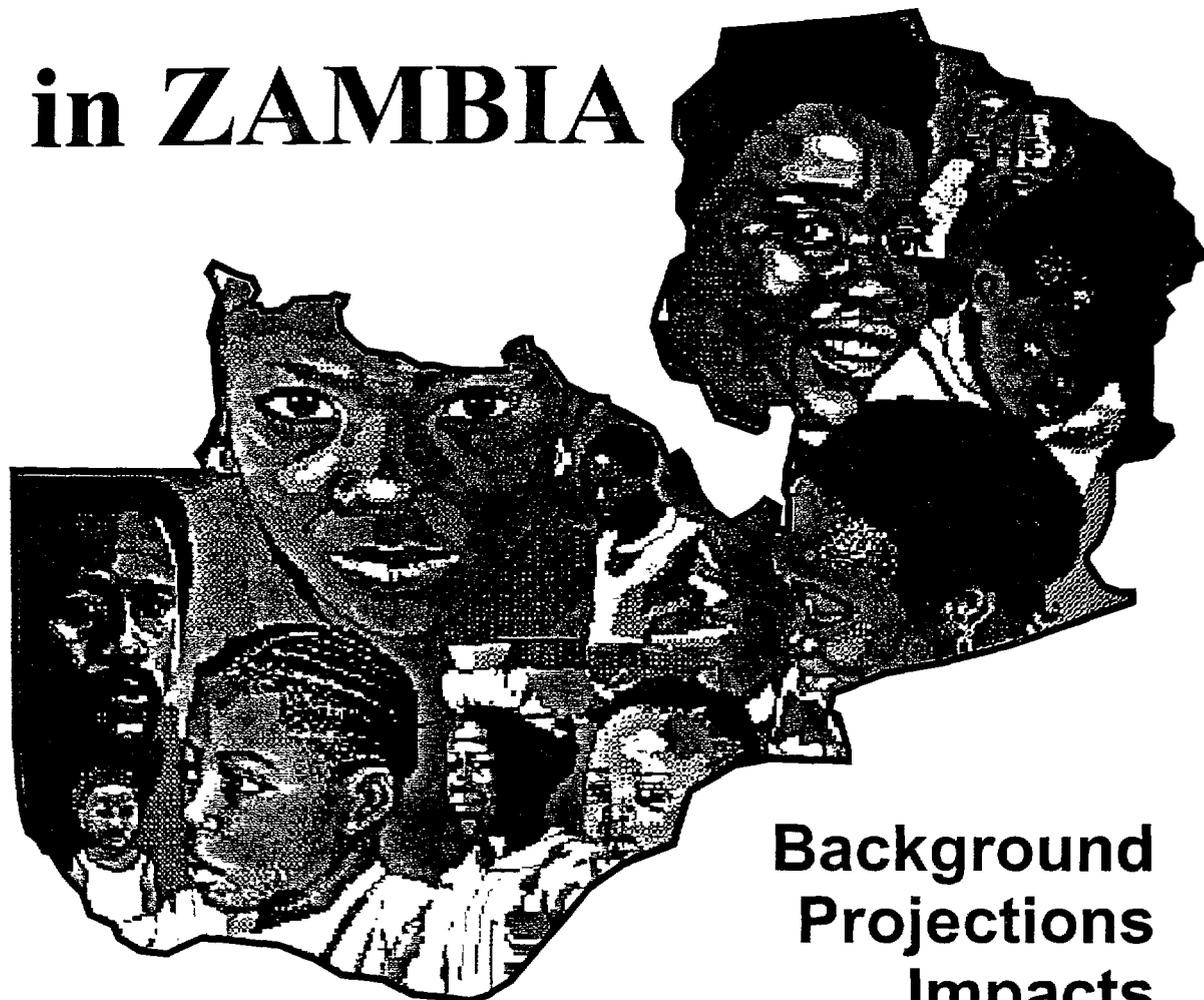


HIV/AIDS

in ZAMBIA



**Background
Projections
Impacts
Interventions**

Ministry of Health /
Central Board of Health

September 1999

BEST AVAILABLE COPY

**HIV/AIDS In Zambia:
Background, Projections, Impacts and Interventions**

Ministry of Health / Central Board of Health

September 1999

TABLE OF CONTENTS

LIST OF ABBREVIATIONS	iv
FOREWORD	v
INTRODUCTION	1
I. BACKGROUND	2
What are HIV and AIDS?	3
Transmission Mechanisms	5
Incubation Period	7
The HIV/AIDS Pyramid	9
Sentinel Surveillance and Population-Based Surveys	10
Current Estimates of HIV Prevalence	11
Age-Sex Distributions	17
Factors Affecting the HIV/AIDS Epidemic in Zambia	21
II. PROJECTIONS	25
HIV Infections	27
Number of AIDS Cases	28
Cumulative AIDS Deaths	29
Annual Deaths to Persons Ages 15 to 49 and Life Expectancy at Birth ...	30
III. THE SOCIAL AND ECONOMIC IMPACTS OF AIDS	32
Orphans as a Result of AIDS	35
Child Survival	37
Population Size and Growth	39
Increase in Cases of Tuberculosis	41
Health Care	43
Economic and Sectoral Impacts	45
Gender and AIDS	49
IV. INTERVENTIONS TO CONTROL THE SPREAD OF AIDS	52
Interventions	53
National AIDS Control Programmes	61
The Role of Zambian Leaders	65
Conclusion	70
V. DISTRICT ESTIMATES	71
VI. TECHNICAL NOTE	74
VII. SELECTED SOURCES	79

LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
AIM	AIDS Impact Model
ANC	Antenatal Care
ARC	AIDS Related Complex
AZT	Zidovudine
CBOH	Central Board of Health
CSO	Central Statistical Office
DHS	Demographic and Health Survey
GRZ	Government of the Republic of Zambia
HAART	Highly Active Anti-Retroviral Therapy
HIV	Human Immunodeficiency Virus
IEC	Information, Education and Communication
MOH	Ministry of Health
MTCT	Mother-to-Child Transmission
MTP1	First Medium Term Plan
MTP2	Second Medium Term Plan
NAPCP	National AIDS Prevention and Control Programme
NASTLP	National AIDS/STD/TB and Leprosy Programme
NGO	Non Governmental Organisation
NVP	Nevirapine
PLWHA	People Living With HIV/AIDS
SBS	Zambia Sexual Behaviour Survey 1998
STDs	Sexually Transmitted Diseases
TB	Tuberculosis
TDRC	Tropical Diseases Research Centre
UNAIDS	Joint United Nations Programme on AIDS
UNICEF	United Nations Children's Fund
VCT	Voluntary HIV Counselling and Testing

FOREWORD

The HIV/AIDS epidemic is a major challenge both to public health and the socio-economic development of the country. It is threatening to arrest, or even reverse, some of the important, hard-won gains in various sectors such as health, education, agriculture and human resource development. The physical, psychological and emotional devastation consequent upon the HIV/AIDS epidemic has brought great suffering not only to the people of Zambia but also to other peoples throughout the world.

It is for this reason that the Ministry of Health and the Central Board of Health recognizes the importance of providing accurate and up-to-date information on the extent and magnitude of the HIV/AIDS epidemic in Zambia. This revised version of *HIV/AIDS in Zambia: Background, Projections, Impacts and Interventions*, first produced in 1997, seeks to provide the most recent data and information on HIV/AIDS. In particular, it uses information from the sentinel surveillance survey conducted in 1998, supplemented by the population-based surveys and the *Zambia Sexual Behaviour Survey 1998*. The availability of all this new information gives us a better picture of the HIV/AIDS epidemic so that we can plan more effective and better-targeted interventions.

Although the prevalence of HIV infections is high in Zambia, as in many countries in the Southern African region, it must be realised that the majority of the population remains uninfected. In fact, more than 80 percent of the adult population is still HIV-free. Prevention efforts must aim to reduce the rate of HIV transmission in our communities through wide-ranging interventions and programmes. Over the years, we have learnt that *prevention works*, and this gives hope that halting the spread of HIV is achievable.

This book has been written in a manner that makes it easily readable and the text is supplemented by colourful graphics. I wish to encourage everyone and every sector to make use of this book in their day-to-day planning for HIV/AIDS activities and programmes. Because of the dynamic and evolutionary nature of the HIV/AIDS epidemic, this book does not constitute the final statement on the status of the HIV/AIDS epidemic in Zambia and my Ministry welcomes comments from readers.

I am convinced that if all of us – political, religious, business, non-governmental, community and district leaders and all others – individually and collectively do our part, we can change the course of this debilitating epidemic and move Zambia towards a healthy and threat-free future.



Professor Nkandu Luo, MP
Minister of Health

BACKGROUND

What are HIV and AIDS?

Human Immunodeficiency Virus (HIV) is the virus that causes Acquired Immune Deficiency Syndrome (AIDS). HIV destroys the biological ability of the human body to fight off opportunistic infections such as tuberculosis. A person can be infected with HIV for a long time without showing any symptoms of the disease. Nonetheless, during that period before a person develops symptoms, he or she can transmit the infection through sexual contact to other, uninfected people. An infected woman can also transmit the disease to her infant during pregnancy or delivery or while breastfeeding. HIV can also be spread by transfusions of contaminated blood and by sharing needles used for injections and drug use.

AIDS itself is defined in terms of how much deterioration of the immune system has taken place as seen by the presence of opportunistic infections. Unless they pass away from something else first, virtually all infected persons will eventually die from the disease. Most will be dead within ten years of infection and many will die even sooner.

By July 1997, about 45,000 AIDS and AIDS Related Complex (ARC) cases had been reported to the Ministry of Health since the beginning of the epidemic in Zambia. This is the latest data prior to this report. AIDS has spread throughout the country; cases have been reported in every district. However, there is much more to the epidemic than the number of reported cases. We know that most AIDS cases are not reported. This can happen for several reasons:

- Some people never seek hospital care for AIDS.
- Some physicians or nurses may not want to record a diagnosis of AIDS because of the stigma attached to the disease.
- People with AIDS do not die from the virus but from the opportunistic infections (such as tuberculosis) that invade the body with the breakdown of the immune system; consequently, many persons die from these invasive infections before they are ever diagnosed as having AIDS.
- Most rural hospitals and district health facilities do not have the capability to test for HIV infection.
- Most private laboratories do not report their figures.

