

Issue Paper on

# **HIV/AIDS in the World Today – a Summary of Trends and Demographic Implications**

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Sida has during 1998 elaborated on a strategy for HIV, AIDS and development – Investing for Future Generations, Sweden's International Response to HIV/AIDS. The strategy was approved by the Cabinet in February 1999.

It was during this process that Sida commissioned a series of Swedish experts to formulate background papers on specific areas as a basis for policy discussions. Considering that these papers are of interest to a wider audience, the Health Division has decided to publish some of them.

The views and interpretations expressed in this document are the authors', and do not necessarily reflect those of the Swedish International Development Cooperation Agency, Sida.

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## 1. Introduction

This report gives a general overview of the HIV/AIDS epidemic in the world today. The evolution of the epidemic on global and regional level is presented in the first chapter. The next chapter is devoted to problems with data and their quality. Another chapter deals with current and expected future demographic impacts of the epidemic. Finally, the needs in Swedish development co-operation are discussed, and recommendations made.<sup>1</sup>

The study covers only the direct and short-term demographic impacts of the epidemic. Issues related to research are not discussed. It should however be evident from the report that much better understanding is required of the wider social and economic implications before the effects of unfolding country epidemics can be properly dealt with in Swedish development co-operation.

## 2. The evolution of the HIV/AIDS pandemic on a global scale

The disease syndrome<sup>2</sup>, which was to be called AIDS, was identified in 1981, and the virus spreading it, HIV, was isolated in 1983. That was also the time of the first indications that a major epidemic was underway. By 1990, epidemics were recorded in nearly all countries in the world. In December 1999, an estimated 33.6 million people were living with HIV/AIDS, of which the over-whelming majority – about 95 per cent – lives in developing countries (Figure 1). 5.6 million new HIV-infected were added during 1999, and 2.6 million died from AIDS (Table 1, Annex 1). According to the WHO 1999 Annual World Health Report in 1998 AIDS was the fourth most important cause of death globally (WHO 1999a). The vast majority of HIV-infected are adults between 15 and 49 years. Among these, more than half of the new infected are under 25 years and 46 per cent are women (UNAIDS 1999a). This proportion is certain to be higher among the young adults. Children 0-14 years make up 3.6 per cent of all infected.

Because the HIV virus develops to AIDS only after a period of several years, an HIV/AIDS epidemic is a long wave phenomenon lasting several decades. When the first AIDS cases are identified clinically, many more cases already exist without being diagnosed, and even more people are infected by the virus. When a significant number of people get ill and die, the HIV epidemic is already far advanced. As indicated in Figures 3 and 4 (p.5–6) countries with low prevalence rates can have a substantial number of infected people and vice versa. When discussing and comparing the HIV/AIDS situation in different regions and countries, it is important to keep in mind that most statistics in this field are only estimates based on limited data with varying quality from country to country. Strict comparability between countries is therefore not possible.

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<sup>1</sup> The report is a revised version of a study submitted to Sida in August 1998 (Egerö & Hammar skjöld 1998). This new version has taken note of written comments by Helen Jackson, SAfAIDS, dated 30 August 1999, and has included relevant information from studies and other documents published since August 1998. Statistical information in text and tables has also been updated and complemented.

<sup>2</sup> The HIV virus impairs immunity, which eventually allows a whole range of opportunistic infections and cancers to develop. It is the combination of symptoms, which is called AIDS or Acquired Immune Deficiency Syndrome.

Figure 1. Adults and children estimated to be living with HIV/AIDS as of end 1999



## Africa

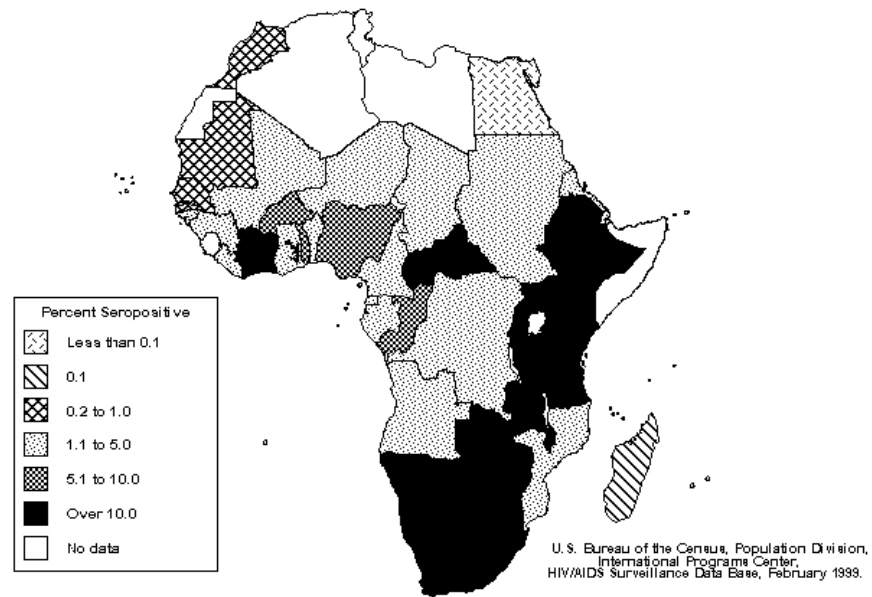
In Sub-Saharan Africa, HIV transmission on a larger scale began around 1980 (Table 2, Annex 1). Today, the region houses almost 70 per cent of all people living with HIV/AIDS, and accounts for over 80 per cent of those who so far have died of AIDS (UNAIDS 1999a). In contrast, North Africa displays low rates of new HIV infections and a generally very low level of HIV prevalence. According to WHO estimates, AIDS was the leading cause of death in Africa as a whole in 1998, responsible for one in five deaths (WHO 1999a).

