemic growth and wider spread of the virus.

The prolonged time lag between infection with HIV and the onset of full disease (on average 9–11 years in the absence of treatment) means that the numbers of HIV-associated tuberculosis cases, AIDS cases and deaths have only recently reached epidemic levels in many of the severely affected countries. Globally, the greatest mortality impact is on people between the ages of 20 and 40 years. Dramatic changes in life expectancy can be observed in the most affected parts of the world. The pandemic has reversed decades of gradual gains in life expectancy in sub-Saharan Africa (2).

What does the global state of the pandemic mean in terms of progress towards the Millennium Development Goals? The eight goals, established following the historic Millennium Summit in New York in 2000, represent commitments by governments throughout the world to do more to reduce poverty and hunger and to tackle ill-health; specifically, to improve access to clean water and to reduce gender inequality, lack of education, and environmental degradation. This includes combating HIV/AIDS, and to have begun to reverse the spread of HIV by 2015. However, progress is not yet being made in many countries, and an unprecedented effort will be required in order for the worst-affected countries to make progress towards all of the Millennium Development Goals (see Box 1.1).

### The uneven spread of HIV

A brief analysis of the regional spread of the HIV/AIDS pandemic shows major differences between regions, within regions and within countries, which have important implications for prevention, care and support. The striking differences in the size of the epidemics in sub-Saharan Africa and other regions of the world have been well documented. While almost all countries in sub-Saharan Africa have been severely affected, widening variations are also emerging within the region, indicating that the consequences of the pandemic will vary substantially (10).

The trends in HIV prevalence among pregnant women attending the same antenatal clinics since 1997 (see Figure 1.2) show that the epidemics in the countries of southern Africa are much larger than elsewhere in sub-Saharan Africa – and that the gaps appear to be widening. In eastern Africa HIV prevalence is now less than half that reported in southern Africa and there is evidence of a modest decline. In western Africa prevalence is now roughly one-fifth of that in southern Africa and no rapid growth is occurring. These striking differences are supported by data from population-based surveys and research studies (see Box 1.2). A range of socioeconomic, cultural, behavioural and biological factors are responsible, such as migration, male circumcision practices and the prevalence of herpes simplex virus type 2 infection (12, 13).

In most countries in Asia the epidemics tend to be concentrated in drug injecting and commercial sex networks, although Cambodia, Myanmar, Thailand and six

### Box 1.1 The impact of HIV/AIDS on the Millennium Development Goals

HIV/AIDS epidemics are reducing the chances of achieving the Millennium Development Goals and targets for many heavily burdened countries, especially in sub-Saharan Africa.

The epidemics undermine poverty reduction efforts by sapping economic growth, thus hampering efforts to reach **Goal 1, to eradicate extreme poverty and hunger**. They have cut annual growth rates by 2–4% per year in Africa (3). But the cumulative long-term macroeconomic effects may be much more devastating and could result in complete economic collapse in some high-burden countries.

Educational opportunities recede as HIV/AIDS cuts family incomes and forces people to spend money on medical care and funerals, thus affecting the chances of reaching **Goal 2, to achieve universal primary education**. For example, in Uganda, 80% of the children in HIV/AIDS-affected households in one village were removed from school because school fees could not be paid or the children's labour was needed (4). In Zambia, the number of teachers killed by AIDS in 1998 was equivalent to two-thirds of the number of teachers trained in the same year (5). Globally, HIV/AIDS is creating millions of orphans with even fewer educational opportunities.

In addition to killing millions of women, HIV/

AIDS adds to the caregiving burdens of women and girls, reducing their chances of pursuing education and paid work, and hence undermining **Goal 3, to promote gender equity and empower women**. Girls are often required to care for their sick brothers and sisters at the expense of their own education. HIV-positive women face many forms of discrimination and psychological and physical abuse.

In the seven African countries with the highest adult HIV prevalence, AIDS has already produced a rise of more than 19% in infant mortality and a 36% rise in under-five mortality, thereby reducing many countries' chances of reaching **Goal 4, to reduce child mortality**. In Botswana, the under-five mortality rate will reach 104 deaths per 1000 live births by 2005. In the absence of HIV/AIDS, the rate would have been 45 deaths per 1000 (6).

The disease reduces the chances of reaching **Goal 5, to reduce maternal mortality**. In Rakai, Uganda, maternal mortality was found to be 1687 per 100 000 live births among HIV-positive women and 310 per 100 000 live births among HIV-negative women (7).

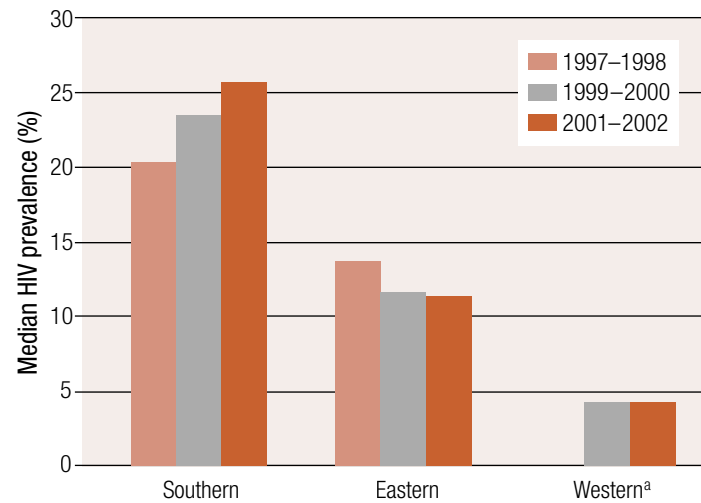
HIV infection also directly increases the risks of developing tuberculosis, and in HIV/AIDS-affected countries it is on the rise. In Malawi, for example, the incidence of tuberculosis