The true number of cumulative AIDS cases in Zambia is not known, but, according to the projection model used in this study, the total was more than 600,000 by the end of 1998. Between 90,000 and 100,000 persons now develop full-blown AIDS each year.

AIDS stands for Acquired Immune Deficiency Syndrome. It is a disease caused by the Human Immunodeficiency Virus or HIV. It acts by weakening the immune system, making the body susceptible to and unable to recover from other diseases.

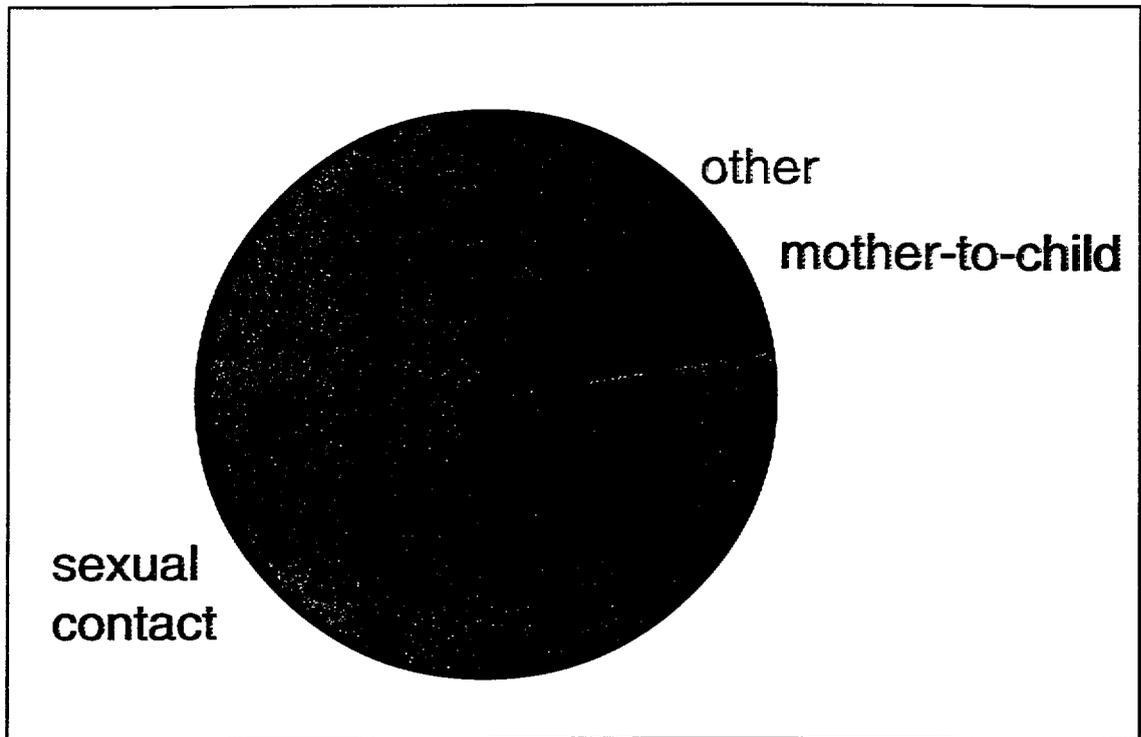
Transmission Mechanisms

In Zambia, two transmission mechanisms account for most new HIV infections in the country: heterosexual contact and mother-to-child transmission.

- < ***Heterosexual Contact.*** The majority of infections are transmitted through heterosexual contact. Certain factors increase the risk of infection during sexual intercourse dramatically. One is the presence in either partner during unprotected sex of a sexually transmitted disease (STD), such as syphilis or gonorrhoea. These diseases form ulcers and sores that facilitate the transfer of the virus. A second factor that contributes to the heterosexual spread of HIV is multiple sexual partnerships. A significant number of Zambian adults do engage in what are, from the perspective of HIV transmission, risky sexual relationships but do not use condoms to protect themselves. As a result, most new HIV infections are due to heterosexual contact. Programmes designed to slow the spread of HIV will need to focus on reducing transmission through unprotected sexual contact.

- < ***Mother-to-Child Transmission (MTCT).*** Many children are infected through mother-to-child transmission. They get the infection from their mothers during pregnancy, at the time of birth or through breastmilk. About 30 - 40 percent of infants born to infected mothers will themselves be infected. The other 60 - 70 percent will not become infected, but are at risk of becoming orphans. About 21,000 children become infected each year.

HIV Transmission Mechanisms



Other modes of transmission contribute less to the spread of the disease in Zambia but it is still important to guard against contaminated blood and reused needles that might transfer the virus.

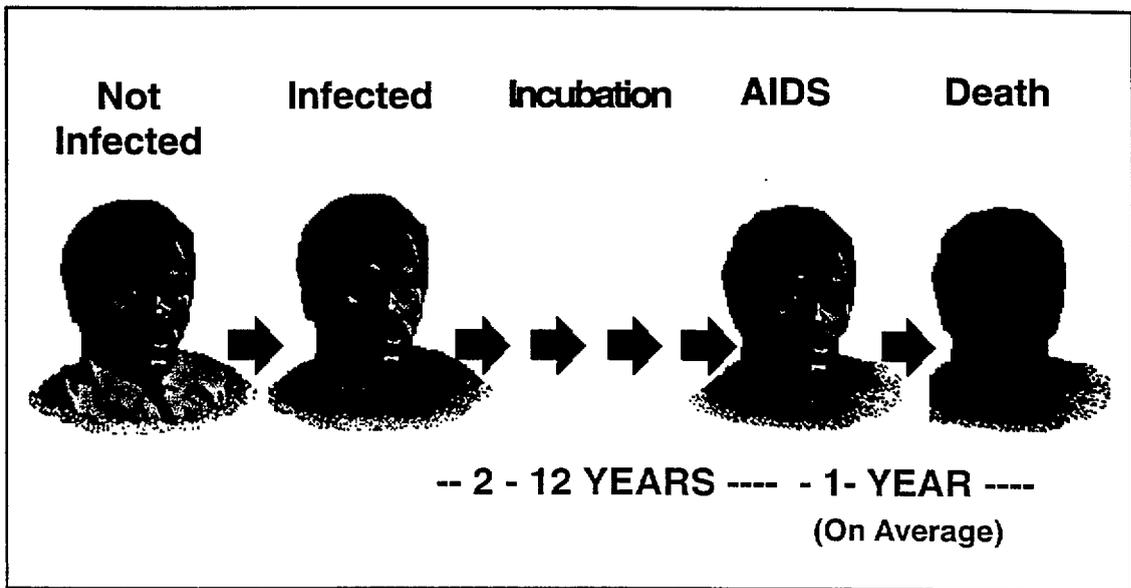
Equally important is how HIV is not transmitted. The virus is not transmitted by mosquitoes or by casual contact such as shaking hands or kissing or by sharing bowls or utensils. HIV-infected persons need not be shunned or avoided.

Incubation Period

After transmission of HIV, a person does not develop AIDS immediately. There is often a lengthy period from infection with HIV to development of the disease AIDS that may last from two to 12 years or even longer. Some people may survive longer than 12 years with an HIV infection while others may develop AIDS within two or three years and die soon thereafter. The average time from infection with HIV to development of the disease AIDS is about eight years. That is, on average, a person does not develop AIDS until eight years after becoming infected.

For most of this period, the person may not have any symptoms and, therefore, may not even be aware that he or she is infected. This contributes to the spread of HIV, since the person can transmit the infection to others without knowing it. A person becomes infectious as soon as he or she becomes HIV-infected. People with full AIDS, of course, remain infectious.

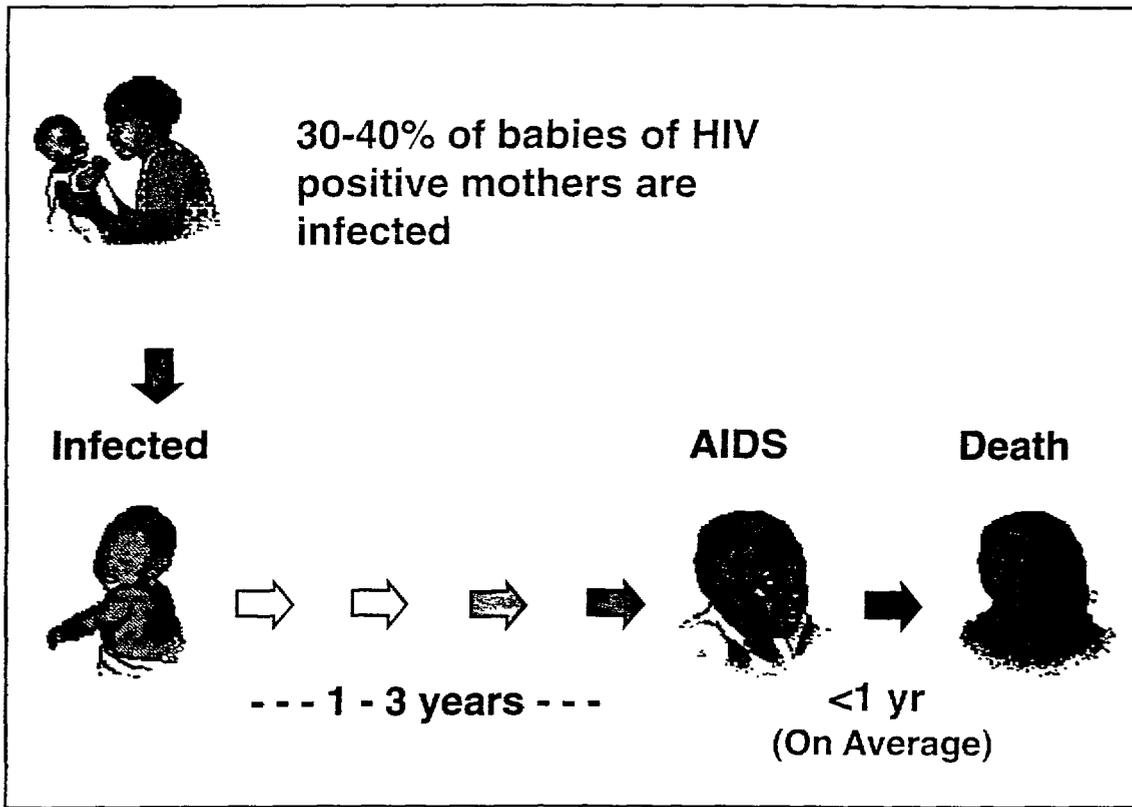
HIV Incubation Period (Adults)



Countries where the overall health of the population is poor may have shorter incubation periods, on average, than countries with better health conditions. At an individual level, no one is quite sure why some infected persons develop AIDS at a slower or faster pace than others. HIV-infected individuals can follow a healthy and positive lifestyle, including good nutrition and treatment of opportunistic infections, that will help them avoid developing AIDS as long as possible.