Most HIV/AIDS cases in Sub-Saharan Africa are found in a belt stretching from Uganda and Kenya southwards to Zimbabwe, Botswana and South Africa (Figure 2). Even so, big variations are found between (and within) these countries. Today, HIV prevalence rates have declined significantly in Uganda<sup>3</sup>, while in Southern Africa the epidemic is spreading rapidly in both urban and rural areas. In West Africa so far, only Abidjan in Côte d'Ivoire has prevalence rates at par with the worst affected countries of Eastern/Central and Southern Africa. Based on present trends, it seems unlikely that other West-African countries will develop a generalised epidemic. The possible exception would be Nigeria<sup>4</sup> and Cameroon where there are indications that infection rates are on the rise (US Bureau of the Census 1999). In Sub-Saharan Africa, in contrast to other regions, female prevalence is higher than male – 55 per cent of all HIV positive by the end of 1999 were women (UNAIDS 1999a).

<sup>3</sup> Official data show that prevalence rates have declined from as high as 25 per cent among pregnant women in 1992 to between 10 and 15 per cent in 1998 (GU 2000).

<sup>4</sup> Even though HIV prevalence in Nigeria is low compared with East and Southern African countries, estimates show that Nigeria's population in 1998 was nearly 1 million smaller than it would have been without AIDS (US Bureau of the Census 1999).

Figure 2. African HIV-1 Seroprevalence for Low-Risk Urban Populations



## Asia

The epidemic began to spread in Asia in the late 1980s. Today there are an estimated 6.5 million people living with HIV/AIDS in the region, and about 1 million have already died (UNAIDS 1999a). The region shows a greater diversity than Sub-Saharan Africa, with wide variations in HIV prevalence between countries. In China and India, variations are particularly large not only between urban and rural areas but also between different regions. Average prevalence rates are low in India, but due to the size of its population India has already the largest absolute number of HIV-infected people of any country – over 4 million. China has fewer infected – an estimated 500 000 – but the potential for a rapid increase exists, due to rapidly spreading drug-injection and big population movements that coupled with increasing income differences have fuelled an expanding sex-industry. In Thailand, which was the first Asian country to record a rapidly expanding HIV/AIDS epidemic, well-organised prevention efforts have resulted in falling prevalence rates. Cambodia now has the highest HIV infection rate in Asia, with more than 2 per cent of pregnant women infected in 12 of 19 provinces, while rates in Myanmar are estimated to be almost as high and rising. Vietnam and Bangladesh have low prevalence rates, but there are alarming signs that they could rise rapidly in both countries.

## Latin America

Latin America also displays a mixed picture. HIV began to spread in the Caribbean basin in the late 1970s, and around 1980 was found in some mainland urban areas especially in Brazil. Many countries in this region have very high HIV prevalence in urban high-risk groups, but the epidemic seems to stay primarily within these groups and spread only slowly among a wider population. Today there are, however, clear signs of a rapid rise of infections in the Central America and Caribbean area, which exhibits some of the worst epidemics outside Sub-Saharan Africa. So far Honduras and Haiti are the most affected countries, while Brazil has the largest absolute number of HIV-infected people.

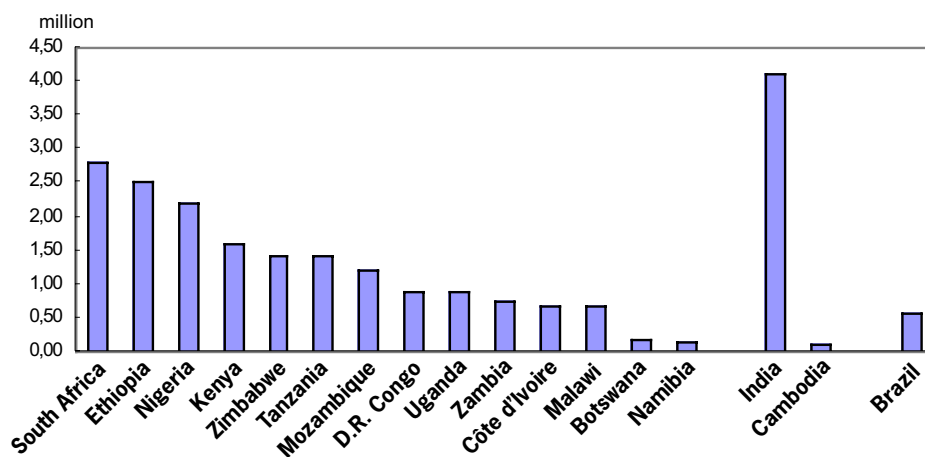
### North-Western and Southern Europe, North America, Australia and New Zealand

HIV/AIDS began to spread in North America in the late 1970s and in the other regions and countries some years later. The general picture today is that high incidence rates are found only in small sub-populations, while overall death rates from AIDS have fallen dramatically after the introduction of anti-retroviral drugs. HIV prevalence rates seem to have levelled out in North-Western Europe, Australia and New Zealand, while HIV continues to spread in Southern Europe and among ethnic minority groups in North America.

### Eastern/Central Europe and former Soviet Union

A steep increase in drug-related HIV infection was discovered in the mid 1990s in several countries of Eastern Europe and the so-called Newly Independent States of ex-USSR. During 1998 and 1999 HIV infections doubled in the former Soviet Union, while Eastern Europe and Central Asia had the world's most rapid increase in HIV prevalence during 1999. The vast majority of new infections occurred in Ukraine and the Russian Federation. Ukraine was the first country in the region to be affected by the HIV/AIDS epidemic, and therefore today has about 90 per cent of all reported AIDS cases. The number of HIV infections in the country increased from around 1 500 reported cases in 1994 to an estimated 180 000 cases in 1998/99. In the region as a whole the epidemic is still primarily confined to the drug-injecting population. But as this group, including many women financing their addiction through prostitution, is rapidly growing and have high rates of ulcerative STIs, there are possibilities of a more generalised epidemic.