doubled between 1986 and 1994, largely because people living with HIV/AIDS are seven times more likely to develop tuberculosis than those who are not infected with the virus (8). In Uganda, HIV-infected women were more likely to develop malaria during pregnancy than HIV-negative women. The same study found that the mother-to-child HIV transmission rates were 40% among women with placental malaria compared with 15.4% for women without malaria (9). Thus the pandemic also adversely affects the chances of contending with malaria and other diseases, as part of **Goal 6, to combat HIV/AIDS, malaria and other diseases**.

One target of **Goal 7, to ensure environmental stability**, is significant improvement in at least 100 million slum dwellers' lives by 2020. However, HIV/AIDS is likely to threaten many millions of them.

All goals depend on **Goal 8, to develop a global partnership for development**. This goal links donors, governments, civil society and the private sector. HIV/AIDS is undermining progress here, for example through its decimation of countries' skilled workforces. Providing access to essential medicines is a key target. Expanding HIV/AIDS treatment will be vital to progress.

**Figure 1.2** HIV prevalence among pregnant women attending antenatal clinics in areas of sub-Saharan Africa, 1997–2002



<sup>a</sup> No estimate available for 1997–1998.

the Russian Federation, where national prevalence is estimated to be just under 1%, 80% of people living with HIV/AIDS are under 30 years of age. In western Europe, the estimated number of new infections greatly exceeds the number of deaths, largely as a result of the success of antiretroviral therapy in lowering death rates. There are, however, worrying signs of increased incidence of other sexually transmitted infections, such as syphilis and gonorrhoea, and reported increases in risk behaviours in several countries (14, 15).

In the WHO Eastern Mediterranean Region it is estimated that there are around 750 000 people living with HIV/AIDS. Heterosexual sex is the main mode of transmission, accounting for nearly 55% of all reported cases. Injecting drug use has an increasing role in transmission and in the near future may become the driving force of the epidemics. A fivefold increase in infections among injecting drug users between 1999 and 2002 was recorded. In Sudan, the most affected country in the region, heterosexual sex is the predominant mode of spread.

In the Americas, the most affected area is the Caribbean, which has the second-highest prevalence in the world after sub-Saharan Africa: overall adult prevalence rates are 2–3%. In Latin America, an estimated 1.6 million people are now infected. Most countries here have concentrated epidemics, with injecting drug use and sex between men as the predominant modes of transmission. The predominant mode of transmission in the Caribbean is heterosexual sex, often associated with commercial sex work. In Central America, prevalence rates have been growing steadily and most countries there are facing a generalized epidemic. In the United States of America, 30 000–40 000 new infections occur every year, with African-Americans and Hispanics the most affected populations.

### Rises in mortality, reductions in life expectancy

In many countries there is evidence of a reversal of the declines in child mortality achieved during the 1990s, especially in those most severely affected by HIV/AIDS.

states in India have an estimated HIV prevalence among adults of more than 1%. The course of the epidemics in the two most populous countries in the world – China and India – will have a decisive influence on the global pandemic. In 2003 it was estimated that 840 000 people in China were living with HIV/AIDS, corresponding to 0.12% of the total adult population aged 15–49 years. About 70% of these infections are thought to have resulted from injecting drug use or faulty plasma-collection procedures; over 80% of all those infected are men. Official estimates in India for 2003 put the number of people infected at 3.8–4.6 million, with considerable variation between states; there has been a modest increase in recent years.

Countries in eastern Europe and central Asia are experiencing growing epidemics, driven by injecting drug use and to a lesser extent by unsafe sex among young people. In

These reversals indicate the adverse impact of HIV/AIDS on the Millennium Development Goal of reducing child mortality. Once again, however, large variations between African countries in their HIV-prevalence trends and levels of child mortality not associated with HIV will mean very different impacts in different places. It has been estimated that HIV/AIDS was the primary cause of about 8% of deaths in under-fives in sub-Saharan Africa in 2001 (16).

In the absence of vital registration and reliable cause-of-death information, evidence on the impact of HIV infection on child mortality is limited. It is known, however, that even before the introduction of antiretroviral therapy the progression of disease among children infected with HIV in Europe and the USA was considerably slower than that observed in Africa. In western and eastern Africa the median survival time is less than two years, compared with well over five years in developed countries (17).

The most dramatic effect of the HIV/AIDS epidemic has been on adult mortality (18). In the worst-affected countries of eastern and southern Africa, the probability of a 15-year-old dying before reaching 60 years of age has risen sharply – from 10–30% in the mid-1980s to 30–60% at the start of the new millennium. In community-based studies in eastern Africa, mortality among adults infected with HIV was 10–20 times higher than in non-infected individuals (19). Overall, the greatest difference in mortality between infected and uninfected people is usually observed between the ages of 20 and 40 years. Women tend to die at an earlier age than men, reflecting the fact that the rates of HIV infection typically peak among women 5–10 years earlier than they do in men. The most reliable estimates of the median survival time following infection with HIV have come from the Masaka study in Uganda (20) where the figure was of the order of nine years – two years less than that observed in developed-country cohort studies even before the advent of effective treatment.

