



Republic of Kenya



AIDS in Kenya

**Background • Projections
Impact • Interventions • Policy**

Sixth edition, 2001

Ministry of Health

Background

HIV/AIDS reservoirs

The HIV/AIDS epidemic in Kenya is mostly invisible. It is estimated that 2.2 million Kenyans are now living with HIV infection, but few know whether they are infected or show outward symptoms of the disease. Only about 200,000 have AIDS, the acquired immune deficiency syndrome. The prevalence of HIV infection is the percentage of people currently living with it, including those with AIDS.

We can picture the HIV epidemic as a reservoir (fig. 1). The new cases, over 300,000 in the year 2000, represent the inflow to the first reservoir. The number of new HIV cases in a year is called the incidence of HIV infection. Many more people are exposed to the virus through risky behaviour or from their mothers, but not all will be infected. At the end of the year 2000, about 2.0 million Kenyans were living with HIV infection but did not have AIDS. Many do not know that they are infected. These HIV-infected Kenyans are the ones who can spread the virus to their sexual partners and children, continuously adding new cases of HIV to the reservoir.

Each year, some of those with HIV infection will become sick and develop AIDS. For some, this will happen quickly, in two or three years in adults or in the first year of life for infants who are infected. Many HIV-infected persons will not develop the symptoms of AIDS for 5 or 10 years or even longer. An

AIDS stands for *acquired immune deficiency syndrome*. It is a disease that is caused by the HIV virus, which acts by weakening the immune system, making the body susceptible to other diseases.

estimated 200,000 Kenyans develop AIDS each year. This represents the incidence of AIDS. Only a small proportion of these cases are reported to the Ministry of Health since some people with AIDS symptoms do not go to hospitals and others are not tested or reported by their doctors because of the lack of test kits, stigma, or failure of health facilities to report the cases.

In figure 1, the Kenyans who are living with AIDS are represented by a second smaller reservoir, which is the prevalence of AIDS. This is the most visible portion of the epidemic, because these are the people in our communities who are sick and suffering from this terrible disease. Most

people with AIDS who do not have access to combination drugs for this disease will live only a few months to 2 years, which is why this reservoir remains smaller than the reservoir of HIV infection.

There is a third reservoir in our picture, which represents those who have died from this disease. Since the beginning of the HIV epidemic in Kenya, it is estimated that over 1,500,000 have died from AIDS. An estimated 180,000 died in the year 2000. Deaths (mortality) caused by HIV will continue to increase because of the number of people already infected with HIV who will develop AIDS each year, even if we prevent new cases of HIV infection in the country.

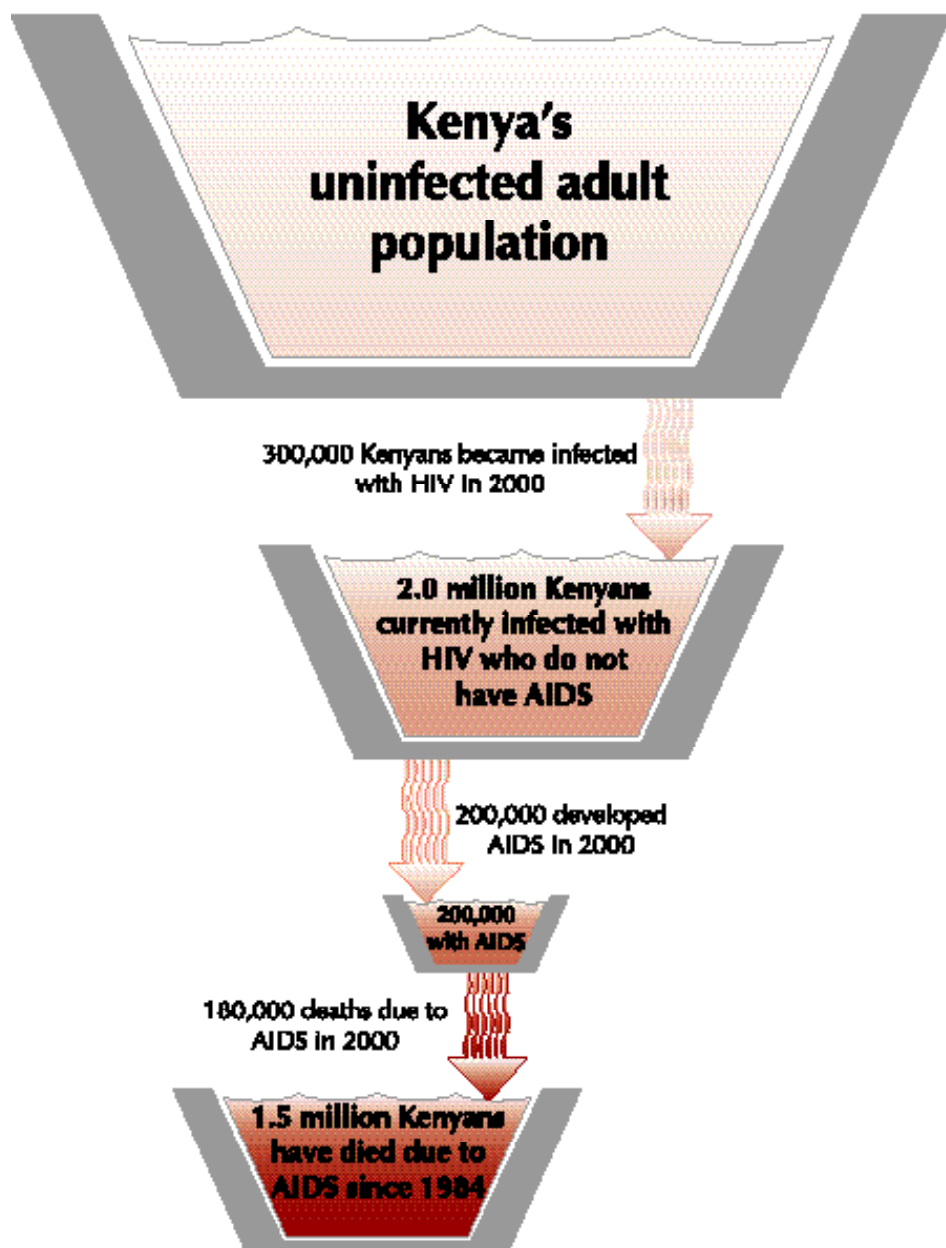


Figure 1. Reservoirs of HIV and AIDS in Kenyan adults.

Sentinel surveillance results

Kenya uses a sentinel surveillance system that provides the basis for estimating the extent and trends of HIV infection. The system operates in 12 urban and 8 peri-urban or rural sites around the country. These sites are antenatal clinics, where women go for care during pregnancy. Each year, pregnant women in each site are anonymously tested for HIV. The results are reported to the National AIDS and STDs Control Programme. Additional surveillance is conducted by the University of Nairobi and the Kenya Medical Research Institute (KEMRI).

The results for the last few years show that there are many sites in Kenya where the proportion of pregnant women who are infected with HIV is 20% or higher (fig. 2). These sites are Busia, Chulaimbo, Kisumu, Mbale, Meru, Nakuru and Thika. In several other sites 10 to 19% of pregnant women are infected. These sites are Kakamega, Kisii, Kitale, Kitui, Maragua, Mombasa, Nairobi, Nyeri and Tiwi. In other sites—Kaplomb, Mosoriot and Njambini—infection rates are 4 to 9%. Infection rates may have been lower at some sites because behaviour patterns are different or because the epidemic started later in these areas. However, it is clear that the levels of HIV infection are alarmingly high in most parts of the country.

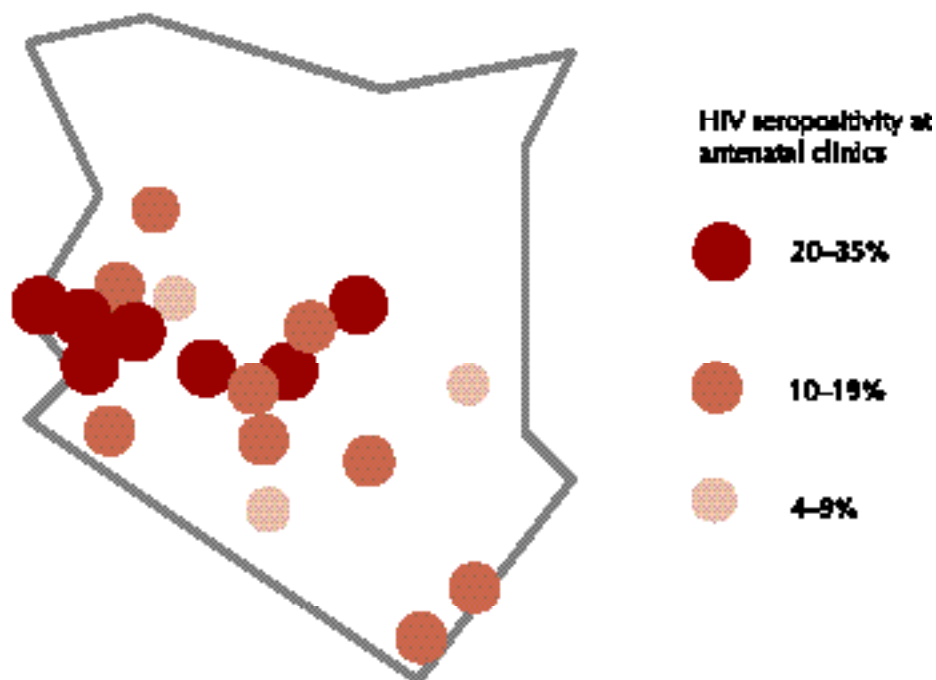


Figure 2. HIV prevalence of selected surveillance sites, 2000.

Using the sentinel surveillance data and adjusting it to be representative of the total population, the National AIDS and STDs Control Programme in the Ministry of Health has estimated that in 2000 over 2 million people in Kenya were infected with HIV.

Trends in HIV infection are illustrated in figure 3 for two sentinel surveillance sites, Mombasa and Meru, covering the last 10 years. These graphs show the percentage of pregnant women visiting the clinic who were infected with HIV. Mombasa is representative of areas that have had stable infection levels for some time. A stable infection level means that the number of new infections each year equals the number of people dying each year from AIDS (provided no major population movements occur). Meru is an example of an area that has experienced rapid increases in the number of people infected. The rapid spread of HIV infection means that no district in Kenya can be complacent about AIDS, even if HIV levels are currently low. HIV can spread very rapidly and become a major problem in a period as short as one or two years.

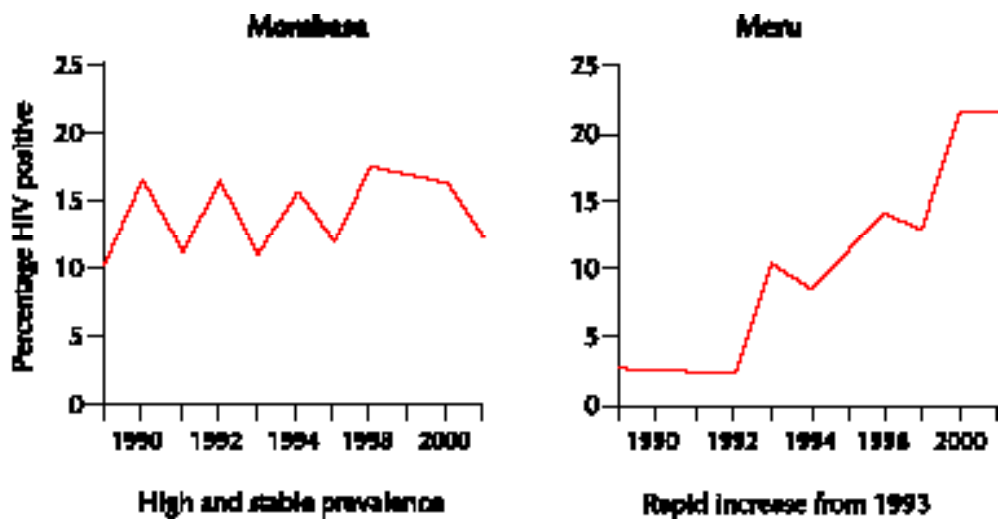


Figure 3. Trends in HIV in antenatal clients at selected clinics.

Results for each of the sentinel surveillance sites are shown in table 1. These are estimated figures, not exact, since the number of women tested varies by year and by site. When the number tested is small, the uncertainty associated with the estimate is high. However, taken as a whole, these results describe the extent of HIV infection in parts of urban and rural Kenya (tables 1 and 2).

Kisumu (included in table 1) is an example of an area where the HIV infection rate has consistently been very high. In 1990, rates in antenatal women were nearly 20%, but they have continued to rise over the last decade, with a rate of 35.4% in 2000.

Table 1. Percentage of pregnant women testing HIV positive at urban sentinel surveillance sites

Urban site	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Busia	17	10	30	22	23	22	28	29	30	34	22
Garissa	5	–	5	4	15	6	5	8	6	6	–
Kajiado	–	–	–	–	–	6	7	10	8	–	–
Kakamega	5	13	15	9	14	12	10	10	16	12	12
Kisii	2	4	0	3	9	4	16	16	15	12	16
Kisumu	19	19	20	20	30	25	27	33	29	27	35
Kitale	3	6	21	8	11	10	12	13	10	18	17
Kitui	1	5	2	8	20	4	4	6	10	9	14
Meru	3	–	–	2	11	9	16	14	23	30	35
Mombasa	10	17	11	17	11	16	12	17	16	–	12
Nairobi	–	12	13	17	15	16	16	–	–	17	–
Nakuru	10	13	13	23	–	27	11	25	25	27	11
Nyeri	3	4	9	3	6	–	9	7	17	–	14
Thika	3	10	3	28	40	–	13	19	33	18	21

Sources: for Nairobi: University of Nairobi Strengthening STD/AIDS Control in Kenya Project; for Kajiado: Kenya Belgium Cooperation Programme on the Control of Sexually Transmitted Diseases; for all other sites: NASCOP sentinel surveillance database

a dash (–) indicates no data

Table 2. Percentage of pregnant women testing HIV positive at rural and peri-urban sentinel surveillance sites

Rural site	District	1994	1995	1996	1997	1998	1999	2000
Chulaimbo	Kisumu	–	21	27	–	37	26	31
Kaplong	Bomet	–	–	4	6	6	6	4
Karurumo	Embu	2	10	–	27	12	–	–
Maragua	Muranga	–	–	–	11	7	–	10
Mbale	Vihiga	12	11	–	16	12	13	25
Mosoriot	Uasin Gishu	2	13	–	9	3	3	7
Njambini	Nyeri	–	–	–	5	4	–	9
Tiwi	Kwale	17	24	–	–	33	23	14

Sources: NASCOP sentinel surveillance database

a dash (–) indicates no data

Current estimates of HIV prevalence

Rates of HIV prevalence in pregnant women in Africa closely approximate the rates of HIV infection in the general adult population age 15 to 49.