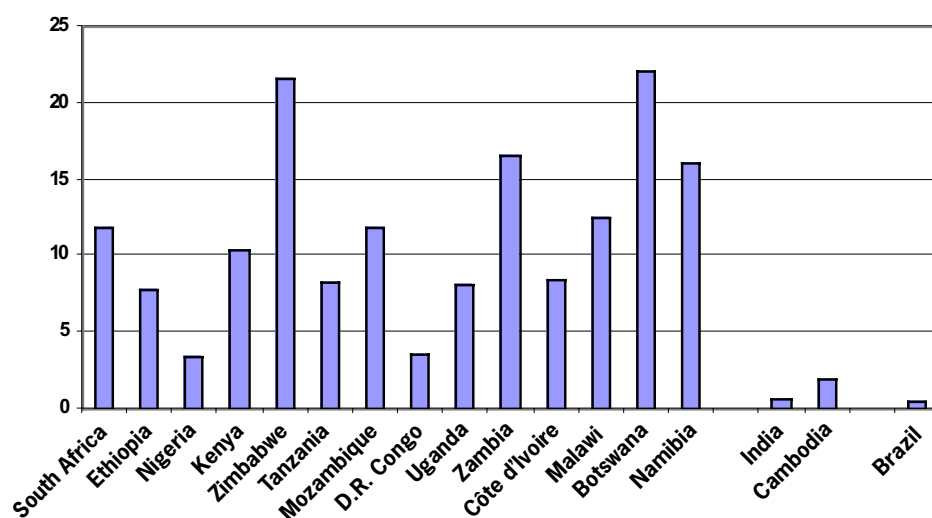
Figure 3. Adult HIV prevalence 1997. absolute numbers



Source: UNAIDS Epi Fact Sheets 1998



Figure 4. Adult HIV-prevalence 1997, percent



Source: UNAIDS Epi Fact Sheets 1998

### Pattern of spread and modes of transmission

The geographical pattern of growth of the epidemic between and within countries is still poorly understood. While in some areas of the world the epidemic is spreading fast over large parts of a society, in others it seems to be limited to geographical or socio-economic subunits. Although e.g. the Philippines, Indonesia and Sri Lanka appear to have many of the preconditions for a major spread of HIV/AIDS, so far prevalence rates are low and increasing only slowly. One important factor behind such differences in HIV prevalence is the main mode or modes of transmission. Where heterosexual transmission dominates, such as in Sub-Saharan Africa, a generalised epidemic is much more likely, especially where other STIs are common. Where drug injection and homosexual transmission are the main modes, such as in parts of Latin America and Eastern Europe, the epidemic may well remain confined to small groups rather than develop into a wider epidemic.

In Sub-Saharan Africa it is common to lay HIV at the door of poverty. However, some of the richer and more developed countries have serious epidemics, while others, despite economic and development determinants pointing to a potential for an epidemic, are much less affected (Barnett & Whiteside 1999). The fact that some countries, sub-regions and urban areas have a longer-standing epidemic than others can only partially explain these differences. This is for example the case with the differences in prevalence levels between West Africa and Eastern/Central Africa. Recent and still far from conclusive studies indicate that there are combinations of factors that contribute to different rates of spread of HIV in different populations (UNAIDS 1999b; Pisani 1999). These factors range from biological co-factors such as rates of ulcerative STIs and male circumcision to age differences between sexual partners, labour mobility, and female integration into economic life<sup>5</sup>.

<sup>5</sup> According to one UNAIDS study (UNAIDS 1999b) there is no evidence that differences in the type of circulating strains of HIV-1 are a major factor in the different rates of spread of HIV in urban areas of Eastern and Western Africa (UNAIDS 1999b). However, the fact that HIV-2 is the main viral type in West Africa might still be a contributory factor to the less severe epidemic in that region. In the case of Senegal, the low prevalence has been attributed to strong influence of Islam and successful prevention programmes sponsored by the government and other social institutions (Ng 1999/2000).

### 3. Availability and quality of data

The specific character of HIV/AIDS makes it difficult to estimate the spread of the epidemic:

- *Firstly*, in the absence of symptoms HIV infection can only be detected through laboratory tests;
- *Secondly*, AIDS is easily confused with other diseases resulting in vast under-reporting of the number of AIDS sick. In USA it is estimated that 10 per cent of AIDS cases are not reported, while in developing countries probably fewer than 10 per cent of cases are recorded (Barnett & Whiteside 1999);
- *Thirdly*, this also makes it difficult to diagnose HIV/AIDS as a direct cause of death. For instance, mother-to-child transmission of HIV results in infant deaths that are not always recognised as an effect of HIV. Many cases of adult AIDS mortality are also likely to go undetected.

#### Estimates of HIV

The progress of the epidemic can be measured through data on the *incidence* of HIV (newly infected per period of time), a potentially important input in all estimates of future effects on mortality levels. However, in reality data on incidence are rarely available, and incidence rates are generally calculated from successive *prevalence* figures (number of infected people at a given point in time), or even – where reliable data of this kind are available – from data on AIDS cases and AIDS mortality.

Measurement of HIV infection has until recently been technically difficult and relatively expensive, especially if done on a large scale. The newly developed method of saliva tests is expected to greatly facilitate HIV screening. Research on HIV prevalence also carries ethical problems, for instance whether or not persons found to be HIV-positive in surveys done under conditions of confidentiality should be informed.

#### *Small samples*

Surveys of HIV seroprevalence are mostly done through small samples either from more easily reached geographical locations, from sub-groups such as blood donors and pregnant women seeking antenatal care (ANC data), or from high-risk groups such as sex workers, STI clients and injecting drug users. This means that *every seroprevalence estimate has a bias characteristic of the particular subgroup, which should caution against drawing inferences beyond the sample population itself.*

#### **Box 1: The use of ANC data**

An HIV-prevalence estimate based on e.g. data from pregnant women in Kinshasa, DR Congo, may be used to estimate prevalence in “urban low-risk groups”. Yet Kinshasa is not representative of urban areas in DR Congo, and pregnant women are poor representatives of all low-risk adults (US Bureau of the Census 1998a). Another problem is that HIV-infection in itself is estimated to reduce the fertility of infected women by 20 per cent (UNAIDS 1999c). This may mean that ANC data underestimate HIV prevalence. Recent population based studies have however shown that where the epidemic is largely transmitted heterosexually, ANC data does provide a good estimate of HIV prevalence in adults (15–49) (UNAIDS 1998c). This is the case in Sub-Saharan Africa and large parts of Asia. Where the HIV-virus is mainly transmitted between men or injecting drug users a good estimate of HIV-prevalence may require other types of data.