Vital registration systems, national censuses, demographic surveys and demographic surveillance systems have provided information on mortality trends (18). Census and survey data from Kenya, Malawi and Zimbabwe have revealed steadily rising adult

## Box 1.2 HIV estimates and population-based surveys

Estimating accurately the number of people living with HIV/AIDS is important for purposes of advocacy, programme planning and evaluation. The estimates for countries with generalized epidemics are based on data generated by surveillance systems that focus on pregnant women attending sentinel antenatal clinics. For countries with concentrated epidemics, the estimates are based on data on HIV prevalence in both high-risk and wider populations.

Recently, several countries have conducted national population-based surveys that include HIV testing, and many more countries plan to do so in the near future. Demographic and health surveys have included HIV testing in the Dominican Republic, Kenya, Mali and Zambia. National surveys with HIV testing have also been conducted in Burundi, Niger, South Africa and Zimbabwe. HIV prevalence is generally lower in the population-based surveys

than the existing estimates based on antenatal surveillance.

Nationally representative surveys have important advantages over antenatal surveillance, as they provide data on a wider sample of the population and especially on rural populations, which are often underrepresented in antenatal clinic surveillance systems. UNAIDS and WHO adjust data to correct for the underrepresentation of populations with lower prevalence, but this may not have been enough.

Population-based surveys vary in their methodologies, sampling approaches, biological sample collection methods, HIV testing strategies, and ways to deal with ethical issues and incentives for participation. Non-response rates at the household and individual levels complicate the interpretation of results. In particular, absence from the household is likely to be associated with higher HIV preva-

lence. In general, survey-based estimates can be expected to be somewhat lower than the true prevalence.

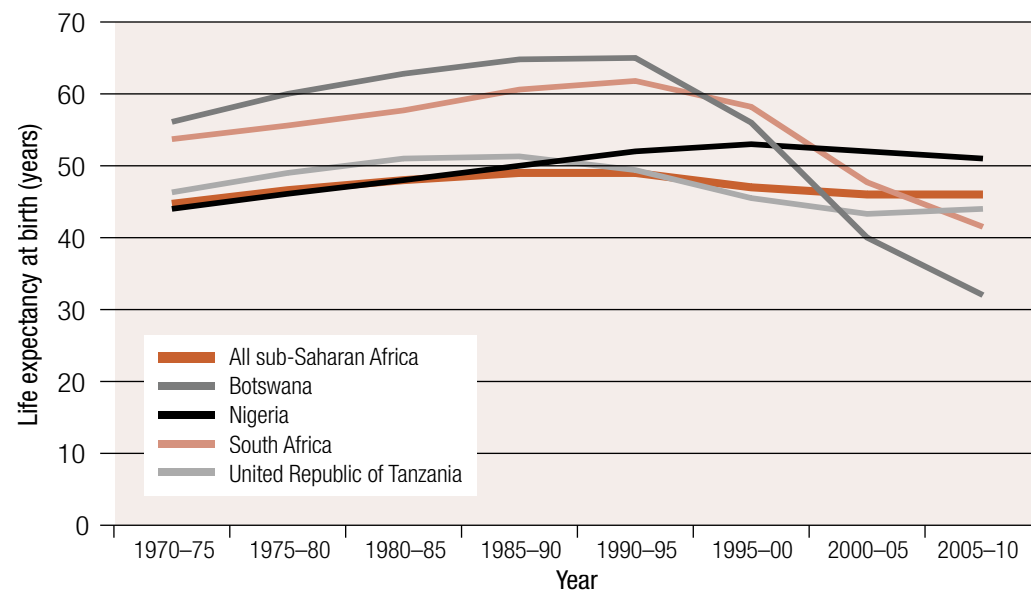
All estimates need to be critically appraised. A single method or data source will not usually provide the best estimate of HIV prevalence. The value of antenatal clinic-based surveillance lies primarily in the assessment of trends, and surveys conducted at 4–5-year intervals will help to improve estimates. High-quality population-based surveys can improve the assumptions that are used to estimate national levels of prevalence, for example assumptions related to rural adjustment and the computation of male prevalence. The results of population-based surveys point to the improvements needed in national HIV surveillance systems (11).

mortality throughout the 1990s. In Kenya, the probability of dying between the ages of 15 and 60 years rose from 18% in the early 1990s to 48% by 2002 (see Annex Table 1). In Malawi the figure is now 63%; it was less than 30% in the early 1980s. In Zimbabwe, the 1997 probabilities of 50% for women and 65% for men have risen to an overall 80%. There is evidence that in Thailand and Trinidad and Tobago there have been increases in mortality, even though the prevalence of HIV infection is considerably lower in those countries than in most of Africa. In Thailand, for example, the crude mortality rate for those aged 15–49 years almost doubled from 2.8 to 5.4 per thousand between 1987 and 1996.

The advent of the HIV/AIDS pandemic has reversed the gains in life expectancy made in sub-Saharan Africa, which reached a peak of 49.2 years during the late 1980s and which is projected to drop to just under 46 years in the period 2000–2005 (2) (see Figure 1.3). This turnaround is most dramatic in those severely affected countries in southern Africa that had relatively high life expectancy prior to the appearance of HIV/AIDS. In Botswana, for example, life expectancy decreased from nearly 65 years in 1985–1990 to 40 years in 2000–2005; in South Africa it is expected to drop from over 60 years to below 50 years. The United Republic of Tanzania (whose epidemic is less than half the size of that in South Africa) is likely to have experienced a decline in life expectancy from 51 to 43 years in the last 15 years. In Nigeria (where the epidemic is about half the size of that in the United Republic of Tanzania) the gradual improvements that were being made have stalled.