For children, the incubation period is much shorter because their immune systems are not yet fully developed. Most infants who are infected at birth develop AIDS within two years and die soon thereafter. Exceptions do exist. In some cases, HIV-infected children may live for five years or even longer.

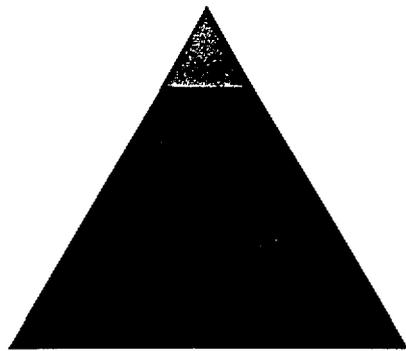
HIV Incubation Period (Infants)



The HIV/AIDS Pyramid

Because of the long and variable incubation period and because most people die quickly after they develop full AIDS, actual cases are only the tip of the epidemic. Many more people are infected with HIV, but have not yet developed AIDS. (Recall that AIDS is determined by how far the immune system has deteriorated, as indicated by the presence of opportunistic infections.)

By 1999, an estimated 1,009,000 persons were infected with HIV in Zambia. However, only about 9 percent of these had actually progressed from HIV to AIDS. Most did not know they were infected, and many had no symptoms at all. However, almost all will develop AIDS and die within the next 10 years or so. There is no available cure for AIDS. (See section IV on treatments and vaccines.)



▲ Estimated AIDS cases - 9%

▲ Additional HIV infections - 91%

▲ Actual AIDS cases are only the tip of the pyramid. Many more people are infected with HIV but have not yet developed AIDS.

Sentinel Surveillance and Population-Based Surveys

If most people do not know they are infected, how do public health officials monitor trends? Zambia has a sentinel surveillance system that provides data for estimating the extent of HIV infection. Each of the nine provinces has designated sentinel surveillance sites at different hospitals or health centres. At these selected sites, usually one rural and one urban for each province, health workers take blood samples from pregnant women visiting for the first time for care for the current pregnancy. (Most Zambian women – about 96 percent according to the *1996 Demographic and Health Survey* – seek such care when pregnant). These blood samples are then tested anonymously for HIV infection and the results are used to understand the status of the epidemic.

The sentinel system first started in the early 1990s, although only a few sites actually took blood samples and reported results prior to 1994. In 1994, all of the sentinel sites collected and reported data. A second round of sentinel collection was scheduled for 1996 but did not take place for various reasons. However, in 1998, CBOH completed another full round of sentinel surveillance.

Zambia is one of the few countries in sub-Saharan Africa where population-based surveys are also used to obtain information on HIV prevalence. Population-based surveys differ from the sentinel sites in that samples are taken from both men and women and from all age groups. These provide a wealth of information on the status of the epidemic and trends, changes in behaviour and risk factors, and how HIV infection affects fertility. In Zambia, the population-based sites are the same as certain sentinel sites; therefore, the population-based results also help confirm the accuracy and usefulness of the sentinel surveillance information. However, population-based surveys are more expensive and difficult to organise than the sentinel sites.

MOH/CBOH undertook population-based surveys in the Chelston area of Lusaka and in Kapiri Mposhi in 1995/96 and in 1998. In addition, the Tropical Diseases Research Centre (TDRC) in Ndola has been participating in a multicentre study on factors affecting the spread of HIV in African towns. As part of this study TDRC has conducted a population survey on HIV prevalence and sexual behaviour and a commercial sex worker survey, both in Ndola.

Finally, the Central Statistical Office led in the implementation of *Zambia Sexual Behaviour Survey 1998* (SBS). While not an HIV prevalence survey, this study provides information on sexual behaviour and attitudes related to the spread of HIV. Similarly, the *1996 Demographic and Health Survey* (DHS) remains a valuable source of information.

Current Estimates of HIV Prevalence

Sufficient information exists from the different sources to draw a reasonably reliable picture of what is happening with HIV/AIDS in Zambia. A good starting point is to look at HIV prevalence in the country. The UNAIDS-recommended measure to understand the extent of HIV in a population is HIV prevalence among 15 to 49 year olds, or the percentage of persons aged 15 to 49 who are infected with the virus.

In 1998, the estimated HIV prevalence rate for the entire country was 19.7 percent. In urban areas, the prevalence rate among 15 to 49 year olds was more than 28 percent; in rural areas it was 13.6 percent. The overall rate is exceedingly high and shows that Zambia is undergoing one of the worst HIV/AIDS epidemics in the entire world. It means that among those Zambians now over the age of 15, nearly one out of five is already HIV-infected and will almost certainly die at a young age from this disease, mostly over the next 2 - 12 years. In addition, more and more adults, as well as children, are becoming newly infected every day.

And yet, it is equally as important to remember the other side of the picture. More than 80 percent of the population aged 15 to 49 remains uninfected, and all of the women and men in this group (and others) can actively take measures to protect themselves and help stop the spread of the virus. This is why a strong response to the epidemic from all sectors of Zambian society is so important.

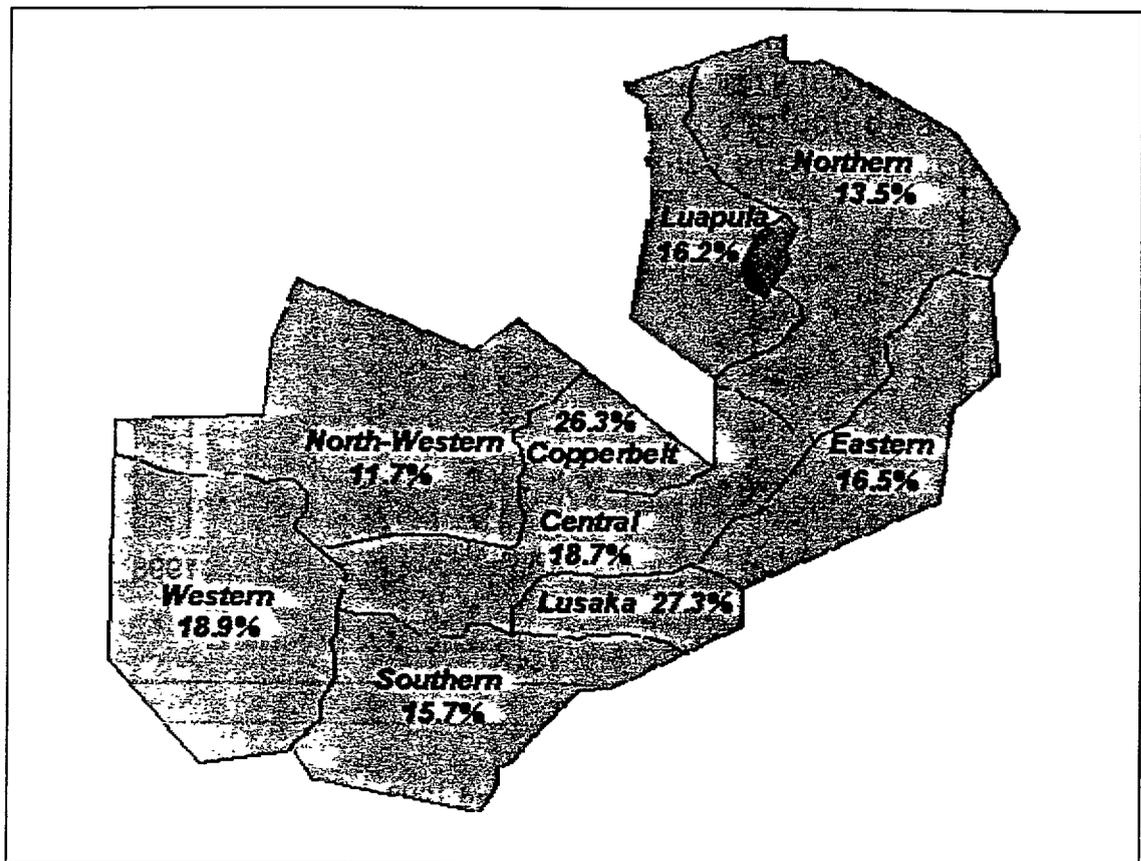
HIV Prevalence, Ages 15 to 49: 1998



If HIV prevalence is very high, how then is it distributed across the country? As noted, HIV prevalence is about 2 times higher in urban areas than in rural areas – HIV prevalence is over 28 percent in urban centres and 13.6 percent in the countryside. The high rate of HIV infection in the urban areas is especially important because Zambia is more urbanised than most sub-Saharan countries.