In most countries, comparable studies that would allow calculations of “average” national seroprevalence are simply not available. When national estimates are reported, they are often not based on sound national data (US Bureau of the Census 1998a). The lack of sound data affects estimates of incidence perhaps more than estimates of prevalence, given that in most cases incidence estimates are calculated from successive prevalence figures.

### **Estimates of AIDS**

Correct diagnosis of AIDS requires access to medical services with relevant competence. Most people in the heavily affected countries do not have such access, or cannot afford to seek the services. Those who do, not always get a correct diagnosis. Most of the data on AIDS, especially on AIDS deaths, therefore emanates from theoretical models of the progression from HIV to AIDS. As most infected persons in developing countries do not know that they are HIV-positive and even fewer when they were infected, it is very difficult to establish the average incubation periods for any given population. There is also evidence of a great individual variability.

The models used estimate the incubation periods in developing countries to between five and eight years, and ten years for high-income groups. A small proportion lives considerably longer without symptoms. Studies also suggest that the younger people are when infected with HIV, the longer they are likely to live before they develop AIDS (Pisani 1999). Survival time from symptoms to death also varies considerably between regions and social groups. Before the development of anti-retroviral therapies, the average period in developed countries was at least 2.5 years. In developing countries it was probably considerably shorter for all but the wealthiest groups. The new therapies appear to make it possible to slow down or even reverse disease progression to a point where AIDS in rich developed countries may be transformed from a death sentence to just another chronic disease. The high cost of these therapies makes them accessible only for very limited groups in poorer countries.

Mortality increases from AIDS can be estimated through demographic indicators. Transmission of HIV from HIV-positive mothers to their newborn children leads to relatively rapid death in AIDS. One relatively early sign of growing HIV infection among women should therefore be rising infant and child mortality, in particular in societies with high levels of childbearing. Another indicator, useful at later stages of the epidemic, is information on adult deaths. Given the low adult death risks even in poor societies, any observed rise in adult deaths might be indicating that AIDS is taking a toll. AIDS-related increases in adult mortality are also reflected in a growing number of orphans, especially so-called double orphans who have lost both their parents.

### **Problems of data collection and measurement**

Demographic indicators require good data. However, few developing countries have anything like a full-scale registration of births and deaths. Estimates of mortality levels and trends are normally based on population censuses, at best taken every ten years. In many countries, censuses do not easily lend themselves for direct estimation of adult mortality. National sample surveys such as the Demographic and Health Surveys (DHS) are often undertaken in intercensal periods. However, they are not designed for comparisons of estimated national mortality levels with census results, and definitely do not permit reliable analysis for subunits of the sample. Local sample surveys are a possibility, but would not give data of value for national estimates.

## Models

Models of the epidemic and its characteristics have since the beginning of the epidemic been a necessary instrument for research for research and surveillance. Some of the models are complicated, but simpler models have been developed for use by national and local governments and other large-scale employers. In the early stages of the epidemic, it was the lack of accurate and statistically reliable data that led to the construction of a variety of models of the epidemic. Today, model development is increasingly synchronised with data collection. New data is collected to serve the models and models are revised following better insights through improved data – a process that can lead to substantial revisions in HIV/AIDS estimates. This was the case with the UNAIDS annual review of the global HIV/AIDS situation 1997. New data had been made available, which showed that the progress of the epidemic varied considerably more between countries and communities than previous data had indicated. New country-specific models were elaborated to replace the earlier general models, and these often gave much higher figures. When 1996 estimates were revised in light of the new data and methods, it became clear that global levels of infection in 1996 had been underestimated by over one third (UNAIDS 1997). The difference also can go in the opposite direction: Improved surveillance now suggests that national prevalence rates in 1998 for a few large Asian and Latin American countries were overestimated (UNAIDS 1999a). The revised total estimate for Asia in December 1999 is 6.5 million HIV-positive persons, lower than the 1998 estimate of 7.3 million.

## 4. Overview of estimated demographic impacts

Well into the second decade of the HIV/AIDS epidemic there is still no broad consensus over its demographic impact, either as of today or for the future. However, for a number of countries especially in Sub-Saharan Africa, improvements in general mortality levels since independence have now been halted or even reversed through increases in adult and infant/child mortality.

### Box 2: Demographic impact according to UN and US Bureau of the Census

Changes in mortality due to AIDS led the UN Population Division to introduce in its 1992 World Population Prospects adjustments for AIDS mortality for 15 African countries. The 1996 version of these projections considers AIDS mortality for 28 countries; 24 from Sub-Saharan Africa, 2 from Asia and 2 from Latin America. For 1998, they contain adjustments also for another 6 countries, 5 African and 1 Asian.

The other main producer of estimates, US Bureau of the Census, publishes a World Population Profile summarizing country estimates of mortality with and without AIDS respectively. The 1998 Profile contain 28 countries, 24 of which are the same as in the latest Population Division projections. Comparisons show that Population Division projections indicate considerably less current impact and a more rapid return to non-AIDS levels than those of US Bureau of the Census (Table 5, Annex 1). The presentation below builds mainly on the US Bureau of the Census estimates, which are also used by UNAIDS. The US Bureau of the Census information on HIV/AIDS is available at [www.census.gov](http://www.census.gov)

UNAIDS currently publishes estimates of HIV-prevalence for about 90 countries including the 34 considered by Population Division. The information is available in country-specific Epidemiological Fact Sheets at [www.unaids.org](http://www.unaids.org)

## **AIDS and population increase**

AIDS is most widespread in countries with rapid population increase. The net AIDS impact on population increase is closely related to fertility levels in society. Where fertility is high, as in Sub-Saharan Africa, more new members continue to be added to the population than are lost by rising death tolls. On the other hand, where fertility is low or declining substantially, as in e.g. Thailand, AIDS may bring the rate of population increase down close to zero or below. In Sub-Saharan Africa, the growing deaths among adults in the midst of continued population growth mean additional burdens on both local communities and the governments:

- *Firstly*, ever more newborn need care, education and social services;
- *Secondly*, a significant proportion of these infants will grow up as orphans;
- *Thirdly*, the proportion of elderly in society will increase in numbers at least in the short term. Many of them will need support from elsewhere when AIDS hits their offspring.
- *Fourthly*, the number of people in productive ages will decline or at least not grow in proportion to those in low or high ages

## **Impact on adult mortality**

In the worst affected countries, HIV/AIDS has contributed to a doubling of mortality among adults in productive ages. The impact is stronger among young people. Most high-risk groups are in the productive ages, as are the sexually most active. Where heterosexual contact is the dominating mode of transmission, on average women are infected at lower ages than men are. This reflects age differences between partners/spouses, and also the higher physiological susceptibility of women. How the sex balance of AIDS evolves depends on a complex set of circumstances (Box 4). In most world regions, women are a minority among HIV-infected people (Table 2, Annex 1). In Sub-Saharan Africa, according to a special study (UNAIDS 1997b) they may outnumber the men by 20 per cent. The gender gap is, however, closing gradually in all world regions (UNAIDS 1999c).

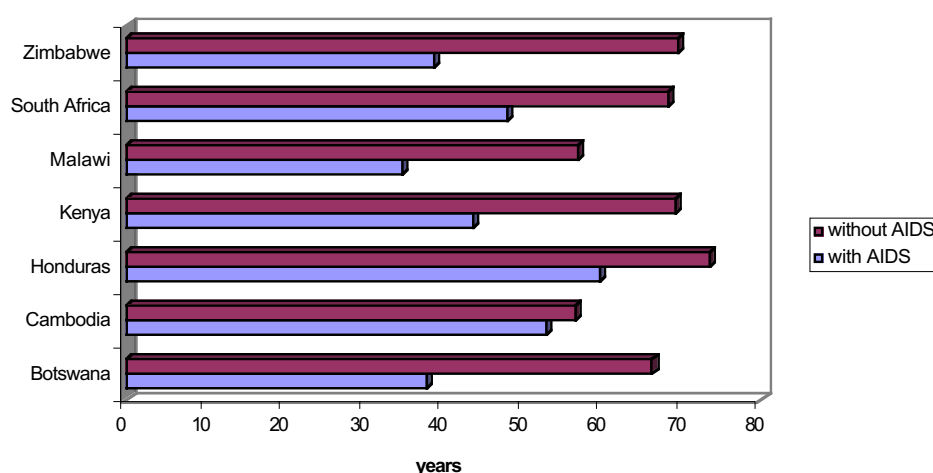
### *Crude death rates*

As already mentioned, AIDS is today the leading cause of death in Africa. In several countries in Sub-Saharan Africa, crude death rates have increased dramatically due to AIDS (Table 3, Annex 1), especially in the age group 20–44 years. In Uganda for example, AIDS causes 7 out of every 10 deaths for women of these ages. In Namibia, HIV causes almost twice as many deaths as malaria across all ages (UNAIDS 1997a), and the crude death rate is more than twice as high as would have been the case without AIDS.

### *Life expectancy*

As a result of the increasing mortality levels, life expectancy has dropped considerably in many Sub-Saharan countries to levels similar to what these countries had 30–40 years ago (Table 3 & 4, Annex 1). By comparison, the two non-African countries presented in Figure 5 below are as yet little affected, but for Honduras a more significant setback is expected in the first decade of the 21<sup>st</sup> century.

Figure 5. Life expectancy with and without AIDS 2010, selected countries



Source: US Bureau of the Census 1999

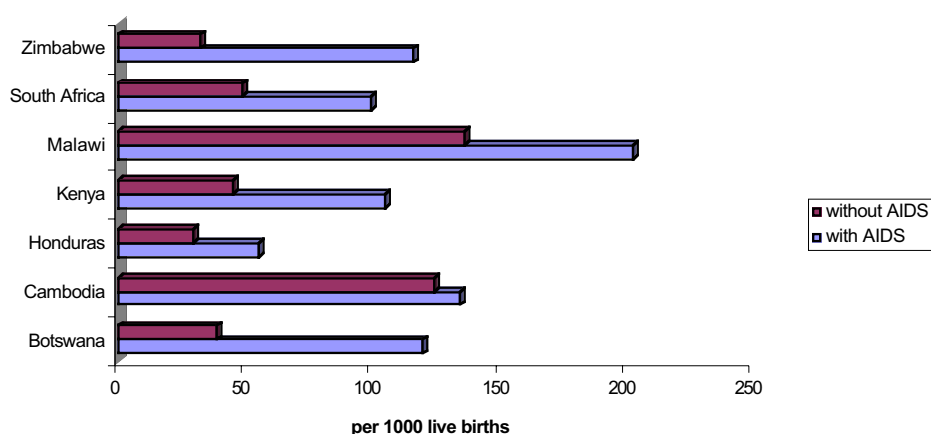
### Impact on infant and child mortality

The impact of AIDS on infant and child mortality goes primarily through transmission from HIV-positive mothers to their children before, during or after birth through breast-feeding. The probability that such children get the virus is estimated to 25–35 per cent in developing countries (UNAIDS 1999c). A child breast-feeding from an HIV positive mother is estimated to run a 15 per cent risk of infection, and some 200 000 infants a year may acquire HIV this way (WHO 1999b). An estimated four-fifths of HIV-infected children die before the age of five. One third do not reach their first birthday. New figures from UNAIDS indicate that during 1999 some 570 000 infants acquired HIV infection from their mothers (UNAIDS 1999a)<sup>6</sup>. In an increasing number of countries HIV is now the single greatest cause of child death. So far, the HIV/AIDS epidemic has claimed the life of nearly 4 million children under 15, and another 1.2 million is living with HIV/AIDS.