Table 3. Estimated HIV infection in adults 15 to 49 by province, June 2000

Province	Number HIV+	Prevalence (%)
Nairobi	175,000	16
Central	240,000	13
Coast	135,000	10
Eastern	380,000	16
North Eastern	15,000	3
Nyanza	480,000	22
Rift Valley	390,000	11
Western	210,000	12
Total	2,025,000	13.5

Therefore, sentinel surveillance in antenatal clinics has been used to estimate the prevalence and trends of HIV infection in the adult population (table 3). Young women generally have higher rates of HIV infection than young men, but older men have higher rates of infection than older women.

HIV probably started to spread in Kenya in the late 1970s or early 1980s. Although HIV prevalence was very low in Kenya during the early 1980s, it has since been increasing. The National AIDS

and STDs Control Programme estimates that by June 2000, adult HIV prevalence had increased to 13.5% (NASCO 2000) (fig. 4). In urban areas prevalence is estimated to be 17 to 18%. That means that there are about 470,000 HIV-infected adults in urban areas. HIV prevalence in rural areas is increasing rapidly. In 2000 it was estimated at 12 to 13%. This suggests that there are about 1.5 million HIV-infected adults living in rural areas. Although prevalence is higher in urban areas, the absolute or total number of people infected is larger in rural areas since 80% of the population lives in rural areas; thus an estimated 72% of the infected adults lives in rural areas.

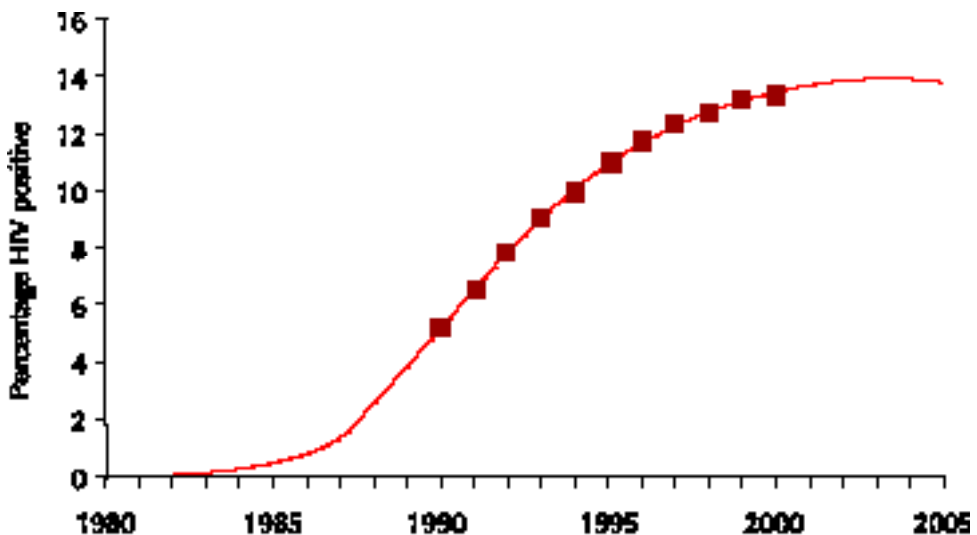


Figure 4. Adult HIV prevalence in Kenya.

Transmission mechanisms

HIV can be transmitted from one person to another in a number of ways. In Kenya, three transmission mechanisms are most important: heterosexual contact, perinatal transmission and blood transfusion.

Sexual contact. The majority of infections are transmitted through heterosexual contact. Although the probability of transmitting HIV in a single act of intercourse may be low, a number of factors increase the risk. They include the viral load of the infected partner; the presence in either partner of sexually transmitted diseases (STDs) like syphilis, chancroid or herpes, that cause genital ulcers; lack of male circumcision; or trauma during sexual contact. A significant number of Kenyan adults suffer from STDs and many have a large number of sexual partners, which increases their vulnerability and exposure to HIV. Consequently, most new HIV infections are due to heterosexual contact. Programmes designed to slow the spread of HIV need to focus on reducing transmission through sexual contact. Transmission risk is also high among men who have sex with men.

Perinatal transmission. Many children are infected perinatally; that is, they receive the infection from their mothers during pregnancy, at the time of birth or through breastfeeding. About 30 to 40% of babies born to infected mothers will themselves be infected. The rest will not be infected but are at risk of becoming orphans when their parents die from AIDS. About 100,000 children under the age of 5 are infected today.

Blood transmission. Transfusion with infected blood will almost always transmit HIV. However, in Kenya close to 100% of the blood is screened for HIV before transfusion. Therefore, this mode of transmission is considered rare in Kenya. Contact with infected blood or body fluids is also a risk, which health workers, traditional birth attendants, traditional male or female circumcisers and others can minimize by practising universal precautions, especially by wearing gloves. Injecting drugs or piercing with unclean instruments can also transmit the HIV virus.

Patterns of infection by age and sex

Since most new infections are transmitted by heterosexual contact, people are at risk of catching the infection as soon as they become sexually active. Figure 5 shows the results of a study in Kisumu, which illustrates the proportion of the population that is infected with HIV by age and sex. The pattern of infection is similar everywhere in Kenya. Infection levels are extremely high for girls and young women. The highest infection levels for women are in the 20–24 age group, while for men the highest infection levels are found in the 30–39 age group. The same study found

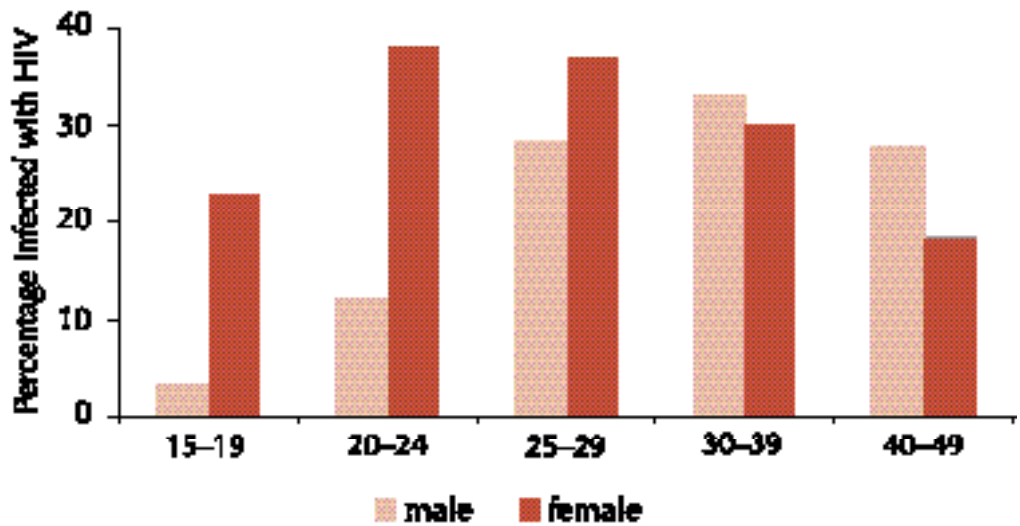


Figure 5. Prevalence of HIV in Kisumu, 1997 (WHO 1997).

that 18% of women were infected within two years of becoming sexually active.

Research suggests that high proportions of Kenya's teenagers are sexually active, and their sexual behaviour puts many of them at risk of HIV infection. *The Kenya Demographic and Health Survey 1998* (National Council for Population and Development 1999) reports that the median age at first sexual intercourse is currently about 17 for women and 16 for men. Median age at first marriage is currently about 20 for women and 25 for men. Thus, there is a significant period of sexual activity before marriage that exposes young people to the risk of HIV infection.

Not all young people have sex because they want to. In a nationwide study of women 12 to 24 years old, 25% said they lost their virginity because they had been forced. In Nyanza, a quarter of secondary school boys and half of the girls described their first sexual experience as unpleasant or worse. Unwilling sex with an infected partner carries a higher risk of infection, especially for girls. Since force is used, abrasions and cuts are more likely and the virus can more easily find its way into the bloodstream. What's more, condom use is unlikely in such situations.

Methodology for estimating national HIV prevalence

The National AIDS and STDs Control Programme (NAS COP) conducts regular HIV surveillance at a number of sites around the country. This information is used by an expert committee convened by the National AIDS Control Council to estimate the number of people infected with HIV in the entire country.

Surveillance conducted among pregnant women is particularly useful for estimating national prevalence since studies from Kisumu and other sites in Africa have shown that prevalence among pregnant women closely approximates prevalence among all adults between the ages of 15 and 49. Data from 14 urban sites from 1990 to 2000 are analysed to determine the trends in HIV prevalence. Every district in Kenya is represented by one of the 14 sentinel sites. Prevalence at these sites is assumed to represent prevalence among urban adults. Rural prevalence is estimated as a certain proportion of urban prevalence based on surveillance information from peri-urban and rural sites. Rural prevalence is assumed to be 40, 70 or 90% of urban prevalence, depending on the degree of isolation or integration of the rural and urban populations. Using these estimates for urban and rural prevalence and population numbers from the 1989 and 1999 censuses, the number of people infected with HIV is calculated by district. These figures are then summed to produce estimates of prevalence and numbers of people affected by province and for the nation. The estimates of the number of urban and rural adults infected with HIV are included in the appendix on page 50.

Details of the methodology and assumptions used in making these estimates are available in the *NASCOP report Estimating National HIV Prevalence in Kenya from Sentinel Surveillance Data* (NASCOP 2000b).

HIV progression

When a person is first infected with HIV, the virus begins multiplying in the body and within a few weeks a person becomes infectious to other persons with whom their body fluids come into contact. But it may take years before the disease AIDS develops. The average time from infection with HIV until the development of AIDS is 3 to 10 years, although it can be either shorter or longer.

During this entire time a person can infect other people, although they have few or no symptoms and are therefore not aware that they are infected. This contributes to the spread of HIV, since the infected person can transmit the virus to their spouse, other sexual partners, or from mother to child without realizing that they have it. The stronger the immune system works, the less likely they are to transmit the virus, so it may be months or years before a regular sexual contact becomes infected. This is why at any one time there are many married couples in the community who are discordant, where one partner is infected and the other is uninfected.

Once an adult develops AIDS, time to death varies from a few months to two years without antiretroviral treatment, with an average of about one year in adults (see fig. 6). As AIDS develops, a person becomes very infectious but is less likely to be sexually active.

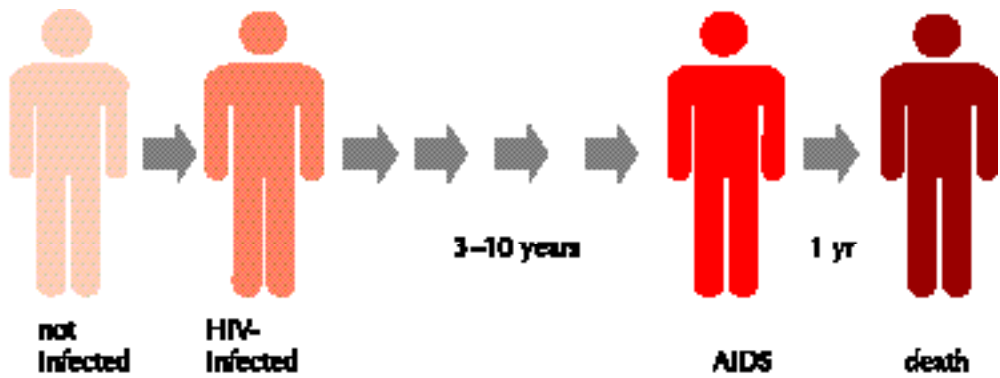


Figure 6. HIV progression in adults.

In children, progression of HIV infection is faster (see fig. 7). Most children with HIV die of ordinary diseases like malaria, diarrhoea or acute respiratory infections, which occur more frequently and are more severe in the HIV-infected child. About one-third of infants with HIV infection will die before their first birthday. Another third will die before they reach the age of three years. The others may live up to 10 years or older, and the disease may progress more like in adults.

Age and sex distribution of reported AIDS cases

Figure 8 shows the distribution of reported AIDS cases by age and sex since 1986. Over 98,000 cases of AIDS have been reported to the Ministry of Health. Although these represent only a small portion of all of the

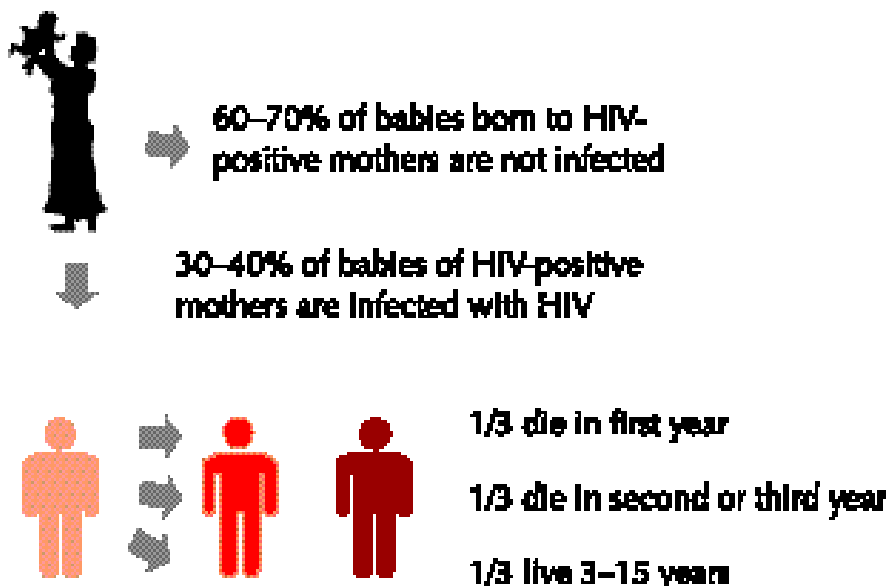


Figure 7. HIV progression in children.