Overall, life expectancy at birth in the African Region was 48 years in 2002; it would have been 54 years in the absence of HIV/AIDS. In the countries of southern Africa life expectancy would have been 56 years instead of 43 years (see Figure 1.4).

Figure 1.3 Trends in life expectancy in sub-Saharan Africa and selected countries, 1970–2010



Source: (21).

### THE DEADLY INTERACTION: HIV/AIDS AND OTHER DISEASES

The interaction of HIV/AIDS with other infectious diseases is an increasing public health concern. In sub-Saharan Africa, for example, malaria, bacterial infections and tuberculosis (TB) have been identified as the leading causes of HIV-related morbidity (22). HIV infection increases both the incidence and severity of clinical malaria in adults (23). In some parts of Africa, falciparum malaria and HIV infection represent the two most important health problems.

The pandemic has brought about devastating changes in the epidemiology of TB, especially in Africa where about one-third of the population is infected with TB but does not necessarily have the disease (it is dormant). However, by the end of 2000 around 17 million people in Africa and 4.5 million people in south-east Asia were infected with both TB and HIV (24). A high proportion of these people can be expected to develop active TB unless they receive treatment (25), because HIV, by weakening the immune system, greatly increases the likelihood of people becoming ill with TB.

In African countries with high rates of HIV infection, including those with well-organized control programmes, case-notification rates of TB have risen more than fourfold since the mid-1980s, reaching more than 200 cases per 100 000 population in 2002 (25). In the USA, 16% of TB cases have been attributed to the virus.

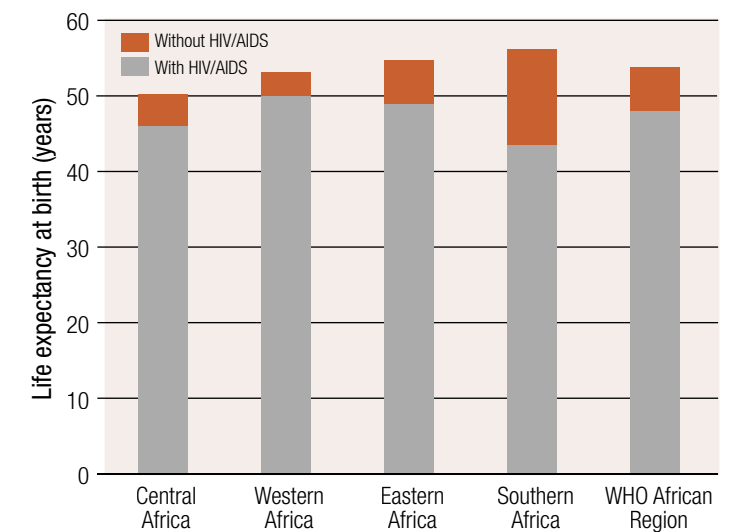
In parts of Asia and eastern Europe, the number of people coinfecting with multidrug-resistant TB and HIV is also likely to increase. In India, for example, where an estimated 1.7 million adults in 2000 were coinfecting with TB and HIV, there is a multidrug resistance rate of up to 3% of previously untreated TB patients.

### THE AIDS TREATMENT GAP

The situation outlined above shows the devastating effects of the virus on the health of the world's people. But the effects are not evenly felt, and are often concentrated in the very places where treatment is least likely to be available. Overall, coverage with antiretroviral drugs is extremely low. In 2003, the estimated number of people worldwide needing treatment because they were in advanced stages of infection was nearly 6 million, although the numbers must be interpreted cautiously and the uncertainty range is large (4–8 million).

In 2003, about 400 000 people received treatment. Coverage is lowest in the African Region, where the burden is highest and only an estimated 100 000 people are receiving treatment: a coverage of 2%. Some 34 countries accounted for more than 90% of the number of adults in need of treatment in 2003. South Africa accounts for almost one in six people in need of treatment. Half of the global treatment needs are located in just seven countries: India and six countries in the WHO African Region.

Figure 1.4 Life expectancy in Africa, with and without HIV/AIDS, 2002



### THE HUMAN, SOCIAL AND ECONOMIC CONSEQUENCES

Epidemics of disease are like famines, wars and natural catastrophes in one major respect: they invariably bring further disasters in their wake. Globally, HIV/AIDS epidemics are already having a disastrous domino effect. Millions of children are orphaned, communities are destroyed, health services are overwhelmed, entire countries face hunger and economic ruin.

The disease affects the poor most severely: they are the most vulnerable to infection, and the poorest families are hardest hit by the suffering, illness and death caused by the disease. The effects include devastating financial hardships that lead in turn to further tragic consequences. The disease forces poor families deeper into poverty, and it also condemns households that were relatively wealthy to a similar fate.

Large-scale negative changes to patterns of economic and social behaviour are likely to result from the epidemic's impact on population structure and adult life expectancy (26). Beyond the loss of income and the diversion of income to health expenditures, families resort to various "coping" strategies with negative long-term effects, including migration (27), child labour, sale of assets and spending of savings. Families suffering from the illness or death of one or more of their members experience both the direct costs of medical and funeral expenditures and the indirect costs of the impact of the illness on productivity (28, 29).