Another way to look at HIV in the country is to consider prevalence in the different regions of the country. The map indicates estimates of HIV prevalence by province. Estimated HIV prevalence is highest in Lusaka and Copperbelt provinces, where more than one out of every four adults in the 15 to 49 year old age group is HIV infected. Prevalence rates are in the 15 to 19 percent range in five of the remaining provinces – Luapula, Eastern, Central, Southern and Western. Prevalence is modestly lower – in the 11 to 14 percent range – in the two remaining provinces, Northern and North-Western. The provincial differences are not the most important story, however. Much more important is the fact that reported rates are very high everywhere in the country. The HIV/AIDS epidemic has left no corner of Zambia untouched.

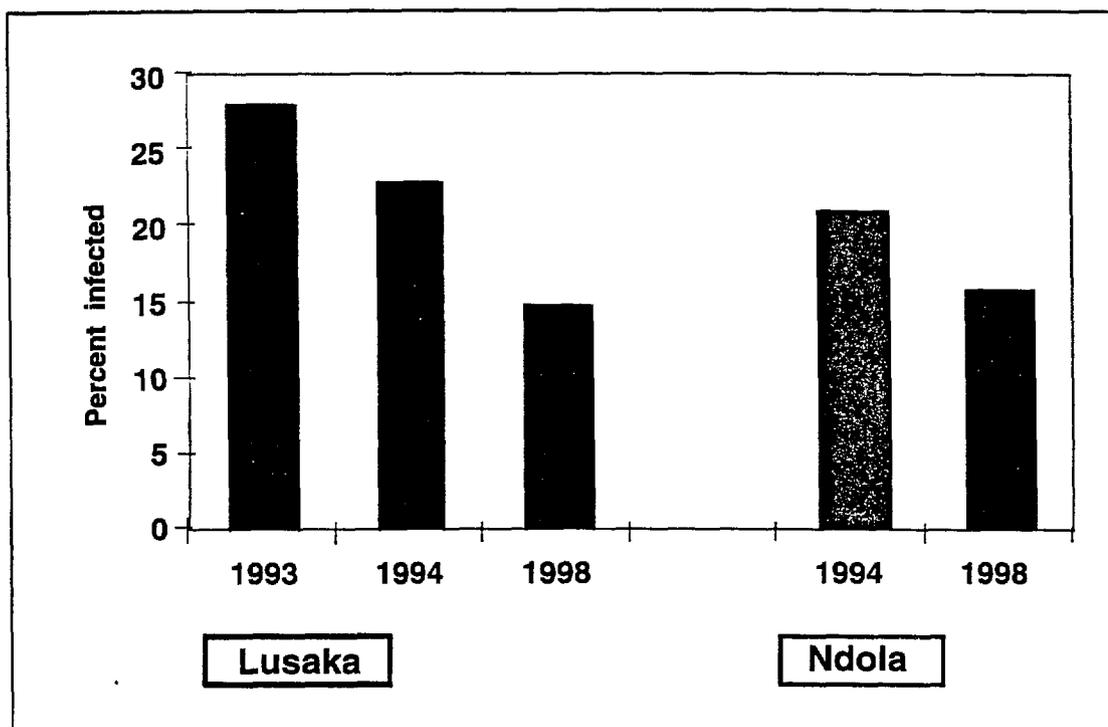
HIV Prevalence, Ages 15 to 49, by Province: 1998



One of the important observations in comparing the 1994 and 1998 sentinel surveillance results is a downward trend in prevalence in the 15 to 19 year old age group. HIV/AIDS policy analysts watch changes in the 15 to 19 year old age group closely to detect changes in the overall epidemic, especially changes in incidence.

The downward trend in this age group is especially marked in major urban areas, notably Lusaka. In Lusaka, for example, HIV prevalence among 15 to 19 year olds dropped from 28 percent in 1993 to 23 percent in 1994 to 15 percent in 1998. In Ndola, prevalence among 15 to 19 year olds dropped from 21 to 16 percent between 1994 and 1998. The same trend, though less pronounced, is evident in several rural areas.

HIV Prevalence in Lusaka and Ndola, Ages 15 to 19



ice
DS
ges

Many believe that the data indicate a new and favourable trend in the HIV epidemic. In this view, the decline in prevalence among late teens most probably corresponds to reduced incidence in this age group attributable in turn to favourable changes in behaviour. This declining incidence will eventually be reflected in a drop in overall HIV prevalence. Others suggest that this information should be interpreted more cautiously. In any case, it will take time before the prevalence declines in the youngest age group can be reflected in older age groups. Only then will it be possible to evaluate the impact of this trend on the overall epidemic.

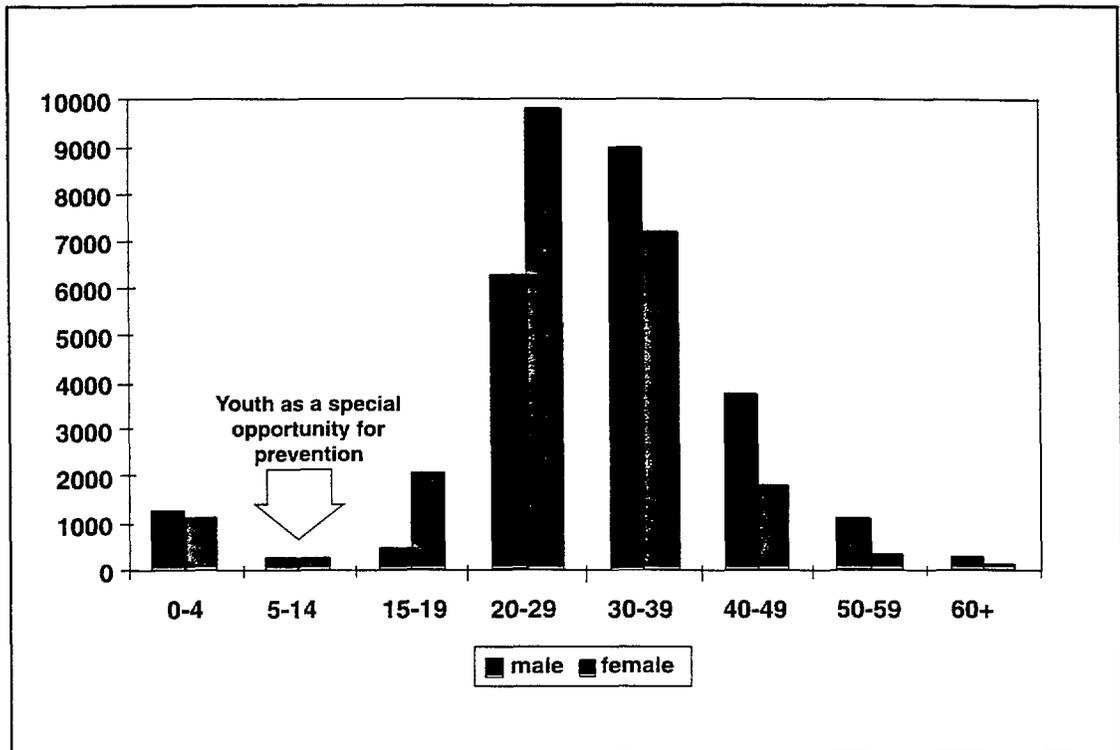
ly
om
ce
he

The drop in prevalence among 15 to 19 year olds in parts of the country is a hopeful and encouraging sign. It underscores the fact that prevalence can change in Zambia and should serve as a stimulus for even stronger programmatic efforts to limit the further spread of HIV.

Age-Sex Distributions

The following chart shows the cumulative number of reported AIDS and AIDS Related Complex (ARC) cases in Zambia through July 1997 by age group and sex. Reported cases represent only a small proportion of all AIDS cases; nonetheless, they provide useful information about the nature of the HIV/AIDS epidemic in Zambia. The blue bars represent AIDS cases among males for each age group; the red bars represent AIDS cases among females.

Reported AIDS and ARC Cases through July 1997



This bar chart illustrates several interesting facts:

- About 84 percent of AIDS cases are found among adults between the ages of 20 and 49. Since this is the most economically productive segment of the population, deaths in this age group constitute an important economic burden. Many productive years and much investment in education and training will be lost. These deaths also have significant family consequences since most people in this age group are raising young children.
- The peak ages for AIDS cases are 20-29 for females and 30-39 for males. Young women in the 15-19 age group are five times as likely to be infected as males in the same age group. Some of the difference may be due to transmission from older men to younger women, but young women may physiologically be more prone to HIV infection.