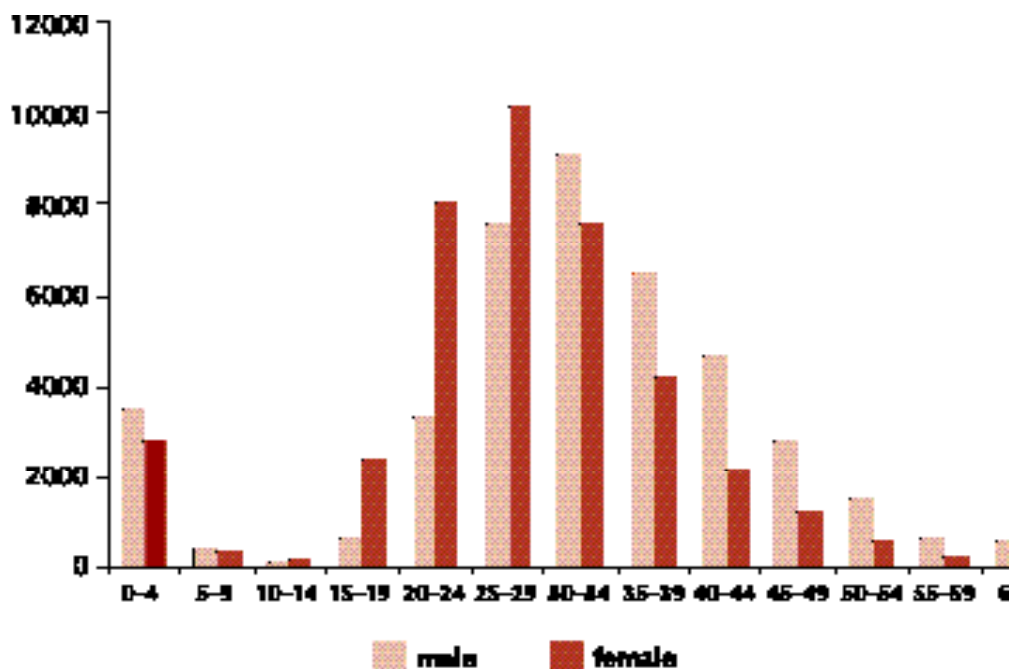


Figure 8. Age and sex distribution of reported AIDS cases (1986–2000).

Kenyan who have developed AIDS during this time, they illustrate the pattern. Each vertical bar shows the number of reported AIDS cases in a particular five-year age group. Males are shown in lighter red and females in darker red in each age group.

Figure 8 illustrates several facts.

- More than 75% of AIDS cases occur in adults between the ages of 20 and 45. Since this is the most economically productive part of the population, illness and death at these ages is a serious economic and social burden for the family and society. This is also the age when investments in education are just beginning to pay off. These deaths have important consequences for children since most people in this age group are raising young children.
- Male and female cases are about equal. This is because HIV is predominantly transmitted through heterosexual contact.
- The peak ages for AIDS cases are 25–29 for females and 30–34 for males.
- Young women in the age groups 15–19 and 20–24 are more than twice as likely to be infected as males in the same age group.
- About 10% of reported AIDS cases occur in children under five years of age. Most of these cases are due to mother-to-child transmission.
- The absence of many AIDS cases in the 5–14 age group indicates that infection is not spread by mosquitoes or casual contact such as shaking hands.

Projections

Projected HIV prevalence

To project the number of future new infections, it is necessary to make an assumption about how rapidly HIV will continue to spread. Will adult HIV prevalence in Kenya increase above the 2000 level of about 13.5%? If it does, how high might it go in the absence of expanded AIDS control programmes and significant behavioural change: 15, 17, 20%?

Since prevalence is still increasing in some areas of Kenya and is tending to stabilize in others, it is likely that prevalence will continue to increase, at least for the next few years. Although the national prevalence in 2000 was estimated at 13 to 14%, it was 17 to 18% in urban areas. There are areas in urban Kenya today where prevalence is already 20 to 30%.

The trend from 1990 to 2000 suggests that adult HIV prevalence in Kenya will increase to about 14% by the year 2005 and then stabilize at that level. Even in an area where HIV prevalence is stable, this is not good news, as it means that the number of new HIV infections approximately equals the number of deaths from AIDS.

Number of future HIV infections and AIDS cases

If HIV prevalence does increase to 14% by the year 2005, the number of infected people in the population will have increased from about 2.2 million people in 2000 to 2.6 million by 2005 and to 2.9 million by 2010 (see figure 9). The number of new AIDS cases each year resulting from these infections will have increased to about 300,000 by 2005.

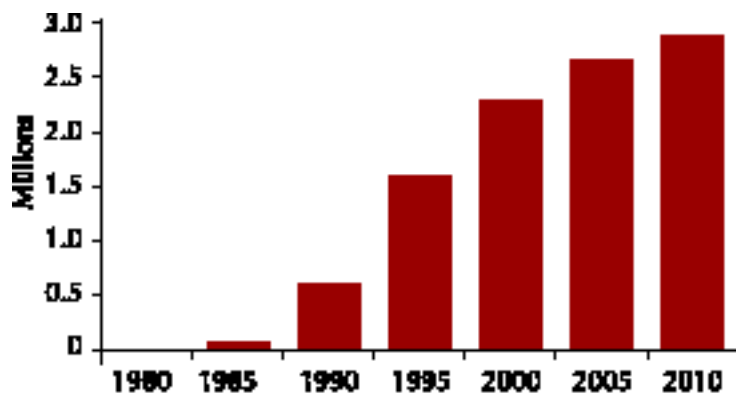


Figure 9. Projected number infected with HIV.

The cumulative number of AIDS deaths will have increased from 1.5 million today to 2.6 million by 2005.

Adult deaths

AIDS will increase the death rate at all ages. However, the impact will be most severe among young adults and children under the age of five. Without AIDS, and assuming a gradual decline in the death rates from other causes, the annual number of deaths among young adults (age 15 to 49) would increase slowly (because of the growing population) from about 52,000 today to 58,000 by 2005. However, AIDS has dramatically increased that number, quadrupling it to 214,000 a year by 2000 and increasing it to 270,000 by 2005 (fig. 10). This rapid increase in young adult deaths will have serious consequences for economic and social development. Much of this impact is examined in the next section.

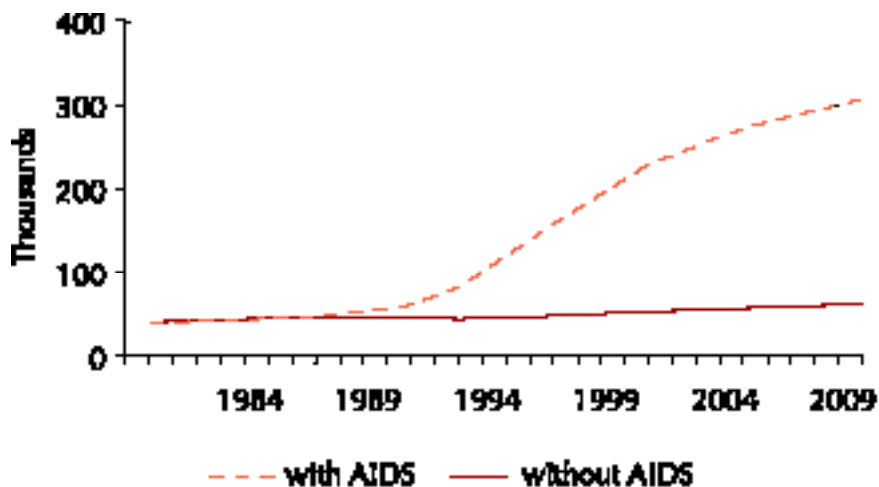


Figure 10. Annual deaths with AIDS.

One dramatic impact of AIDS deaths is the decline in life expectancy. The Central Bureau of Statistics estimates that without AIDS, life expectancy at birth would currently be about 65 years. However, because of the large number of AIDS deaths, it is actually only about 46 years and may decline to 45 years by 2010. Thus almost 20 years of life expectancy have already been lost because of AIDS.

The social and economic impact of AIDS

The sectoral impact of HIV/AIDS

HIV/AIDS affects all aspects of social and economic life in Kenya. Among the sectors that are most severely affected and that can play an important role in combating the epidemic are—

- *Health.* The health sector is affected by an increased burden of caring for those infected with HIV. It is responsible for delivering effective treatment of opportunistic infections, providing compassionate care and implementing many prevention programmes such as STD control, condom promotion and distribution, and health education. There has been increasing discussion about the feasibility of providing antiretroviral treatment.
- *Education.* The education system is affected by AIDS in many ways. Children infected with HIV at birth do not live to enrol in school. Many children have to drop out of school when they become orphans or to tend to sick family members. Teachers are dying from AIDS. Education is also one of the solutions to the problem. School-based programmes can help young people understand how to avoid the risks of unsafe sex.
- *Military.* HIV prevalence is particularly high among soldiers in countries around the world. Military service often places young men in risky environments away from their families. Military programmes for the prevention of HIV can help protect soldiers, their families and communities from the spread of HIV.
- *Transport.* Long-distance truck drivers and other transport workers often spend many nights away from home. Commercial and casual sex is available at truck stops, border crossing points and major transportation hubs. Truckers may acquire HIV infection in these environments, spread it along their route, and take it back to their home communities. Improved programmes for transport workers and border communities are needed to reduce this important mode of transmission.
- *Communications and information.* People need to know about the risks of unsafe sex and the means by which they can protect themselves. People living with HIV/AIDS need to know about access to care and about the human rights that are guaranteed to them in the constitution

and government policies. Information and communications programmes have a major role to play in the fight against AIDS.

- *Agriculture.* AIDS will almost certainly have adverse effects on both smallholder and commercial agriculture, including loss of skilled and unskilled labour supply, decline in labour productivity and loss of remittance income because of AIDS-related death of income earners.

AIDS orphans

One of the worst consequences of AIDS deaths is an increase in the number of orphans. We define an AIDS orphan as a child under the age of 15 who has lost the mother to AIDS. With this definition, the number of AIDS orphans has probably reached over 900,000 today and will increase to 1.5 million by 2005 (fig. 11).

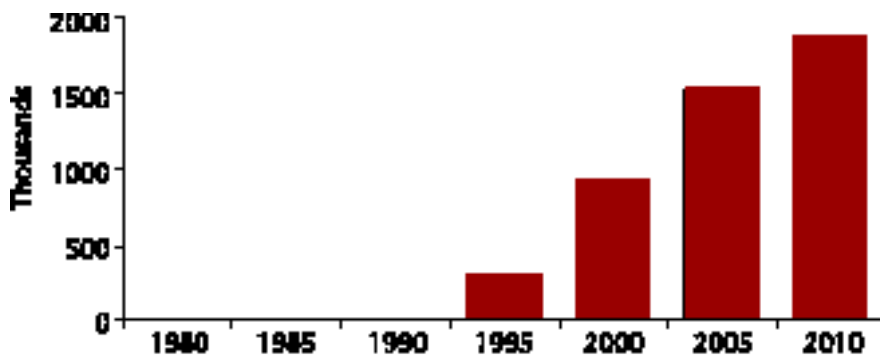


Figure 11. AIDS orphans.

These children may lack the proper care and supervision they need at this critical period of their lives. The strain on social systems to cope with such a large number of orphans will be tremendous.

- Burden and stress will increase on the extended family that will try to care for these orphans. Many grandparents are left to care for young children. Some families will be headed by children as young as 10 or 12 years old.
- The burden will increase on society, both in the community and in the nation, to provide services for these children, including orphanages, food, health care and school fees. Many children go without adequate health care and schooling, which will increase the burden on society in future years. The number of urban street children may also increase.

Population size and growth

AIDS will have a large impact on population size. However, it will not cause population growth to stop or become negative. The following projection illustrates this point:

With no AIDS, the population would have increased from 21 million in 1989 to 38.5 million by 2010. By 2010 the population would have been growing at 1.4% per year (fig. 12).

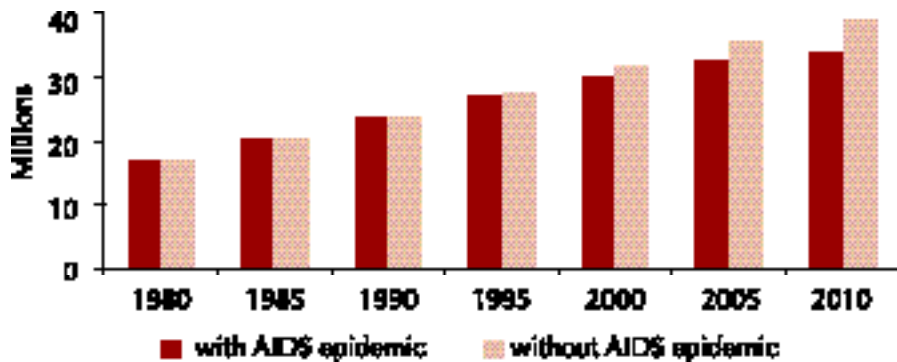


Figure 12. Total Kenya population.

With AIDS increasing the number of deaths, by 2010 the population will grow to 33.5 million, 3 million less than it would have been without AIDS. However, by 2005 the population will still be growing at 0.5% per year.

Although AIDS will reduce the rate of population growth, there is even greater need for a strong family planning programme. Family planning is needed for the following reasons:

- *Choice.* Enable couples to have the number of children they want when they want them.
- *Unmet need.* Provide family planning services to couples who want to plan their births but are not currently using family planning.
- *Health.* Reduce maternal and infant mortality by spacing births appropriately and allowing couples to have only the number of births they want.
- *Orphans.* Provide women who are HIV positive with the means to limit the number of orphans they will leave behind.

Costs of health care

Today more than 2.2 million people in Kenya are infected with HIV. Therefore, it is important to consider the kinds of care and treatment that are available and appropriate for people with HIV infection or AIDS. As HIV infection progresses in an individual it produces a variety of increasingly severe problems. The first symptoms may be common complaints such as headache and diarrhoea. Later, opportunistic infections such as tuberculosis may appear. Eventually the immune system is weakened to the point where the person dies, often from one or more opportunistic infections. Three classes of treatment are available today: palliative care, prevention and treatment of opportunistic infections, and antiretroviral therapy.