HIV/AIDS is changing the very structure of populations. There are increased dependency ratios in many African countries, for example, with smaller numbers of working-age adults on whom both children and elderly relatives depend; a situation that is becoming more severe.

The psychological effects on young people of seeing their immediate elders dying in huge numbers at such young ages, and consequent fears for their own future, are immense and will have profound effects on economic development. Moreover, as parents (most of them young adults) die prematurely, they fail to hand on assets and skills to their children. In this way, HIV/AIDS weakens the process through which human capital – people's experience, skill and knowledge – is accumulated and transmitted across generations (30).

The crisis of children having lost either or both parents to HIV/AIDS has been afflicting Africa for a decade, and will get worse. Today there are about 14 million such children in the world of whom the vast majority are in Africa, but the projected total number will nearly double to 25 million by 2010 (31, 32), a nation of children equal to the total population of Iraq. At that point, anywhere from 15% to 25% of the children in a dozen sub-Saharan countries will be orphans. Even in countries where HIV prevalence has stabilized or fallen, such as Uganda, the numbers of orphans will continue to rise as parents already infected continue to die from the disease. When orphans were relatively few, they could be cared for by extended families, but the numbers are now too great and many children end up living on the street.

### Women: unequally at risk

Women in many countries are already facing severe hardships resulting from inequality, discrimination and victimization, and HIV/AIDS often exacerbates the hardships. In fact, these very factors help explain why women suffer disproportionately from the disease. About 58% of all people living with HIV/AIDS in the WHO African Region are women. They are infected at younger ages than men by, on average, 6–8 years. Young women are often forced into unequal sexual relationships and are frequently unable to negotiate safer sex. The unequal losses of life among women resulting from this

situation will create an imbalance in the adult population, with consequences that are unknown. One likely and ominous outcome, however, is that mature men will seek younger and younger women as partners, which in turn intensifies some of the risk factors for HIV spread.

### The underestimated economic threat

In many countries, the cumulative effects of the epidemics could have catastrophic consequences for long-term economic growth and seriously damage the prospects for poverty reduction. Until recently, most experts believed that a generalized HIV/AIDS epidemic at 10% adult prevalence would reduce economic growth by about 0.5% per year (33). Several country-based studies have suggested that HIV/AIDS epidemics result in a reduction in gross domestic product (GDP) of around 1%, but recent economic studies and estimates suggest a much bleaker picture of current and future economic effects (30, 34).

## A daughter's story



Gideon Mendel/Network

While being treated for tuberculosis at Ngwelezane Hospital, KwaZulu-Natal, South Africa, Samkelisiwe Mkhwanazi was diagnosed with HIV/AIDS. After leaving hospital she stayed for three months with a traditional healer and was treated with herbal medicines, but her condition did not improve.

Samkelisiwe, 30 years old, would normally be responsible for taking care of her child and her mother, Nesta, but now she has become dependent on her mother again. "I want to be with her until I die," she

says. The entire family relies on Nesta, who must look after everyone, including Samkelisiwe's late sister's children (see Nesta's story in Chapter 5).

Samkelisiwe is just one of approximately 6 million people in developing countries who need urgent treatment with antiretroviral drugs. With health care systems that are unable to cope, most people living with HIV/AIDS must rely on their family or community for care.

Studies previously misinterpreted the effects of epidemics as being similar to those caused by one-off shocks, such as natural disasters or international economic downturns, which many economies can absorb and which are beyond the control of planners. Predictions have also frequently reflected assumptions that the worst-hit countries in Africa had an excess of labour, and suggested that a contraction in work-force numbers might lead to more efficient use of land and capital. The belief was that GDP per capita would actually increase if a fall in GDP were lower than the fall in population. Similarly, it had been thought that the destruction of the labour force and hence the reduction in labour supply caused by HIV/AIDS could result in an increase in the productivity of each remaining worker because each would have more land and capital with which to work. The result of these misinterpretations and assumptions was a widespread failure nationally and internationally to revise economic policies to take account of HIV/AIDS.

HIV/AIDS will have long-term and widespread effects that will last for generations, and which do not reveal themselves in many economic studies. Ill-health and premature death lead to wasted investment in human capital and globally reduce the incentives to invest in building for the future. An inadequate response to HIV/AIDS will allow the disease to continue to destroy education systems and other vital institutions, reduce human capital and the ability to transmit it, and contribute to a long-term decline in savings and investment. There will therefore be substantial benefits in responding to epidemics – even those of low prevalence.

### The threat of institutional collapse

The implications of reduced life expectancy in adults for societies heavily burdened by HIV/AIDS are becoming clear, though previous poor performance of institutions has sometimes obscured the specific impact of HIV/AIDS (35). Institutional malfunctioning in Africa, for example, has been concealed by long-running inefficiency and low performance expectations. The survival and functioning of institutions in a number of southern African countries are now threatened. Incapacity is critical. Already there are major shortages of qualified personnel in key organizations. Posts are vacant or occupied on an “acting” capacity. Continuity of staff is low because of deaths and the reshuffles they occasion. Morale is equally low. Numerous studies and anecdotal evidence point to the slowing down and near paralysis of agricultural services, judiciaries, police forces, education systems and health services.

Many African businesses have also been severely affected by reduced labour supply, especially the loss of experienced workers in their most productive years, increased absenteeism, reduced profitability and loss of international competitiveness (36). Threats to regional security caused by the epidemic are another example of indirect impacts that may negatively affect economic activities such as tourism (37) or inflows of foreign investment (38).