In East and Southern Africa, the regions worst affected by the epidemic, infant mortality rates are about 70 per cent higher than they would have been without AIDS (Table 3 & 4, Annex 1). Zimbabwe's infant mortality rate is 72 per cent higher, and by 2010 it is expected to be more than twice the expected level without AIDS, while its under-five mortality rate will be 3–4 times higher.

<sup>6</sup> By late 1998 more than 90 per cent of all HIV-infected babies had been born in Africa, but the number of infants infected by their mothers is rising rapidly in India and South East Asia (UNAIDS 1999a).

Figure 6. Under five mortality with and without AIDS 2010, selected countries



Source: US Bureau of the Census 1999

Two things should be noted in this context:

- *Firstly*, the *relative* impact of AIDS depends on the general level of mortality. In countries and areas where infant and child mortality is high, the impact is less significant than where it is low. Thus in Malawi and Tanzania AIDS today accounts for an estimated 15–20% of under five mortality and 10% of infant mortality, in Botswana and Zimbabwe over 50% of under five mortality and around 40% of infant mortality.
- *Secondly*, these estimates tell the story of direct AIDS deaths only. Indirect effects on the survival of young people, via orphanhood, malnutrition and other causes, remain to be added.

### Box 3: Orphans from AIDS

A rapidly growing number of orphans is one of the most visible and cruel effects of the HIV/AIDS epidemic. Given that half of all people with HIV have become infected before they turned 25 and typically die of AIDS before 35, their children are in most cases too young to fend for themselves. Estimates show that the epidemic by the end of 1999 had produced a cumulative total of 11.2 million orphans, 95 per cent of them in Sub-Saharan Africa (UNAIDS 1999a). Projections show that there will be another 1.8 million by the end of 2000 (UNICEF/UNAIDS 1999). NB. These cumulative figures include orphans who have died, as well as those who are no longer under age 15. The calculations and projections of orphanhood are still based on fairly weak data backed up with assumptions and models. AIDS is expected to lead to a historically very large growth in numbers of orphans prolonged over a uniquely long period. Before AIDS, orphans constituted about 2 per cent of all children in developing countries. By 1997, the figure had in many African countries jumped to 7 per cent and in some countries was as high as 11 per cent (UNICEF/UNAIDS 1999).

With some 22 million adults in Sub-Saharan Africa presently living with HIV, and millions of new being infected every year, the number of orphans from AIDS is likely to continue to rise for at least another 20 years. The significance of AIDS in relation to other causes of orphanhood differs considerably even between the countries worst affected by the epidemic. This indicates that there are other major sources of orphanhood, but is primarily the result of the time that the epidemic has been active in a country. In Zimbabwe, the proportion is projected to be 75 per cent in 2010, while the same estimate for South Africa, where the epidemic is more recent, is 36 per cent (Hunter & Williamson 1997).

### Impact on fertility

Compared to the work done on mortality effects, fertility has received fairly little attention<sup>7</sup>. The information available today on fertility change is also inconclusive. Fertility should be expected to decline as a direct effect of the fact that women die before they reach the end of their reproductive years. A French theoretical model (CEPED 1997) gives the following estimates: For a country like Tanzania, with high rates of childbearing and moderately high average HIV prevalence, average births per woman will decline by about 25 per cent. For a Botswana type country with lower rates of childbearing and a higher HIV prevalence, the estimated reduction is in the order of one third or more. The net result is an even lower rate of population increase than where such effects are not considered. In reality, they may be at least in part countered by other changes. One example would be a programme to reduce STI prevalence, which if successful also reduces the incidence of involuntary infertility and thus contributes to bringing average fertility up. On the other hand, new evidence shows that HIV itself reduces women's fertility: once infected, a woman can be expected to have 20 per cent fewer children than she otherwise would (UNAIDS 1999a).

Before AIDS, it was a well-documented fact that high infant and child mortality contributed to high levels of fertility. The loss of children to AIDS may, where fertility is stable and high, lead to wishes to replace the deceased. However, the effects may be different in countries where fertility decline started before AIDS mortality became wide-

<sup>7</sup> The estimates used by UNAIDS have for example no assumptions on how the HIV/AIDS epidemic affects fertility levels.



spread. Further, if people who already use other contraceptives turn to more frequent use of condoms in order to avoid contracting HIV, fertility decline would continue. Other behaviour changes could also contribute to a decline in child-bearing. Fear of infection may lead adolescents to postpone their sexual début or to insist on protection. Better use of condoms in pre-marital relations should lead to higher age at the time of the first child, and to fewer children overall<sup>8</sup>. However, the net impact of such trends could well be of minor significance compared to that of general forces behind the current transition to low fertility in most of Asia and some parts of Sub-Saharan Africa.

#### **Box 4: AIDS and women**

Initially, AIDS was by and large a men's disease. Women were mainly affected through blood transfusion or as injecting drug users. When the virus began to spread through heterosexual contact, prostitutes became important carriers of infection to clients who thereby exposed their stable partners for the risk of HIV infection. Gradually, non-commercial heterosexual contacts took an increasing share of the transmission.

Where women mainly contract HIV from their husbands or stable men relations, they are infected later than their men, and therefore ought to survive their men more often than vice versa. In highly affected societies on the other hand, men – aware or unaware of being infected – may seek out younger partners in order to avoid getting infected, and in the process infect the younger partner. Such processes lie behind the tendency that AIDS deceased women are younger than AIDS deceased men.

Women are both physiologically and socially more susceptible to the transmission of HIV than men. Transmission is easier from men to women than the other way. In addition, given gender differences in sexual relations, women are generally more exposed to the effects of men's extra-marital relations than the reverse. New community-based studies document situations where surprisingly high proportions of girls are infected during their teens and before marriage. Most of these girls have been infected by men much older than themselves. For example, 23 per cent of teenage girls in Kisumu, Kenya, were HIV-infected as compared with only 8 per cent of boys (UNAIDS 1999b). The difference persisted in the age group 20-25, with 38 per cent women infected against 12 per cent men. Where HIV-prevalence is high among young women, young men – partners or husbands – may become the ultimate victims of the behavior of older men.