Palliative care refers to the relief of symptoms that may be associated with HIV infection. These include diarrhoea, skin rash, cough, fever, headache, pain, nausea and shortness of breath. People with HIV infection may suffer from several of these problems at different times during the course of their illness. These symptoms can be treated with relatively inexpensive drugs, if the drugs are available.

Opportunistic infections are those that take advantage of the weakened immune system of people with HIV. These infections are usually rare or much less serious in people with healthy immune systems. Some of these infections can be treated with relatively inexpensive drugs. They include tuberculosis, pneumonia, thrush and toxoplasmosis. Treatment of these infections can extend the life of an infected individual for a few years.

More expensive drugs are required to treat other opportunistic infections, such as cryptococcosis and herpes simplex virus. These infections appear during the later stages of HIV/AIDS.

Antiretroviral drugs have proven effective in treating HIV infection. They have made a dramatic difference in the course of the disease and have improved the quality of life of people with HIV. The main handicap is the high cost of treatment, which is prohibitive except for the very rich. The drugs themselves cost about US\$1200–2000 per year for each patient, apart from the other medical costs associated with the treatment.

A 1992 study (Forsythe et al. 1992) estimated the cost of hospital care for an AIDS patient at Ksh 27,200. The *Sessional Paper No. 4 of 1997 on*

Annual cost of HIV/AIDS treatment in sub-Saharan Africa

Type of treatment	Approximate cost (US\$ per patient per year)
Palliative care	20
Opportunistic infections	
– inexpensive	30
– expensive	200–2000

AIDS in Kenya (Ministry of Health 1997) estimates the direct cost of treating a new AIDS patient at Ksh 34,680 while indirect costs (lost wages) amount to Ksh 538,560. This brings the estimated total cost of AIDS (direct and indirect) to over Ksh 573,240 per patient. The direct cost of AIDS comprises the cost of drugs, laboratory tests, radiology and hospital overhead costs while the indirect cost encompasses the average productive life-years lost.

Nalo and Aoko (1994) estimated that by the year 2000 the potential cost of providing treatment for AIDS would equal the entire 1993/94 recurrent budget of the Ministry of Health. The analysis further noted that in 1991, the total cost of AIDS to the country ranged between 2 and 4% of GDP but that this would increase to 15% by the year 2000. The rising cost of AIDS is extremely worrying for a low-income country such as Kenya, having per capita income of only US\$280.

The demand that AIDS puts on health services can also be illustrated by looking at hospital beds (fig. 13). Not all people with AIDS seek hospital care. But for those that do, the average length of stay is considerably longer than for most other diseases, perhaps as long as 60 days of hospital stay. In 1992, as much as 15% of all hospital beds in the country were occupied by AIDS patients. Ngugi (1995) estimated bed occupancy rates for HIV/AIDS-related opportunistic diseases at adult wards in major urban hospitals including Kenyatta National Hospital at 30%, while in district hospitals bed utilization for the same illnesses ranged between 10 and 30%. However, the study noted that significant differences existed, with Kisumu and Busia Districts recording bed occupancy rates by HIV/AIDS-related illnesses as high as 70%. Such a demand for beds for AIDS patients greatly constrains hospital facilities, undermining the normal operations. As the epidemic grows, so will the hospital bed requirements. By 2000 about half of all hospital beds were required for AIDS patients. This leaves

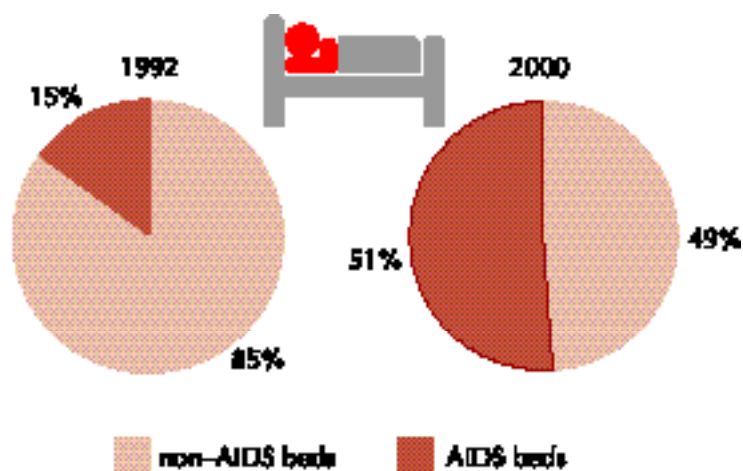


Figure 13. Hospital bed utilization.

an insufficient number of beds for patients with all other complaints. Therefore, AIDS must be controlled or it will seriously affect the provision of health services to all.

Childhood deaths

AIDS also affects child survival. About 30 to 40% of babies born to infected mothers will also be infected with HIV. Most of these babies will develop AIDS and die within two years. Few will survive past the age of five.

AIDS may already be the major cause of child death, worse than other major causes such as measles and malaria. For example, the annual number of child deaths caused by measles and malaria is expected to range between 5000 and 10,000 through the year 2005 (UNICEF 1992). The annual number of deaths caused by AIDS could reach 50,000 to 60,000 over the same period.

- The increasing number of child deaths caused by AIDS threatens to reverse many of the recent gains of child survival programmes.
- The infant mortality rate is the number of infants who die during the first year of life per 1000 live births. It is currently around 74. Without AIDS the infant mortality rate might have been expected to decline to 45–50 by 2005. However with AIDS, it will decline to only about 55–60.
- The child mortality rate is the number of children who die before reaching their fifth birthday per 1000 live births. It is currently around 112. Without AIDS it might have been expected to decline to around 70 by 2005. However, with AIDS it is likely to remain constant or rise slightly to 120–125.

HIV and tuberculosis

Efforts over the past 20 years to control tuberculosis had been showing some success. However, recently the number of TB cases has been rising rapidly, because of the spread of HIV infection. HIV infection weakens the immune system of otherwise healthy adults. Many, perhaps half, of all adults in Kenya carry a latent TB infection, which is suppressed by a healthy immune system. When HIV weakens the immune system, it can no longer control the TB infection and overt TB can develop.

In the absence of HIV, the number of new TB infections would be limited to about 0.2% of the population (Harries 1990). This would result in 40,000 to 60,000 new TB cases each year.

With AIDS, a number of new cases will develop. If we assume that among people with both HIV and latent TB infections, 8% develop TB each year,

then the additional number of TB cases brought about by HIV infection will be about 120,000 by 2005 (fig. 14). Even this is likely to be an underestimate since these new cases may transmit the disease to others.

In a recent study in Kenyatta National Hospital, the proportion of TB cases among all patients admitted doubled from 8 to 16% between 1988/89 and 1997. In HIV-infected patients, the proportion that also had active TB infection rose from 18 to 27% over the same period.

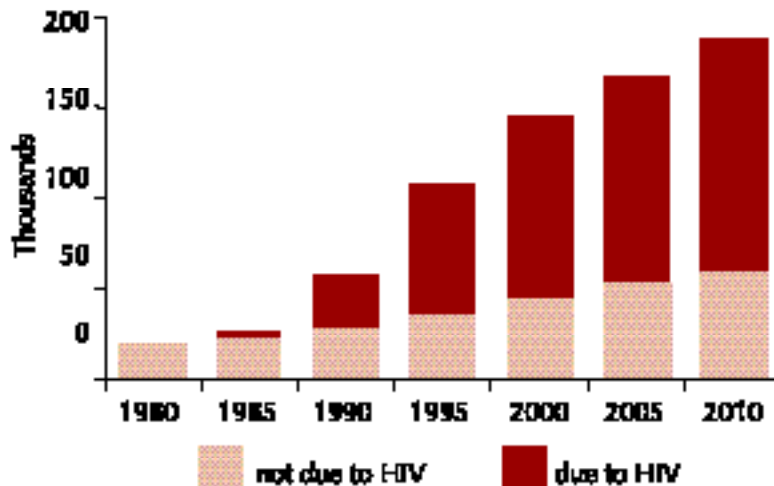


Figure 14. New adult cases of tuberculosis.

The consequences of a sharp rise in TB go beyond simple health concerns. The hospital study showed that TB was the most costly disease to treat for the health service. Rising TB infections will thus inevitably drain resources from other essential health and welfare services if quality services are to be maintained. A breakdown in TB treatment services that leaves patients half treated may lead to drug-resistant strains of the disease developing faster.

The impact of HIV infection on tuberculosis is a serious problem because TB is infectious through casual contact. It threatens to vastly increase the risk of tuberculosis for the entire population. Also, drug-resistant strains of TB are appearing, making the disease much more difficult and expensive to treat. The control of TB is very expensive and puts considerable strain on the health budget.

The economic impact of AIDS

AIDS has the potential to create a severe economic impact in Kenya. It causes a reduction in the size and experience of the labour force, increases health

care expenditure, raises the cost of labour, and reduces savings and investment. It is different from most other diseases because it strikes people in the most productive age groups and is essentially 100% fatal. The economic effect of AIDS will be felt first by individuals and their families, then will ripple outwards to firms and businesses and the macroeconomy.

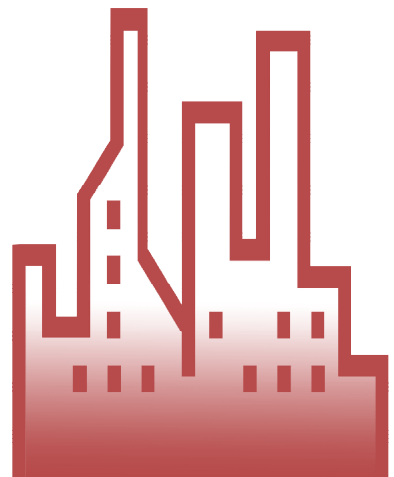
The economic impact is likely to be larger in some sectors than others. Certainly, health care and insurance will be significantly affected, as will the military. Infection rates tend to be quite high among military personnel since many are young, sexually active men who are away from their families for long periods. Other sectors with a mobile work force may also be adversely affected, including transportation, extension services and banking.

When someone in a family becomes sick with AIDS, it is usually the women who care for that person. Young girls may have to stay home from school to help the mother with the other children. The family may exhaust its savings to pay for drugs and funeral expenses. They may even be forced to sell land. The result is that families become poorer, children's education may suffer and the standard of living of the entire family declines.

Impact of AIDS on firms

The economic impact of HIV/AIDS on companies is manifested by reduced labour productivity through AIDS-related deaths, absenteeism and loss of skilled work force. Other effects include increased expenditures on staff recruitment and training, funeral expenses, medical costs and increased employee benefits. These costs could be enormous for a firm, depending on the HIV prevalence among its employees.

According to a World Bank strategy report (World Development Sources 1996), a Kenyan company spent about US\$45 per employee per year for HIV/AIDS-related costs or 3% of company profits. The report projected that this cost would increase to US\$120 per employee per year, equivalent to 8% of company profits, by the year 2000. It further noted that in 1992, an average company in Kenya incurred mean annual costs associated with AIDS of approximately US\$140,000. This cost was expected to rise to US\$ 403,000 by the year 2005.



In a study of Auto Kenya, Western Wood, Kenya Transport (all fictitious names for anonymity) and Muhoroni Sugar Company, Roberts and Rau (1994) showed that in 1994, Auto Kenya spent Ksh 1.1 million (US\$21,312) on HIV/AIDS-related costs, Western Wood Ksh 2 million (US\$40,630), Kenya Transport Ksh 3.1 million (US\$61,132) and Muhoroni Sugar Company Ksh 2.9 million (US\$58,303).

Impact of AIDS on commercial agriculture

Agriculture is the predominant economic activity in Kenya. The sector accounts for approximately 30% of the GDP and 70% of the export earnings. About 80% of all Kenyans live in the rural areas, of whom 90% make their livelihood from agriculture. The agriculture sector also employs about 50% of the Kenyan labour force. The sector is therefore extremely important to Kenya's economy.

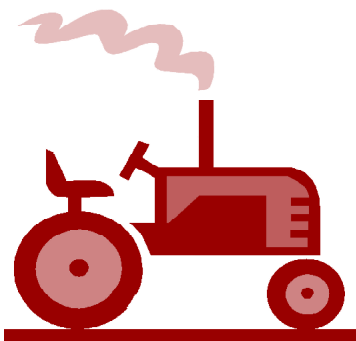


It has been shown that AIDS will almost certainly have adverse effects on agriculture, including loss of skilled and unskilled labour supply, decline in labour productivity and loss of remittance income because of AIDS-related death of income earners. A study on the impact of HIV/AIDS in five commercial agro-estates in three Kenyan provinces, Nyanza, Rift Valley and Eastern, reveals that the cumulative cases of AIDS accounts for as high as 30% of the workforce in Nyanza, 12% in Rift Valley and 3% in Eastern.

Impact of HIV/AIDS on smallholder farmers

Commercial or estate farming in Kenya interacts with smallholder farming in several ways.

- Smallholder farmers are a major source of labour for agro-estates.
- Migrants working in agro-estates send remittances to rural areas and thereby contribute to the subsistence economy of smallholder farmers.
- Smallholder agriculture produces goods and services (such as food crops) that are essential needs for agro-estate workers.
- Smallholder agriculture forms a bulk of the market for most of the products that some of the agro-estates produced.
- In some cases, survival of agro-estates depends on external producers (the so-called outgrowers), who provide the bulk of the raw materials for processing.



In view of the complex interaction described above, it seems obvious that whatever happens in one of the sectors will have an effect on the other. A study by Rugalema et al. (1999) covered two farming systems: 1) semi-subsistence sugarcane outgrowers who supply sugarcane to sugar companies in Nyanza Province and 2) semi-subsistence vegetable growers on an irrigation scheme in Eastern Province. It was clearly evident that morbidity and mortality in the households had led to

decrease in acreage farmed, loss of income, increase in the dependency ratio, and general increase in food insecurity. Similar effects have been observed in other countries with similar social, economic and agro-ecological environments.

Of relevance to the sugar companies is that illness and death of outgrowers means a decrease in supply of sugarcane to the sugar factory. The impact is significant, given that for the two sugar agro-estates surveyed in Nyanza Province, the nuclear estates (company farm under cane) produce only 10% of the cane processed in the factories, while outgrowers, the majority of whom are smallholder farmers, produce 90%.

Macroeconomic impact of AIDS

Besides sectoral effects, AIDS negatively affects the macroeconomy in a number of ways. This occurs when key macroeconomic variables are destabilized as a result of AIDS. Some of these macroeffects are reduction in savings and investment as health expenditure on AIDS escalates, decline in labour productivity as a result of HIV morbidity leading to absenteeism, and AIDS mortality culminating in the loss of experienced workers.