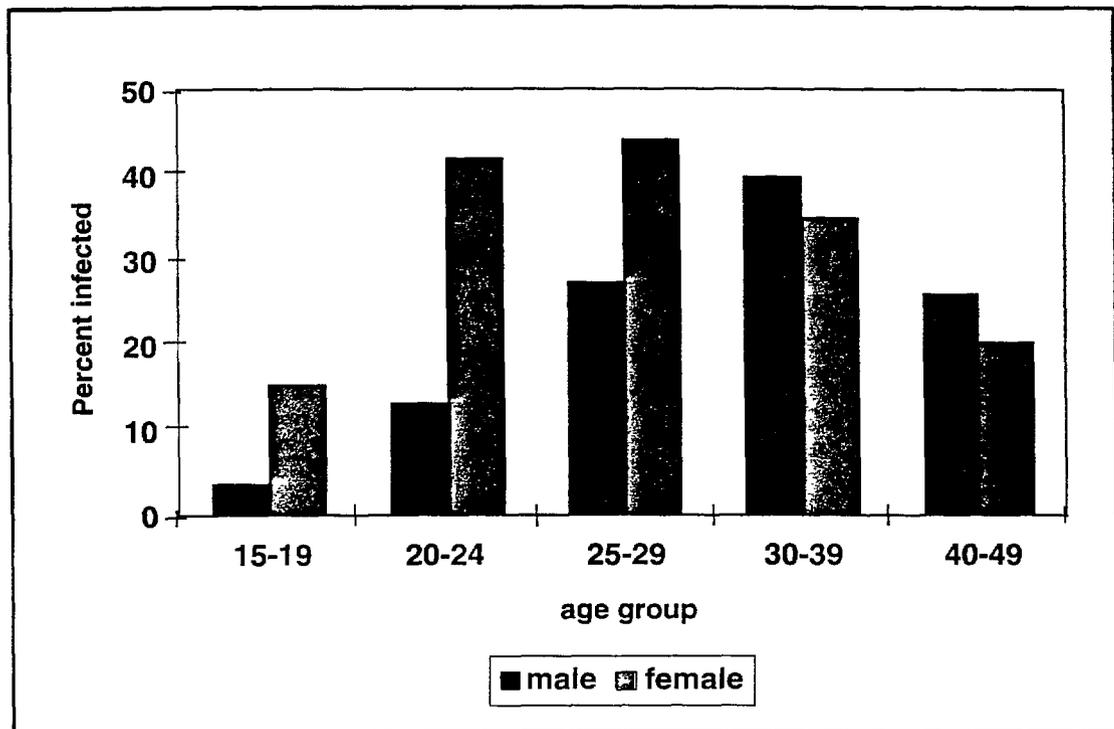
ed
es
ul
nt
ag

- A significant number of AIDS cases have been reported among young children. Virtually all of these children received the infection from their mothers.
- The small number of AIDS cases in the 5-14 year old age group emphasises the point that the main modes of transmission are through sexual contact or mother-to-child transmission. The virus is not transmitted by mosquitoes or casual contact such as shaking hands. If infection were transmitted by mosquitoes or casual contact, then there would be many more cases in the 5-14 year old age group. Rather, Zambia shows a classic age distribution in which nearly all cases are found among sexually active people and children under the age of 5.
- Since prevalence is so low among these young people, programmes targeted at this group provide a special opportunity to prevent infections and affect the future course of the epidemic. The draft national strategic plan recognizes the importance of establishing programmes for both in and out-of-school youth.

id
in
id
nt
l.
ag
he
to
n.

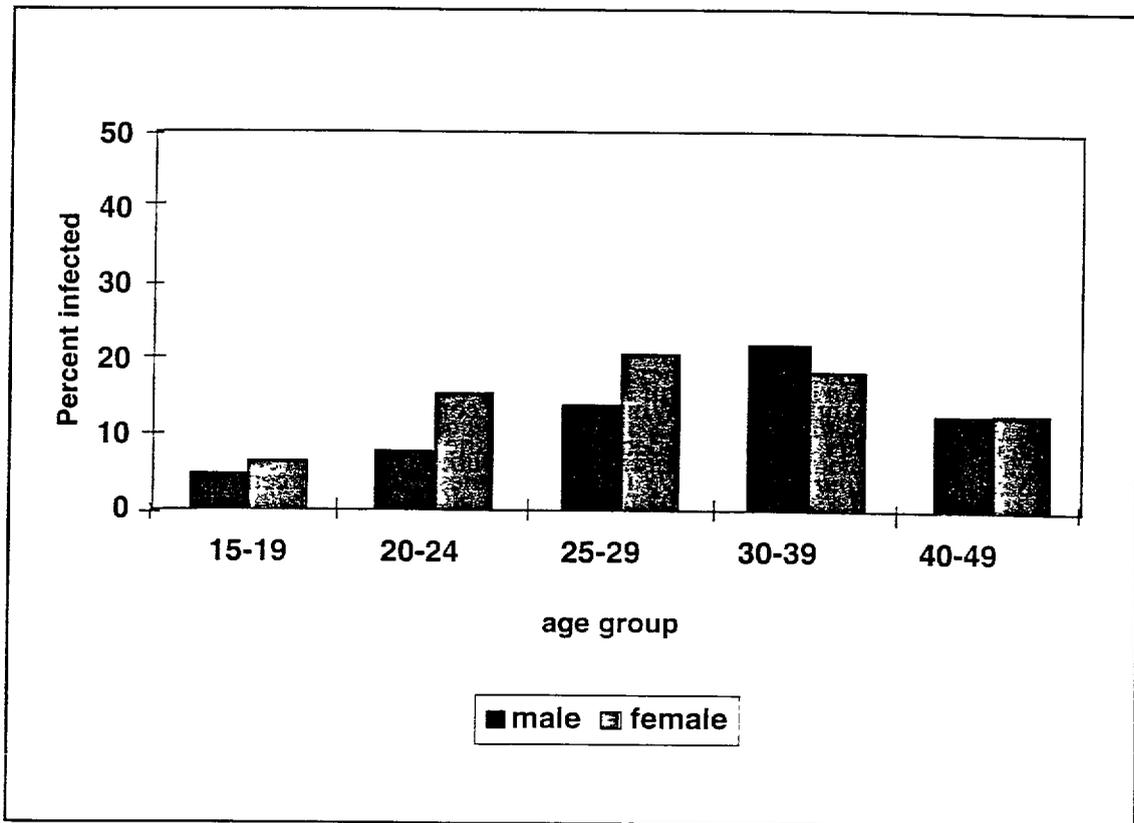
The results from the population-based surveys confirm these observations. The information below is from the Ndola survey. It shows that the peak ages for HIV infection are 30-39 for men and 20-29 for women. Young women ages 15-19 are more than four times more likely to be infected than young men in the same age group, while women in the 20-24 year old age group are more than three times more likely to be infected. Overall, the number of women infected in Ndola is about 1.4 times greater than the number of men. The evidence seems to be mounting that more women become infected than men in mature HIV/AIDS epidemics. The age-sex distribution of HIV infections from the 1995-96 population-based survey in Lusaka is notably similar, especially for ages 15 to 39.

Ndola: HIV Prevalence by Age and Sex, 1998



The findings from the 1998 population-based survey in Kapiri Mposhi district indicate that the ratio of female to male infections (under 1.2) is not as high in rural areas as in the urban centres. Notably, prevalence among 15 to 19 year olds is not much higher for rural females than it is for rural males. As in the urban areas, rural females in their twenties have higher infection rates than their male counterparts. However, men in their thirties are more likely to be infected than women in the same age group.

Rural Kapiri Mposhi: HIV Prevalence by Age and Sex, 1998



Factors Affecting the HIV/AIDS Epidemic in Zambia

Why is this epidemic so serious in Zambia? No one knows for certain. Several factors seem to have contributed to the rapid spread of HIV in the country.

High prevalence of other sexually transmitted diseases. The probability of transmitting HIV during unprotected sex rises dramatically if either partner is infected with another sexually transmitted disease (STD), such as syphilis or gonorrhoea. These infections form ulcers and sores that facilitate the transfer of the virus. And STD levels can be high in Zambia. A recent study in Ndola, for example, indicated that 11.3 percent of men and 14.0 percent of women were infected with syphilis. Two out of every three sex workers in the Ndola commercial sex worker study¹ were infected with a sexually transmitted disease.

Multiple sexual relationships. A second factor that contributes to the heterosexual spread of HIV is multiple sexual partnerships. This is especially true when these partnerships occur at the same time in a person's life. Many Zambians so have relationships with persons other than their regular partner. The *Zambia Sexual Behaviour Survey 1998* reported that 39 percent of sexually active men and 17 percent of sexually active women had a non-regular partner within the past 12 months.

Traditionally low use of condoms, even in high-risk sexual encounters. When condoms are used consistently and correctly, they are a highly effective means of preventing the transmission of HIV and other STDs. While the use of condoms has increased considerably in Zambia in recent years, it is still inadequate given the extent of HIV in the population. *Zambia Sexual Behaviour Survey 1998* (SBS) indicates that 33 percent of men and 24 percent of women used a condom in the last sexual encounter with a non-regular partner. The Ndola commercial sex worker survey reported that only one out of four sex workers used a condom with their last client and less than one out of seven used condoms with all clients.

Low levels of male circumcision. An epidemiological factor that is receiving increased attention in the African region is male circumcision. Though not conclusive, evidence is mounting that HIV is transmitted at a much higher rate in populations where a low proportion of males have been circumcised. The Ndola population-based study found that only 7 percent of men had been circumcised. Reported levels of circumcision were low among all ethnic groups. Fourteen percent of male respondents to the SBS had been circumcised.

Poverty and the low health status of much of the population. The relationship between income and HIV infection can be complex and varying over the course of an epidemic. Still, widespread poverty, high rates of unemployment and generally low returns from informal sector income-generating activities have been associated with high-risk sexual behaviour and the spread of HIV. Over the past 20 years, Zambia has faced increasing economic difficulties. The World Bank-funded assessment of poverty

¹ The results from the Ndola population-based survey and the Ndola commercial sex worker study are found in the same report. See the citation in Sukwa et al in Selected Sources.

Factors Contributing to the Spread of HIV

- ⊖ Prevalence of other STDs
- ⊖ Multiple sexual relationships
- ⊖ Low use of condoms
- ⊖ Lack of male circumcision
- ⊖ Poverty and poor overall health
- ⊖ Low status of women
- ⊖ Urbanisation and mobility
- ⊖ Early sexual activity
- ⊖ Cultural practices

reported an estimated two-thirds of the population living below the poverty line and 69 percent living in households in which basic needs are not being met. It is also possible that poor health status contributes to the spread of the virus. Nearly one-half of children in Zambia are malnourished, with even a higher proportion in rural areas.

Low social and economic status of women. The low social and marginal economic status of women is an important contributor to high-risk sexual behaviour and vulnerability to HIV infection. The low level of educational attainment for women reduces their access to jobs, even when jobs are available. A common coping strategy for survival is for poor women and adolescent girls to exchange sex for money or gifts. The SBS indicated that 57 percent of women and 40 percent of men reported a transaction in cash or kind during the last sexual relationship with a non-marital partner. Children and young people can also be vulnerable to sexual exploitation by adults, even relatives.

Settlement patterns and mobility. Compared to other sub-Saharan African countries, Zambia is highly urbanised. About 43 percent of the population lives in urban areas. Most of the urban population resides along the line-of-rail that moves from the Copperbelt to Lusaka down to Livingstone. The high level of urbanisation and the concentration of the urban population in a relatively small portion of the country well-connected by road and rail facilitate the spread of HIV. Urbanisation and the accompanying social change can give rise to new patterns of sexual behaviour. As noted, HIV prevalence in urban centres tends to be about twice the level found in rural areas. High levels of movement back and forth between town, countryside and mining areas help spread the virus throughout the country, especially when sexual partners are separated for prolonged periods of time. Population dislocations brought about by drought and other causes have a similar effect.