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<sup>8</sup> Studies report uniquely high levels of premarital child bearing in Namibia and part of South Africa in recent years (Tollman et al 1999). This trend appears to go contrary to delayed marriage and marital child bearing.

## 5. International development co-operation and HIV/AIDS

Surveillance of the progress of the epidemic in individual countries serves several purposes in AIDS-related work, among these to:

- improve on general planning and preparation for mitigating the effects of AIDS;
- identify areas of high priority in HIV prevention activities;
- identify needs for better data, through research and surveillance;
- identify necessary elements for consideration in development co-operation programmes in order to better manage the epidemic and its impacts.

Information relevant for macro-level programme development is e.g.:

- prevalence estimates for urban areas and regional sub-units, and for urban areas;
- age- and sex-differentiated trends in HIV prevalence;
- trends in the number of child-headed households and children with orphan status;
- labour availability by sector.

Such data are best retrieved directly from UNAIDS, supplemented by data directly from the US Bureau of the Census. In individual countries the UN Theme Group and the UNAIDS Country Programme Adviser would be the best providers of detailed data for sub-national programme and project planning.

### Country classification

One way to differentiate countries (and parts of countries) according to the status or stage of the epidemic is to classify them as having a '*nascent*', '*concentrated*' or '*generalised*' epidemic.<sup>9</sup> Each category raises its own special challenges for development co-operation, and the classification has the potential to become a useful instrument in Swedish macro-level co-operation planning.

- '*Nascent*' means that the HIV infection has been observed in the country but not (yet) gained in strength. Less than 5 per cent in all high-risk groups are infected. Prevention activities – broad information campaigns, condom distribution etc – are essential to stall the epidemic, and will if successful give high returns to investment.
- '*Concentrated*' relates to situations where HIV is present in high-risk groups such as intravenous drug users, homosexuals and/or prostitutes, while not (yet) spreading in the population at large. HIV prevalence is above 5 per cent in one or more of these groups. Information campaigns need to be complemented with special actions directed to these groups in order to prevent HIV transmission to others and help them hold back on further internal HIV transmission.
- '*Generalised*' is the case when pregnant women show high rates of HIV prevalence (>5 per cent). It should be noted that this classification need not always refer to a country as a whole. The epidemic may have spread widely in certain regions of a country and not in others. Efforts to mitigate impacts in the first type of regions have high priority, and should be guided by special impact assessments in affected areas, places of employment and social groups.

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<sup>9</sup> This typology was proposed by the World Bank (1997).

Given the dynamic nature of the epidemic it is important that data is regularly updated, and that country classification is frequently revised. New or better surveillance data might make it necessary to radically redefine the status of an epidemic. Regular updates also make it possible to avoid a sense of complacency in countries or areas not included in the generalised category. Barnett and Whiteside (1999) use a simplified version of this typology, and talk about *generalised* and *localised* epidemics.

“Generalised” applies to cases when prevalence is high in the entire age cohorts of sexually active, and “localised” when high prevalence is restricted to certain population sub-groups. In cases where the quality of data is in doubt, it might better to use this less precise typology.

### **Support for surveillance**

Certain surveillance instruments need continuous support from donors. Among these are population censuses, which provide data on national and regional trends in mortality. Another source is national surveys; the Demographic and Health Surveys (DHS) which are currently carried out (with Sida support) in several countries could if revised provide better indicators on HIV and AIDS.

#### *Yardstick methods*

Censuses and sample surveys are useful for surveillance of long-term trends. Quick yardsticks of the situation in local areas require other instruments. Hospital records of sick adults seeking treatment could be a useful indicator of trends in the number of AIDS-sick people. Local observations of trends in infant and child deaths (e.g. through burials) would be useful as indicators of HIV among women.

In many HIV-affected countries, HIV spreads earlier and more profoundly in some geographical areas than in others. Existing methods for collecting data on chronically sick family members or on deaths (and burials) in local communities could most likely be applied in HIV/AIDS surveillance. Simple household surveys can be used to measure changing household composition, number of child-headed households, labour availability, and number of households with one or more orphans.

#### *Emerging food needs*

Various indirect measures are possible. Emerging food needs in rural areas with a record of food sufficiency could be evidence of a loss of adult labour through AIDS. Indicators to measure degrees of vulnerability among smallholder economies to the loss of adult labour (through AIDS) have been elaborated, of value in the identification of communities most likely to need special support (Barnett 1994).

#### *STI prevalence*

STI prevalence is an indicator of (at least) two circumstances; extent of extra-marital sexual relations, and susceptibility for infection. A person with STI stands a much higher risk of contracting HIV through sexual contact. STI is more common in men who are not circumcised, and studies have shown that areas in Sub-Saharan Africa where male circumcision is not practised tend to have higher HIV-prevalence.

## 6. Final comments

The HIV/AIDS epidemic is now close to two decades old, and will be with us well into the 21<sup>st</sup> century. In the most affected areas, it has progressed in unforeseen ways, and now advances much more rapidly in Southern Africa than was predicted. This fact is evidence of the difficulties in predicting its future course. It also emphasises the need for continuous assessments of the progress and character of the epidemic in local and national settings.

It is by now evident that HIV/AIDS is more of a development problem than a health problem, and that the epidemic cannot be fought with the instruments of modern medicine alone. The most fertile ground for the spread of HIV is social insecurity, poverty, weak social and political institutions and labour markets distant from the residence of workers. Military conflicts may play a significant role both in their effects on people's living conditions, e.g. by causing refugee movements and increasing poverty, and in the "Trojan horse" role played by the military itself (Shell 1999a, 1999b).

The different conditions of development explain the gaps already existing between weak – susceptible – societies unable to impede HIV spread at an early stage, whose levels of poverty and social unrest – vulnerability – are reinforced by AIDS itself, and strong societies where HIV would not spread very widely and where institutions and instruments suffice for early countermeasures. As long as the underlying causes are not firmly addressed, the gaps should be expected to widen further.