Simulation results by Hancock et al. (1996) on the macroeconomic impact of HIV/AIDS in Kenya reveal that the impact of AIDS could be substantial given that 80% of HIV infection occurs in the economically active age group of 15 to 49 years. With high mortality and morbidity of the most productive labour force, AIDS would lower economic performance. The authors projected that GDP would be 14.5% lower in the year 2005 than without AIDS while per capita income would drop by 10%. The study also predicted a 15% drop in savings by 2005. The simulation also predicted a fall in labour productivity when experienced workers with an average age of 34 years would have to be replaced by relatively young workers with an average age of 25. These developments are detrimental to the Kenyan economy, which is currently in a recession, with low economic growth, low savings and investment, and low foreign direct investments. The challenge that AIDS poses is real and requires deliberate efforts if the effects are to be contained.

The macroeconomic effect of HIV/AIDS also manifests itself through increased medical expenses, absenteeism, a decline in labour productivity, and the costs of mortality including funerals. These costs have been illustrated through surveys that attach some specific values to each of the mentioned items.

- ***Medical expenses.*** Employer-paid medical costs in the agro-estate surveyed rose from a modest Ksh 300,000 in the 1980s to Ksh 8.1 million in 1997. Employee-paid costs also rose from a mere Ksh 1.5 million in 1989 to Ksh 11.3 million in 1997. Had HIV/AIDS not been

present, most of these resources could have been saved or invested in productive ventures. Therefore, AIDS affects the savings of both individuals and organizations, and it cumulatively reduces the general level of saving and investments in the country.

- *Absenteeism.* Absenteeism is a cost in the sense that absent employees continue to be paid for the job they did not perform. Records of labour time lost from morbidity kept by a company in Nyanza Province showed that between 1995 and 1997, the company lost a total of 8007 labour days from employee illness. A significant portion of this time lost was attributed to HIV-related illnesses (Rugalema et al. 1999). Another Nyanza-based company reported having lost a total of 660 labour days between 1995 and 1997 because of sick employees affected by HIV and AIDS.

The indirect effect of absenteeism is that it means extra work for healthy employees, who have to stand in for sick colleagues. In some of the companies, healthy employees were increasingly working extra hours to compensate for the time lost by their absent, sick colleagues. In so doing, not only did companies pay more in overtime but workers interviewed pointed out that they were overworked and exhausted. According to the engineering manager of one of the companies, working longer hours had produced stress among employees and was responsible for a decline of both quantity and quality of the final product, sugar. Since healthy employees had begun to work longer hours, around 1993, the recovery ratio (raw cane: sugar) had declined by almost 50%, that is, from about 8:1 in 1993 to 12:1 in 1997. Another company surveyed reported a 67% decline in recovery ratio during the same period.

- *Declining labour productivity.* In a labour-intensive industry such as agriculture, and in particular sugarcane growing, labour productivity is the most important determinant of output and profitability. Illness compromises labour productivity because a sick person is unable to work. Even when the person still works, physical and psychological factors lower performance. Thus the cost of illness does not end by paying an employee who is not working; it includes other costs related to delays in the production process and loss of quality and quantity of the final product. Workers interviewed pointed out that when they had a sick family member (spouse or child), it was unlikely that they could be as productive as was expected because their presence at work was more physical than mental and hence they performed poorly.
- *Costs of mortality.* In companies heavily affected by AIDS, death is either the leading or one of the leading causes of employees' exit from the company. Illness is the second most important. Before 1990s when deaths were few, records in two of the surveyed companies in Nyanza

(where the death rate is currently very high) showed that in the 1980s, the companies lost an average of 2 to 5 employees per year. The most important reasons for employees exit then were old age retirement, resignation, termination, dismissal, illness and death, in that order. Today, the order has clearly changed, as illness and death have become the leading causes of exit. Could increased illness and death be caused by diseases other than those related to compromised immunity? In general, save for AIDS-related illnesses, communities living on agro-estates had not experienced epidemics of the constancy that would account for prolonged morbidity and mortality among adults. It can be concluded, therefore, that AIDS is responsible for the observed high rate of morbidity and mortality currently experienced in the province.

Strategies and interventions to slow the spread of AIDS

National strategy and policy

To meet the challenge of the HIV/AIDS epidemic, the government of Kenya recognized the need to establish clear policy guidelines and effective organizational structures. Therefore, it began in 1996 to develop a national HIV/AIDS policy. Nine technical subcommittees were established to organize expert information and draft sections of the policy. The recommendations of these committees were presented in meetings held throughout the country to solicit suggestions from all parts of society and gain consensus on the most appropriate policies.

This work resulted in a draft national policy that was submitted to parliament. It was approved on 24 September 1997 as *Sessional Paper No. 4 of 1997 on AIDS in Kenya* (Ministry of Health 1997). The approval of the sessional paper signals the clear intent of the government to support effective programmes to control the spread of AIDS, to protect the human rights of those with HIV and AIDS, and to provide care for those infected and affected by HIV/AIDS.

The goal of the sessional paper was 'to provide a policy framework within which AIDS prevention and control efforts will be undertaken for the next 15 years and beyond'. Specifically, it has the following objectives:

- Give direction on how to handle controversial issues while taking into account prevailing circumstances and the socio-cultural environment.
- Enable the government to play its leadership role in AIDS prevention and control activities. Challenges posed by AIDS call for a multisectoral approach, thus bringing together a diversity of actors. Their roles will be harmonized within the framework of the sessional paper on AIDS.
- Recommend an appropriate institutional framework for effective management and coordination of HIV/AIDS programme activities.

The sessional paper recognizes that responding effectively to the AIDS crisis will require 'a strong political commitment at the highest level, implementation of a multisectoral prevention and control strategy with priority focus on young people, mobilization of resources for financing HIV prevention, care and support, and establishment of a National AIDS Council to provide leadership at the highest level possible'.

The sessional paper reviews the challenges posed by the AIDS epidemic and describes the strategies and interventions that the government has adopted. It also presents a policy framework for AIDS prevention and care. Some of the key aspects of this framework are—

- *Participation.* All sectors of society are invited to join the effort against AIDS. This specifically includes the private sector, non-governmental organizations (NGOs), donor agencies, communities, provincial and district administration officials, religious communities, educational institutions and parents.
- *Socio-cultural issues.* Efforts must be made that promote socio-cultural norms, values and beliefs that will help to reduce the risk of HIV transmission. Consensus between religious teachings on sexuality and on social and cultural practices must be harmonized through education, advocacy, counseling, persuasion and the enforcement of both customary and written law.
- *Legal and ethical challenges.* Discrimination against individuals with HIV or AIDS violates their human rights and hampers prevention efforts by discouraging people from learning about their HIV status. A key element of the sessional paper is the guarantee that the human rights of all Kenyans will be respected. Among the provisions are—
 - HUMAN RIGHTS. All forms of discrimination against people with AIDS should be outlawed.
 - TESTING FOR HIV. HIV testing for individuals should be voluntary.
 - CONFIDENTIALITY. Ethical codes regarding confidentiality of AIDS status should be enforced.
 - EMPLOYER-EMPLOYEE RIGHTS. The employer does not have the right to know the HIV status of an employee without the consent of the employee.
 - RESEARCH. A legal body with a clearly defined mandate will be established to coordinate HIV/AIDS/STD research.
 - CHILDREN. Children infected and affected by HIV/AIDS will be protected from exploitation and discrimination using existing laws.
 - INSURANCE. The government will work closely with insurance companies to establish guidelines pertaining to policies and benefits for people affected or infected with HIV. The guidelines will ensure that compensation is available for all those who were not infected before the issuance of their insurance policy.
 - COUNSELING. Codes for counseling will be developed that will take into account the need for voluntary testing and confidentiality.
 - DRUGS. Clear legal provisions will regulate drug trials and provide sanctions against those peddling, cutting up for sale and advertising substances that have no proven curative value against HIV.
 - CRIMINAL SANCTIONS. Criminal sanctions will be upheld against all those who deliberately infect others.

- *Women and men.* HIV infects everyone. Men may be influenced into high-risk behaviour by cultural norms concerning labour migration, alcohol use, plural marriages and other aspects of social behaviour. Women are especially vulnerable to HIV infection for a variety of social and biological reasons. The government will work with community agencies to provide support for activities that reduce the risk of HIV infection, such as promoting basic education on human sexuality, HIV and STDs; encouraging activities for youth that may delay the onset of sexual activity; harmonizing the age of consent, marriage and maturity to 18 years; encouraging voluntary testing; and empowering women's access to information and giving them economic and social recognition.
- *Children.* To protect children the government will develop clear guidelines on breastfeeding, vaccination, treatment of pregnant women who are HIV positive, and care and support for HIV orphans. These guidelines will be based on the latest national and international research results.
- *Youth and young adults.* A large percentage of new HIV infections occur among youth. To protect young people against HIV and STD infections, the government will provide direction in designing culturally, morally and scientifically acceptable AIDS education programmes for youth in and out of school and advocate the protection of youth against antisocial behaviour that puts them at risk.

The Sessional Paper on AIDS establishes the basis for an effective, multisectoral response to the AIDS epidemic. The challenge now is to translate these guidelines into successful plans, programmes and actions.

National AIDS Control Council

The National AIDS Control Council (NACC) was established as a body corporate under the State Corporations Act by presidential order in Legal Notice No. 170 of 26 November 1999. The council's functions are incorporated into the NACC mission statement:

To provide a policy and strategic framework for mobilizing and coordinating resources for prevention of HIV transmission and provision of care and support to the infected and affected people in Kenya.

The council is expected to provide strong leadership and to coordinate the multisectoral response. A Kenya National HIV/AIDS Strategic Plan has been developed for 2000–05 to provide a sound policy and institutional framework and to ensure that the HIV/AIDS Strategic Plan and policies are integrated into the agenda and the core process of the entire government of Kenya. A number of efforts existing countrywide are combating the HIV/AIDS epidemic; they include those of the

government, NGOs, community-based organizations (CBOs), religious groups and development partners. Much has been achieved in advocacy and awareness, with some evidence of behaviour change (see Signs of success, p. 40). The council will coordinate efforts to avoid duplication and increase effectiveness in fighting the spread of HIV/AIDS.

Specific targets set out in *Sessional Paper No. 4 on AIDS in Kenya* have been incorporated in the NACC National HIV/AIDS Strategic Plan:

- to reduce HIV prevalence by 20 to 30% by the year 2005
- to increase access to care and support for the people infected and affected by HIV/AIDS
- to strengthen institutional capacity and coordination at all levels

NACC is expected to achieve these targets by assuming the following responsibilities:

- coordinate and supervise HIV/AIDS activities
- mobilize resources for HIV/AIDS control and prevention
- develop policy, strategy and guidelines relevant to the prevention and control of HIV/AIDS
- develop sector-specific HIV/AIDS programmes
- develop national management information systems for HIV/AIDS control
- collaborate with local and international agencies that work in AIDS control
- develop appropriate mechanisms and guidance for implementing agencies on selecting activities and on monitoring and evaluating programmes dealing with HIV/AIDS and sexually transmitted diseases
- assume leadership role in advocacy and public relations for HIV/AIDS

AIDS control units

The AIDS control unit (ACU) in each ministry will coordinate implementation of the strategic plan. The units will provide proactive leadership and advocate NACC policies to ensure that priorities on HIV/AIDS prevention and control become integrated into the mainstream of ministry functions.

The purpose of ACUs is to ensure that government departments and the private sector, including NGOs, implement NACC policy and its strategic plan in districts and communities. They will be in the ministries at the national level. It is expected that ACUs will aid in implementing the strategic plan by defining the links between the medium-term expenditure framework and HIV/AIDS.

Provincial AIDS control committees

Provincial AIDS control committees (PACCs) will be established to coordinate, supervise and support HIV/AIDS Strategic Plan issues in the

provinces. They will coordinate with district AIDS control committees (DACCs) to ensure cooperation within the province. To ensure wide participation, PACC members will represent national governmental departments in the province in working with civil society, the private sector and people living with HIV and AIDS. Provincial AIDS coordinators will provide PACCs with secretariat support.

District AIDS control committees

District AIDS control committees will contribute towards coordinating the implementation of the strategic plan in the districts and the communities. Like PACC members, members of DACCs will represent national governmental departments in dealing with civil society, the private sector and people living with HIV and AIDS. District AIDS coordinators will provide DACCs with secretariat support.

DACCs specifically are to—

- communicate and interpret policies under the strategic plan to institutions within a given district as determined by NACC
- monitor how policies under the strategy are implemented within the district
- collate information on the various potential strategic plan activities among and between sectors in the district
- cost the various potential interventions within the district
- set priorities on potential interventions in the district, within the likely resources for total strategic plan interventions, as communicated by NACC
- communicate the proposed set of multisectoral activities for the district, according to the priorities set and costed, to NACC and the relevant ACUs

DACCs will indicate to NACC and the respective ACUs the proposed ministerial responsibility for providing each of the services concerned. They will effectively provide the bottom-up input on budgetary resources that each ministry requires by ensuring that appropriate implementation is tailored within their district. They will synchronize their HIV/AIDS control activities with the district's policy focus. They will also set up and put into operation clear financial and procurement procedures.

Constituency AIDS control committees

The goals of the constituency AIDS control committees (CACCs) are to—

- help implement the resolutions passed at the HIV/AIDS symposium held for members of parliament in Mombasa in November 1999
- develop people-centred activities and responses to HIV/AIDS and related development issues
- coordinate all HIV/AIDS activities in the constituency

Specific roles of CACCs include mobilizing communities, ensuring that committees of elders are formed, promoting positive behaviour change in groups of population including youths, and working out mechanisms to address the impact of HIV/AIDS in the communities. It is expected that they will provide leadership in developing community-based activities to ensure that the rate of spread of HIV is slowed while at the same time the effects of HIV are being addressed. They will be expected to have monitoring and evaluation systems and a work plan. They will submit quarterly reports to DACCs.

Factors to consider in compiling CACC membership will be geographical representation and gender, and on each committee there must be someone with technical capacity, someone able to handle accounts, and at least one person living with HIV or AIDS.

The national council will therefore be represented at all levels of the hierarchy, including at the grassroots, for smooth coordination of the activities (fig. 15).