Across southern and eastern Africa, the education sector is suffering as the loss of teachers exceeds those being trained (39). This is not only a result of AIDS-related illness and death: some teachers are being hired by the private sector, which is also in need of skilled personnel, while others are migrating. The effects are masked by the fact that fewer children enrol in school because HIV/AIDS-affected families cannot afford school fees or need their children to work at home. The result will be lower educational achievement, with negative implications for efforts to reduce poverty, improve gender relations and decrease HIV transmission, and for the overall health of those who survive. The effort to enrol all children in school by 2015 (one of the Millennium

Development Goals) is being undermined with long-term negative consequences.

One of the many tragedies of HIV/AIDS is that it often strikes hardest where health systems are weakest, and deals a double blow. Systems that in any case cannot cope are weakened further by HIV/AIDS deaths and disability among large numbers of health personnel (see Chapter 4). In low-income countries which were already suffering from a lack of health care workers, health care systems are overburdened. In Côte d'Ivoire and Uganda, 50–80% of adult hospital beds are occupied by patients with HIV-related conditions. In Swaziland, the average length of stay in hospital is six days, but in 80% of cases increases to 30 days for patients with tuberculosis associated with HIV (40).

The impact of HIV/AIDS on the health sector is often enormous. The severity and complexity of clinical opportunistic conditions are associated with high hospitalization rates, inpatient mortality and increasing treatment costs. In some sub-Saharan countries, the rate of general hospital bed occupation by AIDS patients is frequently higher than 50%. The introduction of antiretroviral therapy, however, has been shown to lead to a sharp reduction in HIV/AIDS-related mortality, morbidity and care expenditures, with substantial improvements in the quality of life of patients. Chapter 4 deals at length with the key issues linking HIV/AIDS, health systems and treatment expansion.

Given the daunting social and economic consequences of the spread of HIV, the need for effective and wide-ranging methods of prevention is as clear as it has been since the very first days of the epidemic in the 1980s. The next section looks at the current range of prevention and care strategies in play around the world.

### PREVENTION, CARE AND SUPPORT: STRATEGIES FOR CHANGE

HIV/AIDS may not be curable, but it is certainly preventable and treatable. It has been estimated that almost two-thirds of the new infections projected to occur during the period 2002–2010 can be prevented if the coverage of existing HIV prevention strategies is substantially increased (41). Prevention efforts can and do work to halt the spread of the virus, and real advances in treatment hold out the hope of longer and better lives for those already infected. Scaling up treatment must become a way to support and strengthen prevention programmes. Careful integration of prevention and treatment services will ensure that those who test positive are linked to counselling and treatment, which can lead them to protect others from infection (42). Furthermore,

## Box 1.3 Prevention and treatment in Brazil and the Bahamas

The Brazilian experience shows that scaling up antiretroviral treatment enhances, rather than impedes, prevention efforts if they are scaled up simultaneously. Since 1996 (the year Brazil's universal antiretroviral drug distribution programme began), sexual behaviour, and more recently HIV prevalence, have been monitored among nearly 30 000 male army conscripts. In 1999–2002, over 80% of the conscripts were sexually active and the proportion with multiple partners remained steady; but HIV prevalence among the men was low (0.08%) and condom use was high

and increasing. In 1999, 62% of men reported condom use at last sexual intercourse, and in 2000 and 2002, 70% did so. Condom use with a paid partner in the previous year increased from 69% in 1999 to 77% in 2002.

The impact of prevention interventions was also observed among injecting drug users. The most significant reduction in the index of sexual risk behaviour was found in this group (43).

Similarly, in the Bahamas, the introduction of antiretroviral therapy has been accompanied by heightened prevention successes, in addition to significant reductions in deaths

(56% reduction in deaths from AIDS, including an 89% reduction in deaths among children). The success of prevention efforts is also evident from the fact that mother-to-child transmission of HIV was reduced from 28% to 3%; there was also a 44.4% reduction in new HIV cases, a 41% decline in HIV prevalence rate among patients being treated for sexually transmitted infections, and a 38% decline in HIV prevalence rate among pregnant women (44).

people who might otherwise be afraid to undergo testing are more likely to seek services for sexually transmitted infections and HIV/AIDS when they have access to treatment (see Box 1.3).

### Preventing the sexual transmission of HIV

Prevention approaches can work in many populations, as long as they use evidence-based strategies, carefully tailored to the social and economic settings in which they are implemented and to the state of national HIV/AIDS epidemics. A comprehensive approach that supports social and individual rights, involves communities and is developed on the basis of their cultural values has been found to be effective when combined with the promotion of consistent condom use, voluntary testing and counselling for HIV, and delayed sexual initiation. Promotion of other strategies, such as abstinence and reduction in number of partners, also needs to be based on firm evidence.

## Box 1.4 Cambodia and Thailand – successes and challenges

HIV infection in Asia remains largely confined to those people at higher levels of risk – sex workers, injecting drug users, men who have sex with men – and their sexual partners. Those at elevated risk represent anywhere from 7% to 25% of the adult population, making severe epidemics a possibility in all the countries of the region.