Early sexual activity. The initiation of sexual activity at young ages can have an important overall effect on the spread of HIV in a population. Sexual activity begins at a young age for both females and males, either within marriage or outside of it. The Ndola study indicated that nearly 20 percent of both females and males had been sexually active prior to the age of 15. The *Zambia Sexual Behaviour Survey 1998* reports that the average age of first sex is 16.3 years for females and 16.4 years for males. The results show that there has

been no change in age at first sex between 1996 and 1998. This is not a good sign; a rise in the average age of first sex can affect HIV prevalence.

Cultural practices. Certain cultural practices may also contribute to the spread of HIV. The relationship between polygamy and HIV transmission is unclear, though some observers think it a contributing factor. Polygamy is an accepted practice in Zambia, most commonly in rural areas. For example, about one-third of married women in Southern Province are in polygamous unions; about one-fourth of women in Northern Province are in such marriages. The practice of dry sex has also been proposed as a contributing factor to HIV transmission. The use of drying agents can create lesions or sores that facilitate the transfer of the virus. In *Sexual Behaviour Survey 1998*, four percent of men but 18 percent of women reported engaging in dry sex in their last encounter with a non-regular partner. Two percent of adolescent men but 15 percent of adolescent women said they engaged in dry sex. Some ethnic groups also practice sexual cleansing, or other forms of ritualistic sex.

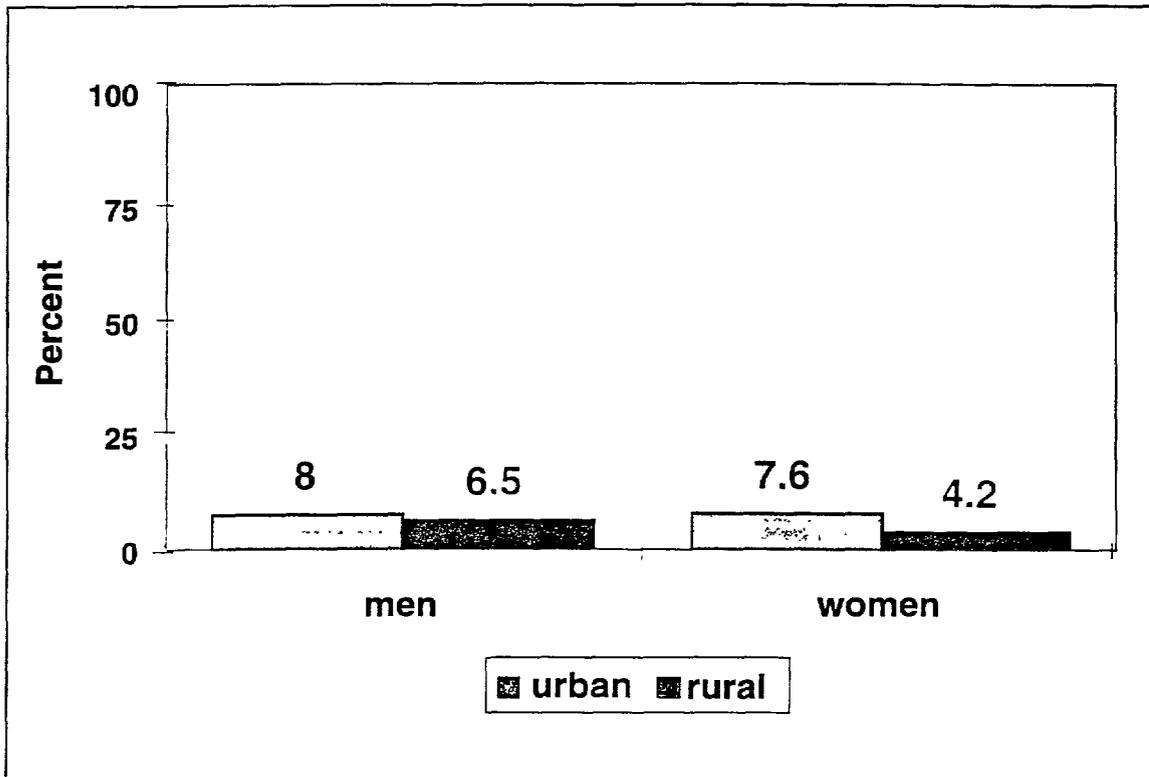
It should be noted that some cultural practices can also help limit the spread of HIV/AIDS, particularly those that preserve and promote extended family structures. These extended family structures can provide information on appropriate sexual behaviour, advocate abstinence and mutual faithfulness, offer support in times of distress, and serve as a social safety net in times of need. Traditional ceremonies and rites (initiation, marriage and funerals) can be channels of information and social pressure that stress respect, faithfulness, mutual responsibility and support within the family context.

Knowledge, Attitudes and Behaviour

Zambia Sexual Behaviour Survey 1998 and *Zambia Demographic and Health Survey 1996* give some indications about knowledge and attitudes towards HIV/AIDS. Knowledge about HIV/AIDS is virtually universal among Zambian adults, most of whom understand that it is a fatal disease and that no cure is available. Moreover, more than four out of every five adults know that persons can take positive actions to avoid transmission of the virus. Similarly, more than 80 percent of adults know that an otherwise healthy person can be HIV-infected. About 70 percent of adults know someone who has died from AIDS.

Misconceptions about HIV transmission still persist, however. About 30 percent of the population believes that HIV can be transmitted by mosquitoes or witchcraft. Only about 6 percent of adults have been tested for HIV and know the results. Sexual behaviour has changed very little between 1996 and 1998 and many Zambians continue to engage in what is, from the perspective of HIV transmission, risky sexual behaviour. Similarly, the evidence does not suggest any changes in adolescent sexual behaviour between 1996 and 1998. Adolescents are less knowledgeable about HIV/AIDS and condom use than other adults. Overall, this evidence does not suggest a society where sexual behaviour is changing rapidly in response to the HIV/AIDS epidemic. However, the two surveys are close in time, so it is possible that they are disguising longer-term changes. New information from the population-based surveys does indicate some behavioural change, such as increased condom use in parts of the country.

Percent of Zambians Who Have Been Tested for HIV and Know the Results



In sum, many factors have contributed to high HIV prevalence in Zambia. Taken together, they have resulted in a raging and pervasive HIV/AIDS epidemic that has left no corner of Zambia untouched and is causing massive disease and death. And while Zambians know about the disease and its fatal consequences, sexual behaviour may be changing slowly in response.

25

II. PROJECTIONS

HIV Infections

Number of AIDS Cases

Cumulative AIDS Deaths

Annual Deaths to Persons Ages 15 to 49 and Life Expectancy at Birth

PROJECTIONS

What is the future course of the epidemic? No one knows for certain. In many ways, the future direction of the epidemic is in the hands of the Zambian people and Zambian institutions and much depends on whether individuals are able to change high-risk behaviours and on the success of other interventions.

HIV prevalence appears to be higher in the neighbouring countries of Zimbabwe and Botswana and possibly South Africa. At the same time, the Zambian evidence indicates that prevalence has probably stabilised at a high level for most of the 1990s. Since prevalence has been high for a relatively long period of time, the social and economic impacts of the epidemic are going to be serious regardless of what happens to prevalence in the future.

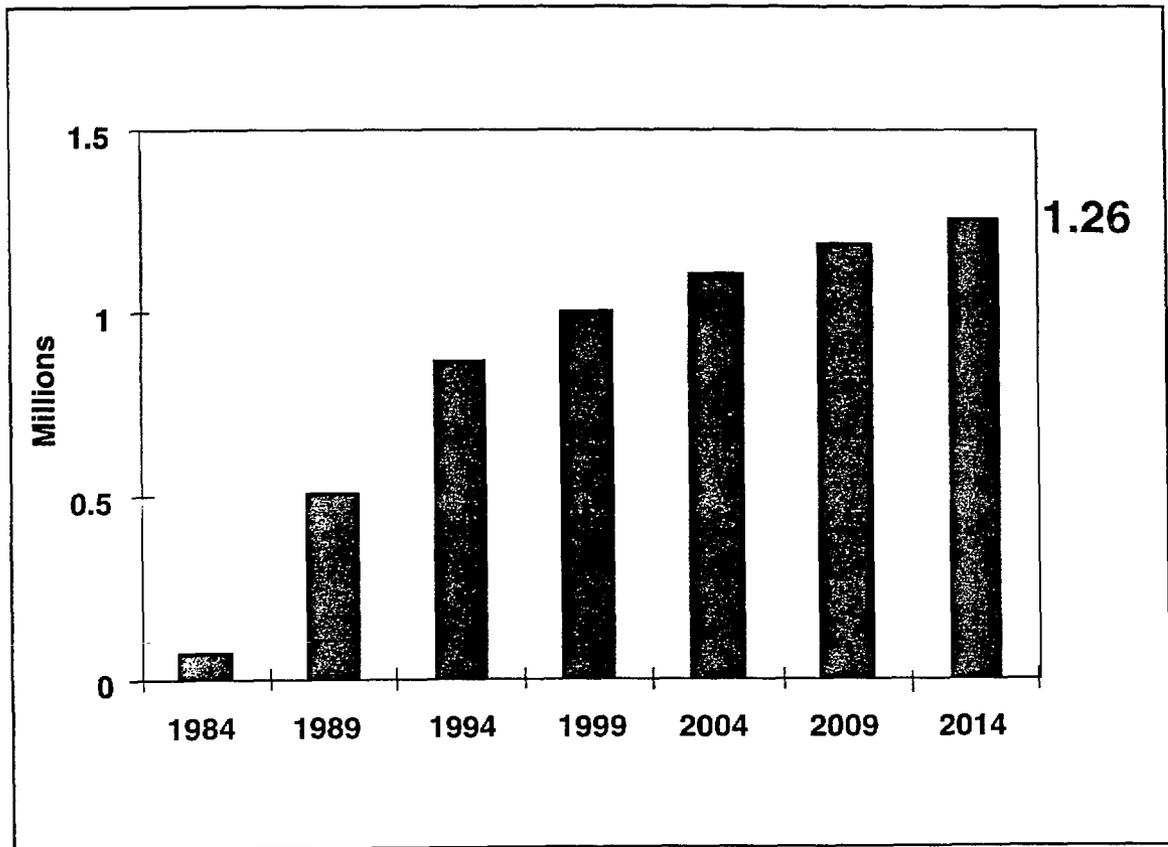
This section makes projections about the future course of the HIV/AIDS epidemic in Zambia. It assumes that prevalence stays at high levels and declines only slowly in coming years to about 18 percent by 2014. But this is not inevitable. The universal goal is to establish effective programmes and achieve behaviour changes that result in a rapid downward trend in prevalence.