Knowledge of AIDS and the risk of becoming infected

Information about personal knowledge of AIDS and risk behaviour in Kenya was collected in a 1998 national survey on fertility, family planning and health, the *Kenya Demographic and Health Survey 1998* (National Council for Population and Development 1999). The survey interviewed 7881 women between the ages of 15 and 49 and 3407 men between the ages of 20 and 55. The results illustrate the level of knowledge and awareness of AIDS in the general population and the extent of risky behaviour.

Knowledge of AIDS. Knowledge is widespread about AIDS and the key transmission mechanisms. Practically everyone has heard of AIDS (99% of both women and men) and knows that the AIDS virus is transmitted through sexual intercourse.

Sexual behaviour. Risky sexual behaviour was reported by a significant number of men and women. Sixteen per cent of married men reported having extramarital sexual partners. Among those who are single, 60% of men and 40% of women reported that they were sexually active. About half of the single, sexually active men reported more than one sexual partner in the last year; among single, sexually active women, about 14% reported more than one sexual partner in the last year.

Knowledge of ways to avoid AIDS. About 40% of respondents correctly identified at least two methods of protecting themselves from becoming infected: abstain from sex, use condoms, avoid multiple partners, stay faithful to one partner.

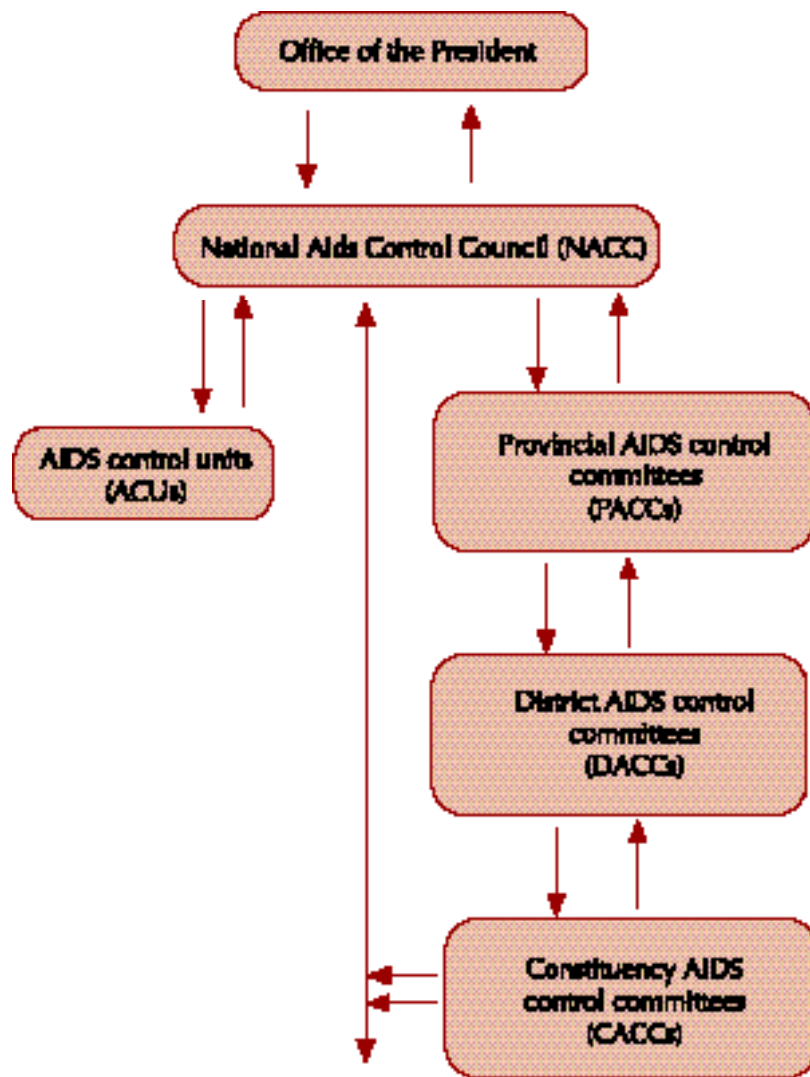


Figure 15. Institutional framework for Kenya National AIDS Control Council.

Perception of risk. One-third of women felt that they were at moderate or great risk of becoming infected, primarily because they thought that their partner had other sex partners. Two-thirds of men felt that they were at moderate or great risk of becoming infected, mostly because they reported that they had many sex partners.

Behaviour change. About 90% of men and 80% of women reported that they had changed their behaviour in some way to avoid AIDS. Most said that they limited themselves to one sex partner; 18% of men said that they had reduced the number of sex partners and 16% of women said that they had asked their spouse to remain faithful.

Knowledge of someone who has AIDS or who has died of AIDS. The majority of respondents (71%) said that they personally knew someone who has AIDS or had died of AIDS.

Testing for HIV. Only 14% of women and 17% of men reported that they had ever been tested for HIV. Two-thirds of those who had not been tested reported that they would like to be tested.

Interventions for preventing the transmission of HIV

The impact of AIDS will be very severe in Kenya if HIV infection continues to spread rapidly. However, a number of interventions can slow the spread.

Interventions to prevent heterosexual transmission. The major mode of transmission is through heterosexual contact and it is especially in this area that interventions have to be intensified. Interventions include promoting abstinence and faithfulness, promoting reduction in the number of sexual partners, encouraging delay in the onset of sexual activity among adolescents, promoting the correct use and consistent availability of condoms, strengthening programmes for STD control, and encouraging voluntary counseling and testing.

Promoting abstinence before marriage and faithfulness to one partner. One set of interventions focuses on encouraging people to abstain from sex before marriage and to remain faithful to a single partner. Abstinence and faithfulness can be promoted through a combination of mass media, counseling and education programmes. Delay in the onset of sexual activity among adolescents can have a significant impact on the spread of HIV. Information, education, communication and other programmes that address adolescents and the needs of young people are particularly needed. A reduction in HIV incidence (the annual rate of new infections) among today's young people would not only avoid much suffering but would also be a critical step in controlling the spread of the virus.

Promoting voluntary counseling and testing. In voluntary counseling and testing (VCT) for HIV, a person receives the counseling needed to make an informed choice about whether to undergo confidential testing for HIV. The government of Kenya is fully committed to encouraging the provision of VCT services throughout Kenya so that all Kenyans who wish to know their HIV serostatus will have access to these services.

HIV voluntary counseling and testing has been shown to have a role both in preventing HIV infection and, for people with the infection, as an entry point to care. It gives people an opportunity to learn and accept their HIV status in a confidential environment with counseling and referral for ongoing emotional support and medical care. Rapid, whole-blood tests are now available that provide accurate results from a finger prick in just 10 to 15 minutes.

People who have tested positive for HIV can benefit from early appropriate medical care and interventions to treat or prevent HIV-associated illnesses.

Pregnant women who are aware that they are HIV positive can prevent transmission to their infants. Knowledge of HIV status can also help people decide how to protect themselves from infection when they are HIV negative and to protect their sexual partners from infection if they are HIV positive. Studies have indicated that VCT can be a cost-effective intervention in preventing HIV transmission.

Promoting the use and availability of condoms. Another important intervention is to promote condom use through mass media, counseling and education and to increase the availability of condoms through expanded public distribution, social marketing programmes and programmes in the workplace. Special initiatives to promote condom use among high-risk populations (such as commercial sex workers and long-distance truck drivers) have proven effective in some cases.

Controlling other sexually transmitted diseases. Another intervention focuses on controlling the spread of sexually transmitted diseases such as syphilis, gonorrhoea and chancroid. A study in Mwanza, Tanzania, for example, found a reduction of 42% in the number of new HIV infections after an improved STD prevention and treatment programme. Services to detect and control STDs can be critically important for managing the HIV/AIDS epidemic.

Preventing infection in young people. Levels of HIV infection are alarmingly high among young people, particularly young women. Special efforts are required to protect the youth. It is difficult to change any behaviour pattern, and especially sexual behaviour pattern, once it has become a habit. Around the world, successful prevention programmes among young people are ones that equip adolescents with the knowledge, skills and attitudes that will keep them safe from infection *before* they become sexually active.

The government has recognized the vulnerability of youth. In the *Sessional Paper on AIDS in Kenya*, it has committed itself to protecting young people from HIV infection by equipping them with adequate knowledge and skills. Further, the government has stated that, as a matter of policy, it has integrated AIDS education programmes into existing school curricula.

Such education does appear to help young people reduce their risk of HIV infection. A family life education programme in Youth Training Service colleges has resulted in more responsible behaviour on the part of people exposed to the programme compared with students from colleges with no family life education. More young people who have undergone the programme chose to be counseled and tested for HIV, more protected themselves or their partners against unwanted pregnancy, and more adopted behaviour that would protect them against HIV infection. College medical records show that where 20% of students in Youth Training Service colleges suffered from STDs in 1990, the proportion dropped by more

than half by 1995, after family life education was instituted. In colleges with no special programmes, a nearly constant 16% of students were infected with STDs over the five-year period.

Counseling by churches can also play an important role. A high proportion of young churchgoers are sexually active, and in 1996, 97.7% of young churchgoers surveyed asked for more information and guidance on sex and prevention of AIDS. A programme sponsored by church authorities to increase the leadership role of the church in this field produced remarkable results. In areas where the programme actively promoted more discussion and counseling on responsible relationships, only one young person in 10 reported that they had had sex with more than one person in the previous six months. Among churchgoing youth in areas where there was no active increase in counseling, three times as many young people said they had had sex with several partners over the same period.

Interventions to prevent mother-to-child transmission (PMCT). A mother who is infected with HIV will transmit the virus to her newborn child 30 to 40% of the time. Around 100,000 infants and children are living with HIV in Kenya, and many more have already died of AIDS. The majority of these children acquired the infection from their mothers at or around the time of birth, with a small number infected during her pregnancy. Between 25 and 50% of the infected children were probably infected through breastmilk.

Various approaches can be used to reduce the number of children who are infected, including—

- *Preventing HIV infection in women.* The best way to prevent mother-to-child transmission of HIV is to prevent the woman from becoming infected. Delaying the sexual debut of teenage girls, keeping girls in school, and providing HIV prevention counseling can reduce the number of young pregnant women who are infected. Protecting women from becoming infected during pregnancy and lactation will also reduce the number of infants who are infected.
- *Comprehensive antenatal care and nutrition during pregnancy.* Preventing and treating malaria and sexually transmitted diseases and correcting nutritional deficiencies promote the health of all mothers and babies and may reduce mother-to-child transmission of HIV.
- *Counseling and testing.* Providing HIV counseling and testing for women and their partners during pregnancy offers an opportunity to prevent HIV infection in HIV-negative women and to offer antiretroviral drugs and other advice for HIV-infected women to reduce mother-to-child HIV transmission. Such counseling also enables couples to make informed reproductive choices for the future.

- *Antiretroviral therapy.* Antiretroviral drugs taken during labour or during the last weeks of pregnancy can reduce the risk of the viral load in the mother and reduce the risk of mother-to-child transmission during this time by half. Nevirapine is taken as a single dose early in labour and another dose is given to the newborn at three days of age. AZT (azidovudine) is usually taken in the last weeks of pregnancy and during labour.
- *Reducing transmission during childbirth.* Practices that reduce trauma and shorten exposure to the virus during labour and delivery can reduce HIV transmission. These practices include avoiding prolonged rupture of the membranes of more than four hours, avoiding routine episiotomy, and elective caesarean section delivery.
- *Reducing transmission from breastfeeding.* One-third of mother-to-child transmission occurs through breastfeeding. Many children who are not breastfed, however, die from diarrhoeal diseases and other infections. Health personnel should counsel women about safe and appropriate feeding strategies, to minimize mother-to-child transmission and improve child survival. This includes the choice of replacement feedings, lactation management, and method and timing of weaning.
- *Reducing the number of HIV-exposed pregnancies.* Women who are HIV positive may wish to avoid childbearing so that they do not infect their newborn babies or leave behind orphaned children when they die.

Safe blood supply. Blood transfusion services (BTS) in Kenya is a hospital-based system operating as a part of the hospital pathology services. Although a central body deals with procurement and coordination, the day-to-day management is with hospital administration. Various reviews and needs assessments have recommended developing a blood policy, establishing a semi-autonomous regional BTS, and setting up a funding mechanism and organizational structure to manage the programme.

A safe blood supply is necessary to avoid infection through blood transfusion. This means that possible donors are first screened through interviews to reject those that have a high probability of being infected with HIV. The donated blood is then screened through laboratory tests to detect infected blood, which is destroyed. Since the advent of AIDS, the number of blood donors has declined steadily, with the resultant decline in the number of donations. In 1996 the total blood collection in Kenya was 150,000 units. The amount collected declined to less than 70,000 units by 1999, despite demand estimated at 210,000 units. The demand was brought about by an increase in population and in the number of acute care hospital beds, approximately 30,000. This situation has resulted in—

- transfusion not being given in a timely manner
- increased reliance on donation by relatives, who may themselves be HIV positive
- screening of blood under emergency conditions

The transfusion service in the public sector is wholly financed by the government from funds allocated for purchasing laboratory supplies. There are no budgetary allocations for day-to-day running of BTS activities such as recruiting blood donors. Hospitals therefore run activities using funds that were allocated for other purposes. It follows that because safe blood is often not available, non-essential transfusions are always discouraged and autologous transfusions (using the patient's own blood that has been obtained earlier) for planned operations are encouraged.

Sessional Paper No. 4 of 1997 on AIDS in Kenya provided for the following to ensure a safe blood supply, and these steps are currently being implemented:

- recruit donors; provide education, counseling and research
- reorganize BTS
- provide and maintain blood-screening facilities including protective materials
- train health workers
- establish a quality control mechanism in all laboratories
- develop a working management information system

Combined interventions. Each of the intervention packages described here can make an important contribution to controlling the spread of HIV. Alone, none will be as effective; some people will respond to or be affected by one type of intervention, others to another (fig. 16). Computer simulations suggest that a much larger effect can be achieved by implementing all the interventions together in a broad attack on the epidemic.

The following information is not specific to Kenya but is based on simulation modelling. Figure 17 shows the expected impact of interventions in an illustrative African city. In the absence of interventions—the base projection or the top line on the graph—the HIV adult prevalence rate continues to rise over time. An effective blood-screening programme can reduce prevalence only modestly, since only a few infections are caused by transfusions. However, an effective STD control programme brings expected prevalence down by about 12%; reducing the number of sexual partners and promoting the use of condoms also each bring it down by similar amounts. Most importantly, when all four interventions are implemented simultaneously, the projected prevalence is 65% less in 2005 than it would have been with no interventions.