The most immediate support required to HIV affected nations is to strengthen local communities in their ability to handle HIV/AIDS and to introduce behaviour changes to stem further spread. Beyond this, all evidence points to radical and determined poverty alleviation and strengthening of social and political institutions as the most urgent tasks to save societies – indeed countries – from a semi-permanent state of widespread AIDS, where its productive resources are continually drained and no development is possible. The HIV/AIDS epidemic has been called a national disaster, a state of war. The prime enemy in that war is poverty and insecurity. Joint mobilisation between national and international actors is required, where the sources of poverty have to be sought and tackled wherever they are found.

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## Annex 1. Tables

*Table 1. Global summary of the HIV/AIDS epidemic for 1999*

<b>People newly infected during 1999</b>	<b>million</b>	<b>No. of people living with HIV/AIDS 1999</b>	<b>million</b>
Total	5.6	Total	33.6
adults	5	adults	32.4
whereof women	2.3	whereof women	14.8
children >15 yrs	0.57	Children >15 years	1.2
<b>AIDS deaths during 1999</b>	<b>million</b>		
Total	2.6		
adults	2.1		
whereof women	1.1		
Children <15 years	0.47		

Source: UNAIDS 1999a

*Table 2. Regional HIV/AIDS data and estimates, December 1999*

<b>Region</b>	<b>Epidemic started</b>	<b>Total no of people with HIV/AIDS</b>	<b>Adult prevalence rate* (%)</b>	<b>Percent women among HIV-positive adults</b>
Sub-Saharan Africa	late '70s-early '80s	23.3 million	8	55
North Africa and Middle East	late '80s	220 000	0.13	20
South and South-East Asia	late '80s	6 million	0.69	30
East Asia and Pacific	late '80s	530 000	0.068	15
Latin America	late '70s-early '80s	1.3 million	0.57	20
The Caribbean	late '70s-early '80s	360 000	1.96	35
Eastern Europe and Central Asia	early '90s	360 000	0.14	20
Western Europe	late '70s-early '80s	525 000	0.25	20
North America	late '70s-early '80s	920 000	0.56	20
Australia and New Zealand	late '70s-early '80s	12 000	0.1	10
<b>TOTAL</b>		<b>33,6 million</b>	<b>1.1</b>	<b>46</b>

\* Percent with HIV/AIDS among people 15–49 years. Source: UNAIDS 1999a

Table 3. Demographic Indicators for 1998: With and Without AIDS

Country	Life Expectancy		Crude Death Rate		Infant Mortality Rate (0–1 year)		Under Five Mortality (0–5 years)	
	w/AIDS	w/o	w/AIDS	W/o	w/AIDS	w/o	w/AIDS	w/o
Botswana	40.1	61.5	20.9	8.6	59.3	36.4	121.1	57.4
Cambodia	48.0	50.7	16.5	15.0	106.8	104.2	179.7	171.9
Ethiopia	40.9	50.9	21.3	15.0	125.7	115.4	197.6	169.2
Honduras	65.0	69.2	7.0	5.5	41.9	38.6	61.2	50.4
Kenya	47.6	65.6	14.2	6.2	59.4	44.7	107.0	64.9
Malawi	36.6	51.1	23.7	14.4	133.8	117.9	231.6	190.3
Rwanda	41.9	53.9	19.0	12.2	113.3	101.3	181.9	148.5
South Africa	55.7	65.4	12.3	7.8	52.0	43.3	95.5	69.7
Tanzania	46.4	55.2	16.7	12.1	96.9	89.2	160.1	137.8
Uganda	42.6	54.1	19.0	12.5	92.9	81.3	164.5	132.9
Zambia	37.1	56.2	22.6	11.4	92.6	72.0	181.2	125.7
Zimbabwe	39.2	64.9	20.1	6.2	61.8	35.9	123.4	50.5

Source: US Bureau of the Census 1999

Table 4. Demographic Indicators for 2010: With and Without AIDS

Country	Life Expectancy		Crude Death Rate		Infant Mortality Rate (0–1 year)		Under Five Mortality (0–5 years)	
	w/AIDS	w/o	w/AIDS	W/o	w/AIDS	w/o	w/AIDS	w/o
Botswana	37.8	66.3	23.8	6.4	5.2	26.3	119.5	38.3
Cambodia	52.8	56.7	12.8	10.9	81.7	78.1	133.9	123.9
Ethiopia	38.6	54.7	21.8	12.1	112.4	95.4	183.4	136.7
Honduras	59.7	73.4	9.7	4.4	32.1	23.5	55.2	29.3
Kenya	43.7	69.2	18.6	5.2	53.9	32.9	105.2	45.4
Malawi	34.8	56.8	2.3	10.4	113.1	88.4	202.6	136.0
Rwanda	37.6	59.2	23.1	9.4	97.1	74.7	166.4	105.5
South Africa	48.0	68.2	17.8	7.1	50.7	32.3	99.5	48.5
Tanzania	46.1	60.7	16.3	8.9	77.8	65.2	131.3	95.8
Uganda	4.6	59.5	14.4	8.8	68.6	58.5	120.6	92.9
Zambia	37.8	60.1	21.5	9.0	81.7	58.4	160.7	96.9
Zimbabwe	38.8	69.5	22.5	4.9	53.7	24.0	115.6	31.8

Source: US Bureau of the Census 1999



*Table 5. Life expectancy in selected African countries at two points in time as projected by UN Population Division and US Bureau of the Census*

	<b>US Bureau of the Census (1998)</b>	<b>UN Pop.Div. (2000–2005)</b>	<b>US Bureau of the Census (2010)</b>	<b>UN Pop.Div. (2010/2015)</b>
Botswana	40.1	41.3	37.8	48.9
Ethiopia	40.9	43.9	38.6	52.3
Kenya	47.6	48.4	43.7	51
Malawi	36.6	40.4	34.8	51.2
South Africa	55.6	46.9	48.0	47.2
Tanzania	46.4	47.9	46.1	52.4
Uganda	42.6	44.8	47.6	48.1
Zambia	37.1	42	37.8	51.5
Zimbabwe	39.2	41.2	38.8	50.4

Source: UN 1999 and US Bureau of the Census 1999.

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