HIV Infections

If HIV prevalence drops only gradually between 1999 and 2014, then the number of HIV infected persons in the population (including children) would rise from about 1,000,000 in 1999 to 1,260,000 in 2014. As indicated on the graph on cumulative AIDS deaths, large numbers of people will die from the disease and be removed from the HIV-infected population. This is why the number of infected persons does not grow at an even faster pace.

Sometimes people wonder how the number of HIV-infected persons can continue to rise when prevalence is not going up. Despite high death rates from AIDS, the population still continues to grow over the projection period. This happens because birth rates are so high in Zambia. Because the population is increasing in size, the number of HIV-infected persons continues to rise even if prevalence is not going up.

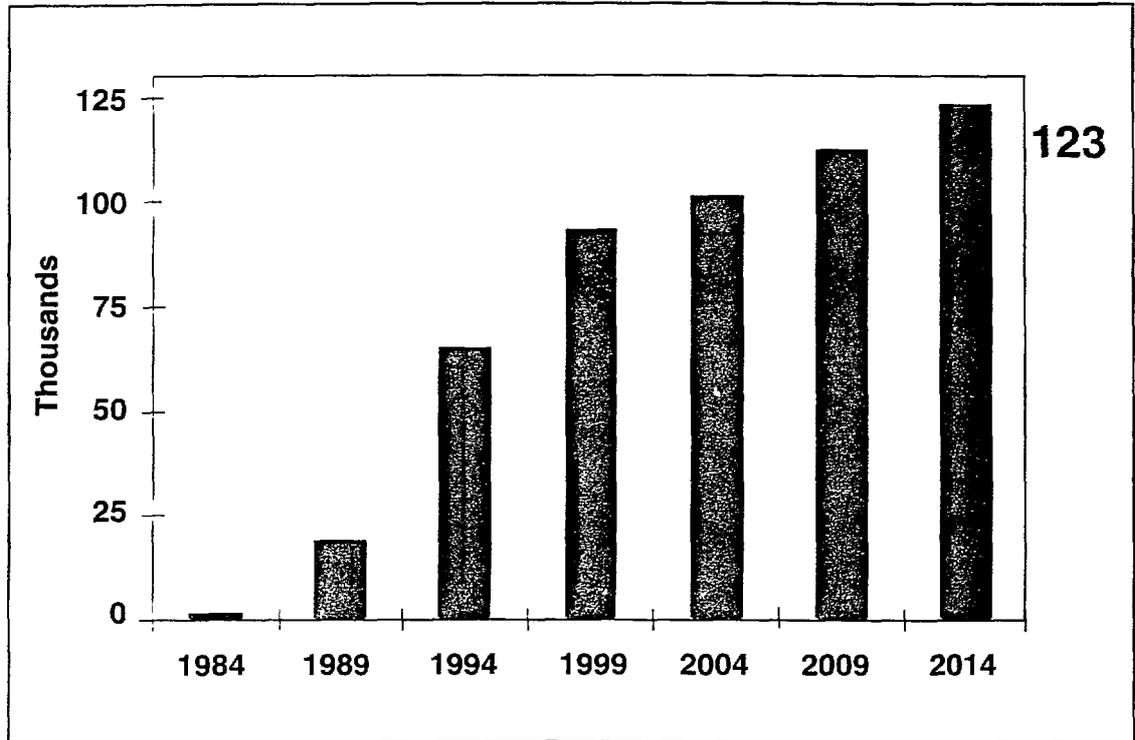
Projected Number of People Infected with HIV



Number of AIDS Cases

The number of new AIDS cases developing each year from among those persons living with HIV infection would rise to 93,000 in 1999, 101,000 in 2004 and 123,000 in 2014. Under the assumptions in these projections, about 280 persons would develop AIDS each and every day for the entire decade between 1999 and 2009. The very large number of annual new AIDS cases will place severe pressure on the health system, as well as on households, to provide the intensive care required by AIDS patients.

Projected Annual New AIDS Cases



HIV
00 in
large
ected
aster

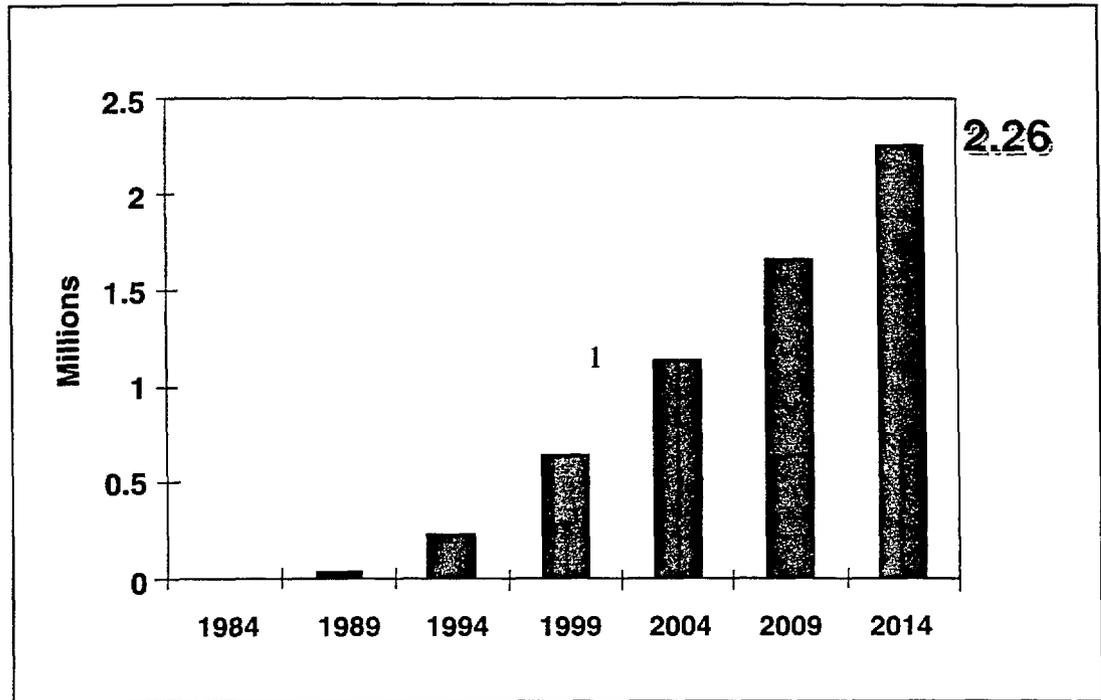
rise
still
high
ersons

.26

Cumulative AIDS Deaths

The death toll would also be staggering. Through 1999, the cumulative number of AIDS deaths from the beginning of the epidemic may be estimated at about 650,000. Over the ensuing 15 years, 1999-2014, an additional 1.61 million Zambians are likely to die from the disease, which would result in a cumulative total of about 2.26 million deaths by 2014.

Cumulative AIDS Deaths

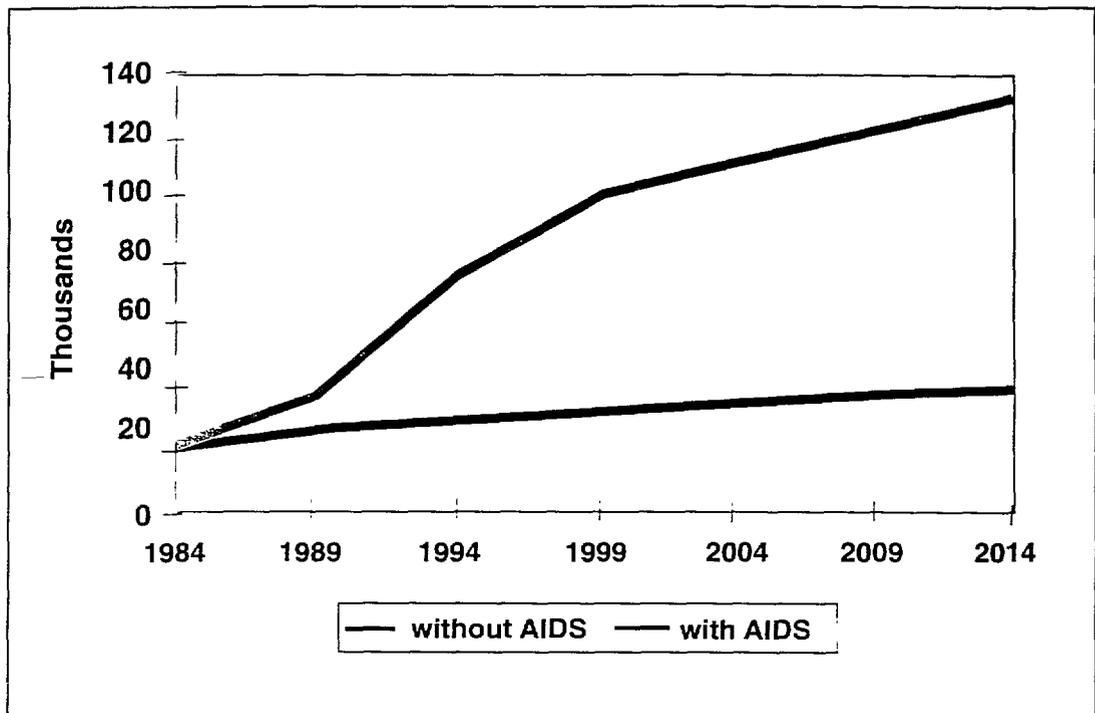


Annual Deaths to Persons Age 15 to 49 and Life Expectancy at Birth

DS
the
the
4.