- **Transfusion**
 - Test donated blood and defer ineligible donors
 - Screen donors
 - Avoid unnecessary transfusions
 - Encourage autologous transfusions for elective surgery

- **Perinatal**
 - Counsel pregnant women and couples
 - Provide antiretroviral therapy
 - Direct special prevention programmes towards women
 - Make appropriate feeding recommendations
 - Provide comprehensive ANC and safe delivery care

- **Sexual transmission**
 - Abstain from sex altogether
 - Be faithful to one uninfected partner
 - Delay onset of sexual activity
 - Use condoms

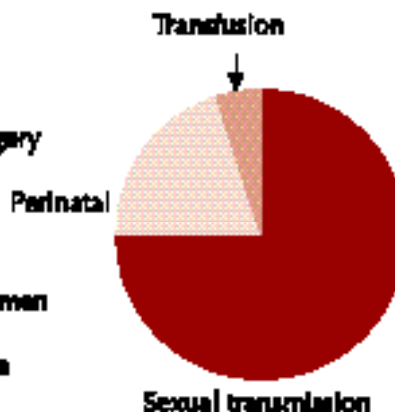


Figure 16. Methods to prevent HIV transmission.

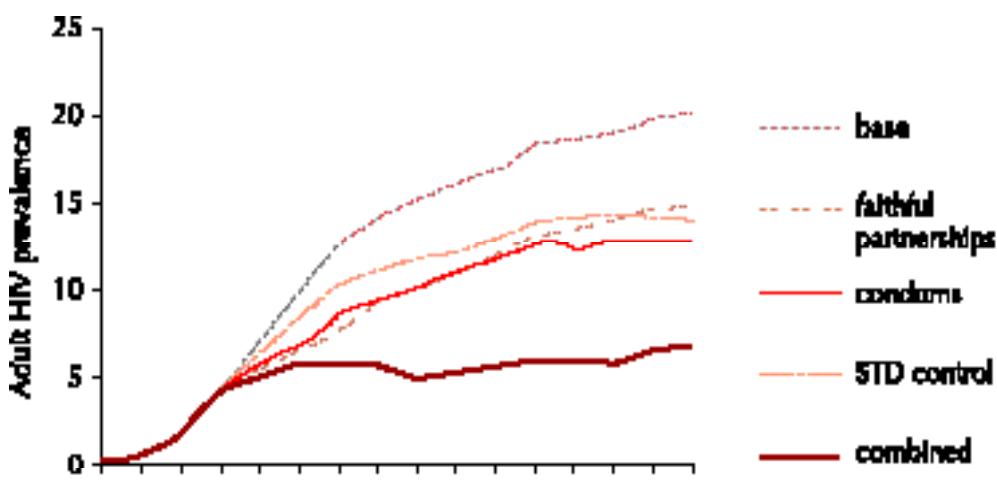


Figure 17. Effect of AIDS interventions, based on simulation modelling of typical high-prevalence urban areas.

The fundamental message is a hopeful one. The simulation modelling suggests that with a concerted effort on a number of fronts, a country can turn the rising prevalence curve downwards and start to bring the HIV/AIDS epidemic under control.

Overall, several important lessons can be learned about interventions.

- Pilot tests have shown that interventions can be successful in significantly reducing the spread of HIV.

- Applying interventions on a large scale is costly and success is difficult to measure. Nonetheless, evidence from Uganda and Thailand now shows that significant national reductions in HIV incidence and prevalence can occur. Both countries recognized the seriousness of the epidemic early and implemented strong national programmes to reduce the spread of HIV and to provide support for people with AIDS and their families.
- It is important to intervene as early as possible with a comprehensive mix of proven and effective interventions to reach the largest possible number of people and have the maximum impact.
- The most effective interventions are those that focus on population groups that have the most sexual partners. This is true at all stages of the epidemic.
- Prevention through behaviour change, condom promotion and STD treatment is many times more cost effective than either providing hospital treatment for AIDS patients or trying to prevent the spread of the virus with antiretroviral therapy.

Care and treatment of HIV infection

Antiretroviral treatment. Highly active antiretroviral therapy (HAART) has received much international publicity in recent years. The therapy uses combinations of drugs and can inhibit the spread of HIV within a person's body. For some HIV-infected persons, HAART has been an effective way to prevent the onset of AIDS and prolong life. Guidelines for antiretroviral drug therapy in Kenya have now been developed and, though this care can be difficult and expensive, HAART is becoming more widely available in Kenya. However, important limitations about such treatment must be considered:

- Many HIV-infected persons cannot tolerate the side effects or follow the combination drug regimens. Using less than triple therapy has not been shown effective in prolonging life. Careful medical supervision is required.
- These drugs are not appropriate for everyone with HIV infection. They are best started when the immune function is low and this requires laboratory tests that are available in only a few centres.
- The cost of these treatments is coming down in Kenya, but it is still US\$1000–2000 a year.

Promotion of home-based care. The increasing number of people developing AIDS calls for partnership among the family members, health care

workers, local CBOs and NGOs in providing care and support to those infected and affected by the HIV/AIDS epidemic. Home-based care (HBC) programmes are being developed as an alternative to hospital care. HBC can be defined as the care of persons infected and affected by HIV/AIDS that is extended from the hospital or the health facility to their homes through family participation and community involvement within the available resources and in collaboration with health care workers. HBC is a collaborative effort between the hospital, the family of the patient and the community. It is holistic care that provides physical, medical and social needs. It is comprehensive care across the continuum from the health facility through to the community and the home. It should include medical care, nursing care, counseling, nutrition and social support. More information can be obtained from the National AIDS and STDs Control Programme (NAS COP) and the national home-based care guidelines.

Vaccines. For many HIV/AIDS researchers and policymakers, the real hope is for a widely available vaccine that can prevent HIV infection. Research on vaccines continues in many places around the world, including Kenya, but identifying and testing an effective HIV vaccine will take many years. In brief, it does not appear that vaccines will contribute to reducing the sexual spread of HIV in Kenya in the next decade.

Signs of success

Much has been done in Kenya in the last 15 years to fight the AIDS epidemic. Through the *Sessional Paper on AIDS in Kenya the government* has established a clear policy framework. The National AIDS Control Council, working with AIDS Control Units in the Ministry of Health and other ministries, is organizing the government response including disseminating information about the epidemic, coordinating research, ensuring safe medical practices, and implementing intervention and treatment programmes. A large number of NGOs provide prevention, counseling and care services. Organizations from all parts of society are participating, including church and community groups and the commercial sector. Political, commercial and community leaders are speaking out about AIDS and are encouraging people to protect themselves.

In spite of these activities, it is discouraging to see that HIV prevalence continues to rise in Kenya. However, that does not mean that these efforts are having no effect. Without these efforts, the epidemic would be far worse than it is today. In addition, signs are appearing that programmes are having an important effect in reducing the risk of HIV transmission.

- **Condom use.** The number of condoms distributed by the government has increased from 18 million in 1991 to over 60 million in 2000.

Sales of condoms through the social marketing programme have increased to over 13 million per year. The *Kenya Demographic and Health Survey 1998* (National Council for Population and Development, 1999) reported that over 40% of men said they used a condom the last time they had sex with someone other than their spouse. It is clear that more and more people are recognizing the risk of unprotected sex and are taking steps to protect themselves and their partners.

- **STD treatment.** A number of programmes have been implemented around the country to improve the treatment of sexually transmitted diseases. The Ministry of Health reports that over 50,000 cases of STDs are being treated each month. This is a significant increase from just a few years ago when supplies of drugs to treat STDs were scarce.
- **Targeted intervention programmes.** Two comprehensive intervention programmes in Nairobi have shown that treating STDs, promoting the use of condoms and peer counseling can have an important effect. An intervention with commercial sex workers in one area of Nairobi led to a reduction in the annual incidence of new HIV infections among the sex workers from 45% in the late 1980s to 10% in the 1990s. Large declines in the prevalence of STDs have also occurred.
- **Community-based programmes.** A community-based intervention in Nairobi and Nakuru included peer group education, condom promotion and improved STD treatment. From 1993 to 1998 the prevalence of chancroid and gonorrhoea has declined significantly (fig. 18) and HIV prevalence among young women has also declined.

Signs of success have also been seen in other countries, particularly Thailand and Uganda, where programmes have apparently been successful

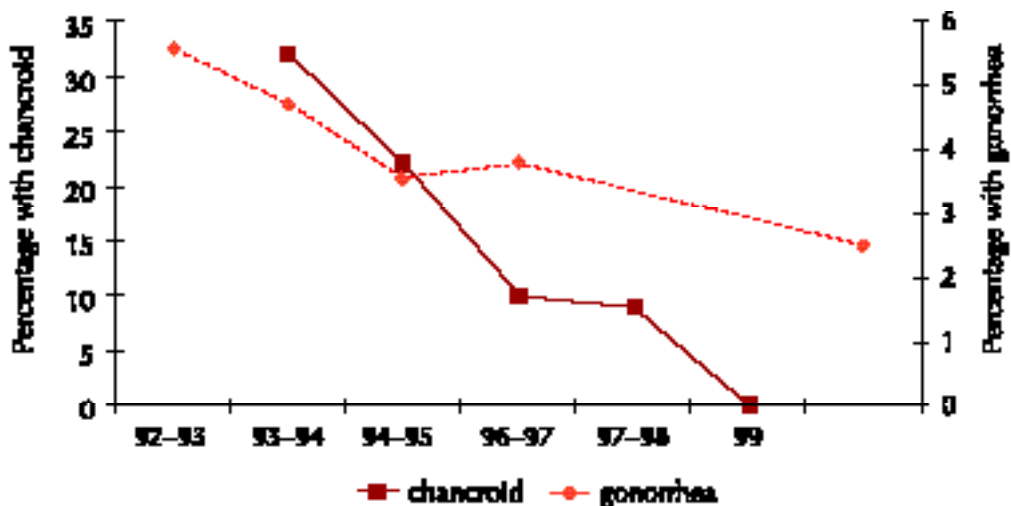


Figure 18. Impact of interventions on prevalence of STDs in Nairobi study population.

in reducing the prevalence of HIV infection. Recent trends in Uganda are a sign of hope for other countries with high levels of HIV infection. Reports from sentinel surveillance sites and other sources indicate that there may actually be a downward trend in HIV prevalence. Of particular note, the evidence indicates that HIV incidence (annual new infections) and prevalence rates among 15-to-19-year-olds have levelled off in rural areas and are declining in urban areas. Survey results from the early 1990s and mid-1990s suggest that behaviour has been changing within this age group, most notably by a later onset of sexual activity among teens and a decline in the proportion of adolescents with multiple sex partners. Members of this age group have also made greater use of condoms in high-risk sexual encounters.

The reasons for the behavioural changes in Uganda are unclear. Some data indicate that people are likely to change their behaviour if a close friend or relative has died from the disease. This suggests rising mortality as a grim catalyst for changing sexual practices. More positively, President Museveni and other Ugandan leaders have given strong support to AIDS control efforts, and knowledge about AIDS, its risks, consequences and means of prevention have been widely diffused throughout the country. Whatever the reasons for the changing behaviour, it is encouraging to witness, at last, a downward trend in HIV prevalence in an African country seriously affected by the AIDS epidemic.

What needs to be done

Actions can be taken to slow the spread of HIV in Kenya and to avert the serious personal, social and economic consequences that will result from a continued AIDS epidemic. Much is being done today in Kenya to care for HIV/AIDS patients and to educate people about the dangers of AIDS. However, these efforts are not enough. HIV is still spreading rapidly in most parts of the country. For prevention efforts to succeed, a number of changes are required. The following are among the most important:

- *Sustain strong political commitment of all leaders.* Experience from development programmes around the world has shown that with a difficult problem such as AIDS, the strong support of the top leaders of the country is crucial to success. High-level political commitment to the AIDS problem has increased markedly in Kenya in recent years. The president has declared AIDS a national disaster and a new multisectoral approach to AIDS prevention and care has been adopted. It is vital to sustain this commitment during the coming years.
- *Implement the multisectoral approach to AIDS interventions.* It is clear that AIDS is not just a health problem. It affects all areas of society. It affects individuals, families, villages, towns, economic growth and

social development. Kenya has adopted a multisectoral approach coordinated by the National AIDS Control Council. During the coming year each of the key sectors needs to develop its own AIDS control activities and work hard to implement them effectively. Among the priority government sectors that will be crucial are health, education, armed forces, civil service, agriculture, transport and communications. It is important that non-governmental sectors contribute to the solution as well, including NGOs, private sector organizations, religious organizations, educational institutions, unions and professional societies.

- *Provide VCT services.* VCT services need to be available in all districts of Kenya, handled by dedicated and well-trained VCT providers following the national guidelines and the national training curriculum. VCT services provide entry to care for those who are infected, promote behaviour change, and help those who are affected to cope with their situation.
- *Provide services to prevent mother-to-child HIV transmission.* PMCT offers an opportunity to reduce childhood deaths through improved care during pregnancy, delivery and lactation, thus reducing the amount of HIV transmission to children, and it introduces HIV prevention to the family.
- *Strengthen STD treatment.* Evidence from Nairobi shows that a strong programme to educate people about sexually transmitted diseases, promote condom use and provide effective treatment can dramatically reduce their prevalence. This, in turn, will contribute to reduction in HIV incidence. It is now important to strengthen programmes in the rest of the country.
- *Strengthen AIDS education in schools.* HIV prevalence is alarmingly high among youth, especially girls. A new HIV/AIDS curriculum has been introduced through NACC and the Ministry of Education. Full integration of comprehensive AIDS education in schools is required to encourage and sustain responsible behaviour for HIV prevention.
- *Implement the strategic plan.* Kenya has developed a comprehensive strategic plan that aims to reduce HIV prevalence by 20 to 30% in the next five years. To achieve this goal, efforts need to be focused on implementing the planned activities and ensuring that each organization contributes maximum effort according to its role.
- *Strengthen home-based care.* There is an obligation to provide quality care for those who already have AIDS, many of whom occupy scarce hospital beds or are neglected at home. Improved collaboration among health care providers, communities and families through better training, mobilization and sensitization is required.