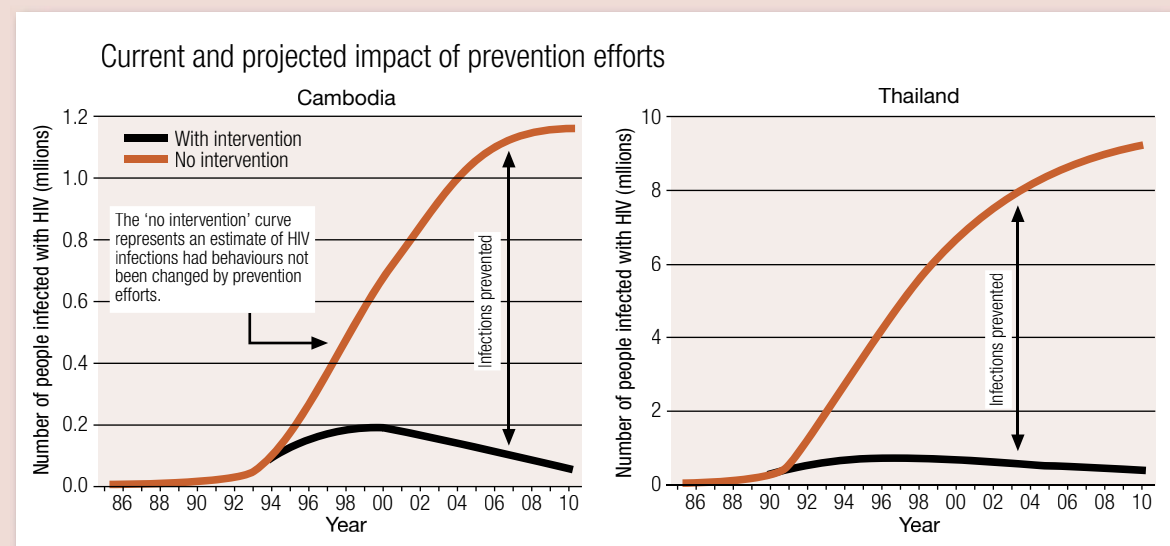
However, the focused nature of risk means in turn that focused prevention efforts with high coverage can slow or reverse the course of the epidemics. By mounting intensive, well-funded and extensive efforts to reduce the risks in sex work, Cambodia and Thailand have changed the course of their epidemics. In both countries, the role of sex work in HIV

transmission was realized early on and major nationwide prevention efforts were mounted, working not only with brothel owners and sex workers, but also reaching out to the large client populations – almost 20% of adult males in the early 1990s. In response to these programmes, condom use between sex workers and clients rose to more than 90%, and the number of men visiting sex workers was halved.

Using this Asian Epidemic Model, the East-West Center and its collaborators have explored the impacts of these prevention efforts. Without aggressive prevention programmes, it is estimated that both countries would now be looking at expanding epidemics with 10–15%

of their adult populations living with HIV/AIDS, instead of the declining epidemics of 2–3% currently seen.

But as one avenue of HIV transmission is closed off, others appear. Programmes for injecting drug users, men who have sex with men, and sexually active young people have been weak and ineffective to date. The epidemic among injecting drug users in Thailand continues unabated, condom use among young people remains low at around 20%, and there are HIV levels of around 15% in men who have sex with men. If the two countries are to sustain their past successes, they must adapt responses to be as effective and aggressive with new evolving patterns of risk (50, 51).



Level of social and economic development, and cultural factors such as gender inequality or access to education and health care, are all known to be obstacles to the successful implementation of prevention initiatives. Interventions that reduce the effects of such obstacles – by implementing measures that allow girls to stay in school for longer, for example – can have a lasting impact on rates of HIV transmission. The promotion of human rights, combined with behavioural change programmes, also helps (45, 46). Lessons learnt from various settings and communities show that the use of any chosen prevention measure requires that people not only have the proper knowledge but also the ability to apply it.

Consistent condom use demands a reliable distribution system to people who live in poverty or in difficult-to-reach areas (47). Interventions that have targeted populations at high risk such as men who have sex with men and female sex workers and their clients in Africa, Asia and Latin America are effective. In Abidjan (Côte d'Ivoire) and Cotonou (Benin), HIV prevalence among sex workers declined during the 1990s and the increased use of condoms contributed significantly to these declines (48, 49); similar changes have been observed in sex workers in Cambodia and Thailand (see Box 1.4). Evidence from a South African mining community showed that interventions among those most at risk increased condom use and greatly reduced rates of sexually transmitted infections – especially those most linked to HIV transmission – in the community (52).

Effective prevention programmes aimed at young people can teach them responsible and safe sexual behaviour, according to some of the latest research. Recent findings from Uganda indicate that young people have changed their behaviour considerably over the last few years, and that HIV prevalence among them has dropped (53).

### Breaking the link with other sexually transmitted infections

Sexually transmitted infections increase the risk of HIV transmission by at least two to five times (49). They help drive the spread of HIV. If untreated, they not only increase the infectivity of HIV-positive individuals but also make those who are HIV negative more susceptible to infection. Early detection and treatment, and related efforts to reduce the prevalence of these infections, should therefore be an integral component of a comprehensive HIV prevention effort. The potential benefits are probably greatest in the early stages of a national HIV/AIDS epidemic when the virus spreads as a result of high rates of change of sexual partners, but evidence suggests that measures to control sexually transmitted infections have important effects even in more advanced epidemics.

### Preventing infection in infants and children

Every year an estimated 2.2 million pregnant women infected with HIV give birth, and about 700 000 neonates contract HIV from their mothers. HIV transmission from mother to child may occur during pregnancy, labour and delivery, or during breastfeeding. In the absence of any intervention, 14–25% of children born to HIV-infected mothers become infected in developed countries, 13–42% in other countries (54). This disparity is mostly a result of different breastfeeding practices. It is estimated that 5–20% of infants born to HIV-infected women acquire infection through breastfeeding.

The most effective ways to prevent infection in infants and young children are to prevent HIV infection in women and to prevent unintended pregnancies among HIV-infected women. It is also possible, however, to prevent most cases of transmission

from HIV-infected pregnant women to their infants. Antiretroviral prophylaxis in combination with other interventions such as elective caesarean section before onset of labour and rupture of membranes, and refraining from breastfeeding, have now almost entirely eliminated HIV infection in infants in the developed world, with transmission rates below 2%. In developing countries where breastfeeding is the norm, the risk of HIV transmission to the newborn child can be more than halved by short-course antiretroviral regimens, though this reduction is not sustained where feeding practices to reduce risk are not adopted.

To reduce the risk of postpartum transmission of HIV through breastfeeding, WHO currently recommends that when replacement feeding is acceptable, feasible, affordable, sustainable and safe, HIV-infected mothers avoid all breastfeeding. Otherwise, exclusive breastfeeding is recommended during the first months of life. To minimize the risk of postpartum transmission, breastfeeding should be discontinued as soon as is feasible, taking into account local circumstances, the individual woman's situation and the risks posed by using replacement feeding, including infections other than HIV and malnutrition.

Although progress is now being made in the delivery of these low-cost and relatively simple interventions on a large scale in the most-affected countries, it has been slower than anticipated. Women must be encouraged and helped to attend antenatal care

facilities, to accept counselling and testing, to return for test results and to adopt safer infant feeding practices, and must be given access to correctly administered antiretroviral drugs. Current challenges include achieving a rapid increase in acceptance of HIV testing and counselling, integrating prevention of infection in infants and young children into maternal and child health services, and extending the prevention of mother-to-child transmission to include HIV-related care, treatment and support for HIV-infected mothers, their infants and family.

### Injecting drug use – reducing the harm

There may be as many as 2–3 million past and current injecting drug users living with HIV/AIDS worldwide. There are HIV epidemics associated with such drug use in more than 110 countries. In the absence of harm-reduction activities, HIV prevalence among injecting drug users can rise to 40% or more within one to two years of the introduction of the virus into their communities. HIV transmission through the sharing of non-sterile injection equipment is augmented by sexual transmission among injecting drug users, and between them and their sex partners.

Injecting drug users should have access to services that help reduce the related risks of drug use and HIV infection. Drug treatment programmes should be accessible to those who want to stop using drugs or, through substitution therapy, to stop injecting. Harm reduction primarily aims to help injecting drug users to avoid the negative health consequences of injecting and to improve their health and social status. Interventions include projects that try to ensure that those who continue injecting have access to clean injection paraphernalia. One evaluation carried out in 99 cities showed a reduction in the risk of HIV transmission of 19% per year in cities with such projects (with no concomitant increase in drug use) compared with an 8% increase in cities without them (55).

### Preventing transmission during health care

Improper blood-transfusion practices are another important route of parenteral HIV transmission. Policies and procedures are needed to minimize the risk of transmission through blood transfusion, including the creation of a national blood service, use of low-risk donors, eliminating unnecessary transfusions, and systematic screening of blood for transfusion.

Universal precautions in health care settings prevent the transmission of HIV and other bloodborne pathogens, and therefore increased access to safer technologies is needed. A review of published studies has shown that unsafe injections play a minor but significant role in HIV transmission in sub-Saharan Africa (56). Irrespective of the exact contribution to the HIV/AIDS pandemic, unsafe injections are an unacceptable practice and efforts should be increased in all health care settings to reduce the exposure of patients and carers to bloodborne infections.

### Testing and counselling

The vast majority of people living with HIV/AIDS in low-income countries are unaware that they are infected. Testing is an essential means of identifying these people and beginning treatment, and for preventing infection in mothers and infants. It is also a critical component of a comprehensive strategy to prevent sexual transmission. Studies have shown that people who test positive for HIV tend to reduce risk behaviours (57). Joint counselling and testing sessions with couples may increase condom use.

## Caring for HIV-positive infants in Moscow



Ilse Fiecht/lookat/Network

In eastern Europe and the former Soviet Union the number of HIV/AIDS cases has increased rapidly during the last decade. Unlike in most other regions, infection here is spread primarily through injecting drug use. Many women who become infected in this way transmit the virus to

their babies. These three infants are being cared for at a small clinic in the Orechovo-Zoejevo Hospital, Moscow. The clinic provides a home for HIV-positive children whose mothers have died or are unable to look after them.

There is an urgent need to scale up access to counselling and testing, which should be offered as standard practice. An HIV test should always be performed with informed consent and appropriate confidentiality. Testing and counselling services must keep pace with the current new treatment and prevention opportunities. The onus will increase on national governments to provide high-quality testing and counselling services. Such services should become a routine part of health care, for example during attendance at antenatal clinics, or at tuberculosis and sexually transmitted infection diagnosis and treatment centres.

To accelerate prevention and care, while limiting the social devastation now unfolding, rapid expansion of HIV/AIDS treatment in the countries hardest hit by the pandemic is a public health necessity. Treatment with antiretroviral medicines is effective and is much cheaper than a few years ago; it saves lives and will help to prevent the social and economic disasters outlined in this chapter. The necessary response is described in the following chapter, which deals with the bold initiative to deliver treatment to 3 million people with HIV/AIDS by the end of 2005 and explains how this can help strengthen health systems.

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