- *Strengthen networks of people living with HIV/AIDS.* Organizations that are formed by people living with HIV/AIDS offer psychological support to their members and are important agents of community change.
- *Eliminate stigma.* The stigma associated with HIV causes great hardship for many living with HIV and hampers efforts to provide proper care and get people to learn their HIV status. Eliminating the stigma and discrimination will improve the quality of life of those living with HIV/AIDS and bolster efforts to prevent further spread.

Frequently asked questions

Since April 1993 over 650 presentations based on this booklet have been given to audiences in Kenya. More than 16,000 people have participated in these presentations and have asked many questions. The most frequently asked questions and brief responses are given here.

How and where did HIV originate?

HIV is closely related genetically to simian (primate) immunodeficiency viruses. How, when, and where it came into the human population is not known, but it may have been around for some time, infecting only a few people. In the last two decades, HIV has become a serious epidemic and has spread throughout the world. How to prevent its spread, rather than how and where the virus originated, is the most important question facing us today.

Why is Africa, of all the regions in the world, the hardest hit?

The World Health Organization estimates that 70% of all AIDS cases have occurred in Africa and the highest HIV rates in the world are now in southern Africa. Poverty, the high prevalence of other sexually transmitted diseases, and cultural and sexual practices and beliefs all contribute to the rapid spread of HIV in Africa.

Why is there more AIDS in some parts of the country than in others?

Infection levels are generally higher in urban areas than in nearby rural areas, and some parts of western Kenya have the highest recorded rates in the country. HIV is still spreading in Kenya, so that many rural and urban areas that had low infection levels in the past are now experiencing higher infection rates. Many factors may contribute to these differences, such as high population density, more movement of people because of trading and migration routes, non-practice of circumcision, sexual networks within communities, and cultural practices such as wife-sharing and widow inheritance.

Is there a cure for AIDS? Will combination therapy cure AIDS?

There is no cure for AIDS. Recently, new therapies combining three different antiretroviral drugs have proven successful in preventing or slowing the progress from HIV infection to AIDS when a person with HIV shows signs of a weakening immune system. However, these drugs are expensive and have side effects that may make them difficult to take. They are not a cure, so lifelong treatment may be necessary.

Is there a vaccine to prevent AIDS?

Many trial HIV vaccines are under development, and some are being tested in Kenya, but the process of developing and testing drugs and vaccines is a long one. An effective vaccine is not likely to be available within the next 10 years. Therefore, efforts to prevent the spread of HIV through education are the main weapon.

Is there more than one type of HIV? Does the virus mutate?

There are different strains of HIV. The greatest difference is between HIV-1, which is found in Kenya and most parts of the world, and HIV-2, which is found primarily in western Africa. HIV-2 does not transmit as readily as HIV-1 but still leads to eventual death. There are various strains of HIV-1 as well. Originally subtype B predominated in America and Europe, type E was in Thailand and Australia, and types A, C and D were in Africa and India. Now, however, most strains can be found almost everywhere. HIV mutates frequently, which poses a challenge to maintaining immunity or developing an effective vaccine.

Are condoms really safe and effective if used properly? Can HIV pass through the pores of a condom?

The only 100% effective method of avoiding sexually transmitted HIV infection is abstinence. Condoms are safe and offer reliable protection against HIV infection if used properly. The main risk for condom users is from using condoms inconsistently or improperly. Latex condoms do not have pores and have a thickness of 0.03 to 0.09 mm. They are tested extensively to make sure they meet the standards set by the World Health Organization so they are safe and effective.

Can mosquitoes transmit HIV infection?

There is no evidence of HIV being transmitted through mosquitoes. If it were, many more children and elderly people would be infected. The HIV virus in the blood is inactivated in the mosquito digestive system, just as it is in the human digestive system. When a mosquito bites it injects saliva, which may contain malaria parasites but does not contain HIV.

Are the tests for HIV infection accurate?

Tests for HIV infection are very accurate when done properly by qualified laboratory personnel. However, a positive test should always be confirmed with a second, different HIV test, since a small percentage of tests may be falsely positive. Also a person who has become infected very recently (for a few weeks to months after exposure) may test negative before enough antibodies develop within their body to show up in a test.

Why do some HIV-positive mothers transmit the virus to their babies while others do not?

Mothers with HIV infection in Kenya transmit the virus to their babies between 30 and 40% of the time. Many factors influence the possibility of transmission. The amount of virus that the mother has in her body and the function of her immune system are the most important factors. But malaria during pregnancy, lack of vitamin A and other nutrients, a long or difficult labour or delivery, and duration of breastfeeding may also contribute to babies becoming infected. There are now ways to prevent the transmission of mother-to-child HIV transmission—by using drugs in pregnancy, labour and after delivery; by giving good antenatal and delivery care; and by advising on appropriate feeding (see p. 35, 'Interventions to prevent mother-to-child transmission').

Can a married couple have different HIV results even though they have unprotected sex with each other?

HIV infection is not transmitted each time a person has sexual intercourse. Especially if the infected person has a good immune function, few symptoms, and does not have genital ulcers, it may be several years before HIV is transmitted to the spouse. In fact, generally more couples in a community have different (discordant) results, where one is positive and the other negative, than where both are HIV infected. The best way for couples to know if they are safe is to go for voluntary counseling and testing as a couple, where they learn their HIV results together and can protect themselves if they are discordant.

Why can't the government test everybody for HIV infection?

The government encourages people to know their HIV status, especially for couples before marriage, when planning to have children, or when certain illnesses occur. This testing should be voluntary, counseling by a trained counselor should accompany it, and there should always be a second, different test to confirm HIV-positive results. More facilities will be offering voluntary counseling and testing throughout the country. Improved rapid HIV tests have shortened the time to results to less than an hour.

Despite education campaigns and increased condom use, HIV is still increasing. Why aren't these programmes effective?

The AIDS prevention programmes that have been implemented have had an effect in reducing the severity of the epidemic. Many people have changed their behaviour to stick with one faithful partner. Many others have adopted condom use, and others are seeking treatment for other sexually transmitted diseases. One study estimated that increased condom use alone has saved hundreds of thousands of people from HIV infection in Kenya (Stover and Baltazar 1998). So these programmes have had an effect. Unfortunately, they have not been widespread or effective enough to prevent all new infections. In fact, the number of infected people is still increasing. Only a much expanded prevention programme, with participation from all sectors—government, NGOs, the private sector, religious groups, churches, professional organizations, community groups—will be successful in reducing the number of infected people in the future.

Won't learning that I am HIV infected cause me to die sooner?

There is no scientific evidence to show that people who know their status develop AIDS or die quicker. The advantages of knowing one's status include being able to protect sexual partners and to avoid reinfection, changing one's lifestyle to prevent illness and seek early treatment, and making more informed choices in their reproductive lives.

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Appendix

Estimated prevalence of HIV in Kenya by district

Province	District	Urban infected (no.)	Rural infected (no.)	Total infected (no.)	Prevalence (%)	R/U prevalence relationship		Urban site	Urban prevalence (%)
						R/U links	R/U ratio		
Central	Kiambu	8,501	54,958	63,459	17	M	0.7	Thika	22.8
Central	Kirinyaga	1,631	21,234	22,865	10	M	0.7	Nyeri	14.0
Central	Maragua	1,714	17,377	19,091	10	M	0.7	Nyeri	14.0
Central	Muranga	1,547	15,679	17,226	10	M	0.7	Nyeri	14.0
Central	Nyandarua	1,522	22,150	23,672	10	M	0.7	Nyeri	14.0
Central	Nyeri	9,784	25,063	34,847	11	M	0.7	Nyeri	14.0
Central	Thika	7,413	47,922	55,335	17	M	0.7	Thika	22.8
Coast	Kilifi	4,039	25,415	29,454	10	M	0.7	Mombasa	14.3
Coast	Kwale	–	23,612	23,612	9	L	0.4	Tiwi	23.5
Coast	Lamu	986	1,714	2,700	7	L	0.4	Mombasa	14.3
Coast	Malindi	2,052	12,914	14,966	10	M	0.7	Mombasa	14.3
Coast	Mombasa	51,726	–	51,726	16	H	0.8	Mombasa	14.3
Coast	Taita-Taveta	2,322	5,900	8,222	7	L	0.4	Kitui	13.7
Coast	Tana River	383	2,217	2,600	3	L	0.4	Garissa	6.3
Eastern	Embu	3,127	33,023	36,150	26	M	0.7	Meru	36.0
Eastern	Isiolo	757	1,007	1,764	3	L	0.4	Garissa	6.3
Eastern	Kitui	546	14,169	14,715	6	L	0.4	Kitui	13.7
Eastern	Machakos	9,605	47,169	56,774	12	M	0.7	Nairobi	16.8
Eastern	Makueni	8,051	39,539	47,590	12	M	0.7	Nairobi	16.8
Eastern	Marsabit	1,081	1,089	2,170	4	L	0.4	Garissa	6.3
Eastern	Mbeere	1,953	20,625	22,578	26	M	0.7	Meru	36.0
Eastern	Meru Cent'l	7,895	57,960	65,855	26	M	0.7	Meru	36.0
Eastern	Meru North	9,600	70,479	80,079	26	M	0.7	Meru	36.0
Eastern	Moyale	57	1,480	1,537	6	L	0.4	Kitui	13.7
Eastern	Mwingi	320	8,304	8,624	6	L	0.4	Kitui	13.7
Eastern	Nithi	3,237	23,763	27,000	26	M	0.7	Meru	36.0
Eastern	Tharaka	1,595	11,708	13,303	26	M	0.7	Meru	36.0
Nairobi	Nairobi	174,747	–	174,747	16	H	0.9	Nairobi	16.8
N. Eastern	Garissa	1,337	4,934	6,271	3	L	0.4	Garissa	6.3
N. Eastern	Mandera	339	3,220	3,559	3	L	0.4	Garissa	6.3
N. Eastern	Wajir	944	4,034	4,978	3	L	0.4	Garissa	6.3
Nyanza	Bondo	1,289	30,773	32,062	27	H	0.9	Kisumu	29.8
Nyanza	Gucha	2,146	24,306	26,452	11	M	0.7	Kisii	15.8
Nyanza	Homa Bay	1,415	38,199	39,614	27	H	0.9	Kisumu	29.8
Nyanza	Kisii Central	2,252	25,511	27,763	11	M	0.7	Kisii	15.8
Nyanza	Kisumu	28,963	41,114	70,077	28	H	0.9	Kisumu	29.8
Nyanza	Kuria	739	19,953	20,692	27	H	0.9	Kisumu	29.8
Nyanza	Migori	2,514	67,866	70,380	27	H	0.9	Kisumu	29.8
Nyanza	North Kisii	2,313	26,192	28,505	11	M	0.7	Kisii	15.8
Nyanza	Nyando	17,204	24,422	41,626	28	H	0.9	Kisumu	29.8
Nyanza	Rachuonyo	1,498	40,431	41,929	27	H	0.9	Kisumu	29.8
Nyanza	Siaya	2,589	61,804	64,393	27	H	0.9	Kisumu	29.8
Nyanza	Suba	759	20,478	21,237	27	H	0.9	Kisumu	29.8
Rift Valley	Baringo	1,688	8,279	9,967	7	L	0.4	Kitale	16.6
Rift Valley	Bomet	1,891	21,311	23,202	12	M	0.7	Kitale	16.6
Rift Valley	Buret	1,561	17,593	19,154	12	M	0.7	Kitale	16.6

Estimated prevalence of HIV in Kenya by district (continued)

Province	District	Urban infected (no.)	Rural infected (no.)	Total infected (no.)	Prevalence (%)	R/U prevalence relationship		Urban site	Urban prevalence (%)
						R/U links	R/U ratio		
Rift Valley	Kajiado	1,074	7,279	8,353	4	L	0.4	Kajiado	9.2
Rift Valley	Keiyo	–	2,663	2,663	4	L	0.4	Kajiado	9.2
Rift Valley	Kericho	2,324	26,195	28,519	12	M	0.7	Kitale	16.6
Rift Valley	Koibatek	879	4,311	5,190	7	L	0.4	Kitale	16.6
Rift Valley	Laikipia	2,663	8,247	10,910	7	L	0.4	Nyeri	14.0
Rift Valley	Marakwet	–	2,645	2,645	4	L	0.4	Kajiado	9.2
Rift Valley	Nakuru	45,587	105,685	151,272	25	H	0.9	Nakuru	26.8
Rift Valley	Nandi	1,476	18,950	20,426	7	L	0.4	Kitale	16.6
Rift Valley	Narok	544	6,589	7,133	4	L	0.4	Kajiado	9.2
Rift Valley	Samburu	1,218	2,158	3,376	5	L	0.4	Kajiado	9.2
Rift Valley	Trans Mara	258	3,122	3,380	4	L	0.4	Kajiado	9.2
Rift Valley	Trans Nzoia	6,802	29,357	36,159	12	M	0.7	Kitale	16.6
Rift Valley	Turkana	–	8,926	8,926	4	L	0.4	Kajiado	9.2
Rift Valley	Uasin Gishu	14,117	26,583	40,700	13	M	0.7	Kitale	16.6
Rift Valley	West Pokot	595	5,559	6,154	4	L	0.4	Kajiado	9.2
Western	Bungoma	3,882	36,326	40,208	9	M	0.7	Kakamega	12.3
Western	Busia	2,689	34,043	36,732	20	M	0.7	Busia	28.5
Western	Butere/ Mumias	1,897	25,018	26,915	11	H	0.9	Kakamega	12.3
Western	Kakamega	2,401	31,665	34,066	11	H	0.9	Kakamega	12.3
Western	Lugari	861	11,357	12,218	11	H	0.9	Kakamega	12.3
Western	Mt Elgon	805	7,531	8,336	12	M	0.7	Kitale	16.6
Western	Teso	1,019	9,539	10,558	12	M	0.7	Kitale	16.6
Western	Vihiga	2,641	34,837	37,478	15	H	0.9	Mbale	16.4

These prevalence estimates are based on sentinel surveillance of HIV in antenatal clinics. The population figures are based on projections calculated before release of 1999 census data.

R/U – rural-to-urban ratio of the infected

L – low; M – medium; H – high

– indicates no urban or no rural population in the district

For additional information on how you can help or for more information about this booklet or to schedule a presentation for your organization, please contact:

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AIDS in Kenya

Background, Projections, Impact, Interventions and Policy

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