The epidemic will increase the death rate at almost all ages. However, the impact will be most severe among adults in the prime working ages and among children under the age of 5. Without AIDS, and assuming a gradual decline in death rates from other causes, the annual number of deaths among adults aged 15-49 would increase slowly after 1999 because of the growth of the population. However, AIDS will dramatically increase the number, with annual deaths in this age group from all causes reaching 110,000 per year by 2004, 121,000 in 2009 and 132,000 in 2014. Already in 1999, AIDS is responsible for more than two out of every three deaths in this age group. By 2004, AIDS will account for about 210 deaths per day among 15 to 49 year olds. This rapid increase in deaths in the productive age group could have serious consequences for the economic and social development of the country.

Annual Number of Deaths to Adults Ages 15 to 49



The Central Statistical Office (CSO) estimated life expectancy at birth at over 52 years in 1980. Now, in 1999, life expectancy at birth may have dropped well below 40 years according to the projection model used in this analysis. The same trend of declining life expectancy is found in projections prepared by the United Nations and the U.S. Bureau of the Census. Zambia may have one of the lower life expectancies in the world and the reason is largely the HIV/AIDS epidemic. The projections indicate that without AIDS, life expectancy at birth in Zambia might still be over 50 years.

Life expectancy at birth is an average. A life expectancy at birth in the 35 to 40 year range does not mean that most Zambians live to be that age. What it does mean is that death rates among children and young adults are high. Because the HIV/AIDS epidemic causes increases in infant, child and young adult mortality, life expectancy at birth has gone down in the country.

III. THE SOCIAL AND ECONOMIC IMPACTS OF AIDS

Orphans as a Result of AIDS

Child Survival

Population Size and Growth

Increase in Cases of Tuberculosis

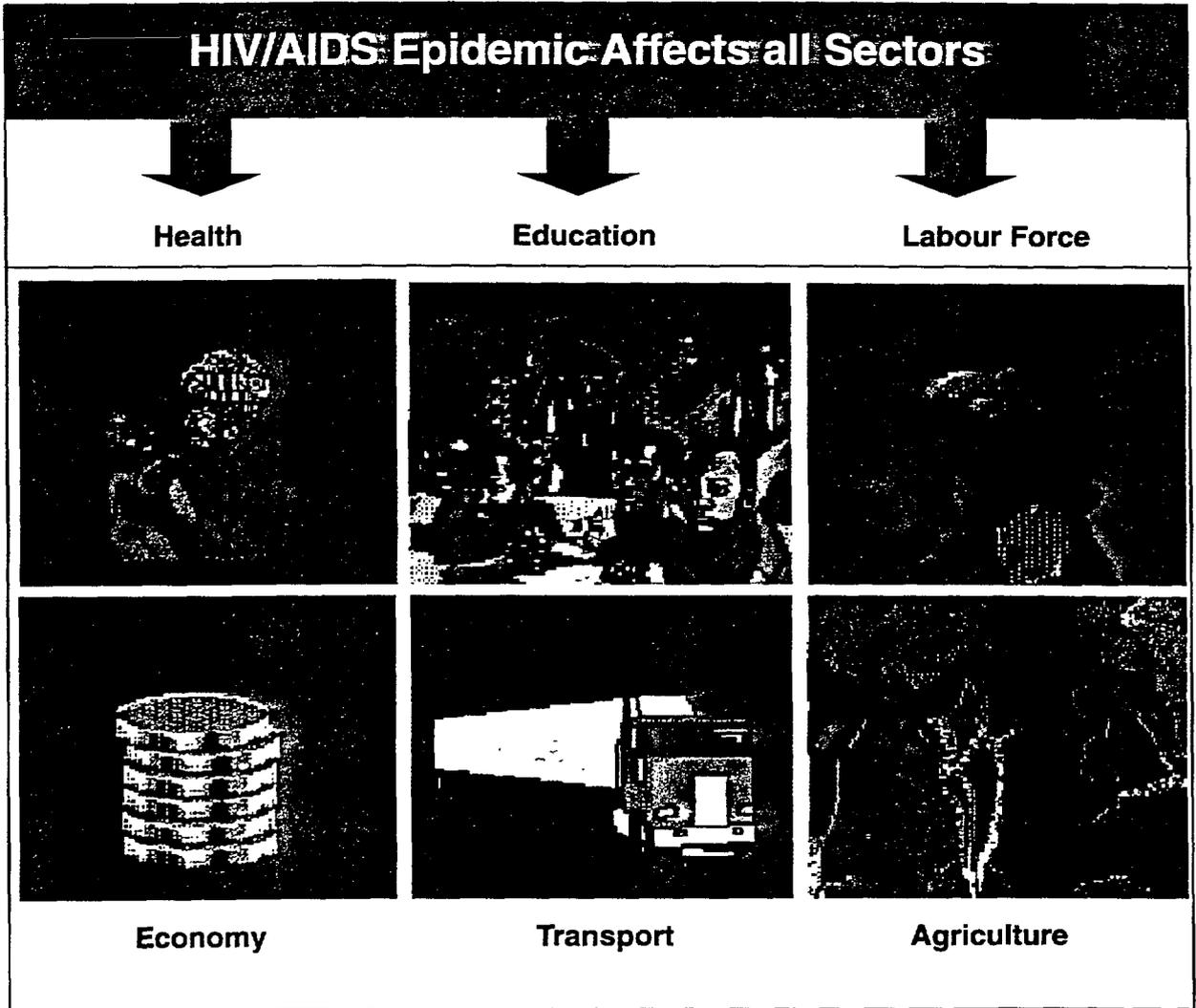
Health Care

Economic and Sectoral Impacts

Gender and AIDS

THE SOCIAL AND ECONOMIC IMPACTS OF AIDS

In part, what makes the HIV/AIDS epidemic so serious is that it has a pervasive impact on virtually on aspects of development and society in Zambia. Health, education, economy, labour force, agriculture and transport are all affected. Children, women and families feel the brunt of a raging epidemic. National security is undermined. This next section will illustrate some of the social and economic impacts of HIV/AIDS.



The HIV/AIDS Epidemic Has an Impact on ...



➔ Women

➔ Children

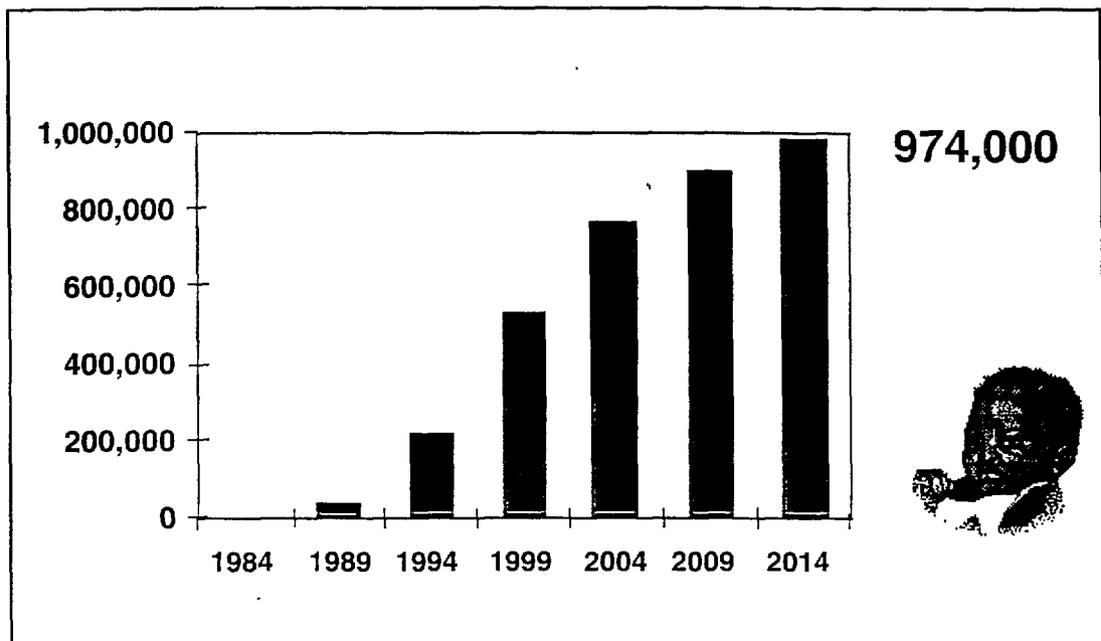
➔ Family

ct on
omy,
feel
will

Orphans as a Result of AIDS

One serious consequence of AIDS deaths to men and women in their prime childrearing ages is an increase in the number of orphans. The United Nations Children's Fund (UNICEF) defines an AIDS orphan as a child under 15 whose mother has died from AIDS or whose parents have both died from the disease. In reality, given the primacy of heterosexual transmission in spreading the virus, many children will lose both parents. Already, there are about 520,000 orphans as a result of AIDS in 1999. That number will rise to 895,000 by 2009 and 974,000 by 2014. A child leaves the population of orphans when he/she reaches the age of 15 or dies. Therefore, the cumulative number of children orphaned by the epidemic is much higher than can be seen at any one point in time. Also, parents die from causes other than AIDS so the total number of orphans in the population is even higher.

Orphans as a Result of AIDS



There will be a tremendous strain on social systems to cope with such a large number of orphans and provide them with needed care and supervision. At the family level, there will be increased burden and stress for the extended family, which has the traditional responsibility to care for orphans. This surge in the number of orphans comes at a time when the traditional roles of the extended family have already been breaking down with urbanisation and prolonged economic pressures.

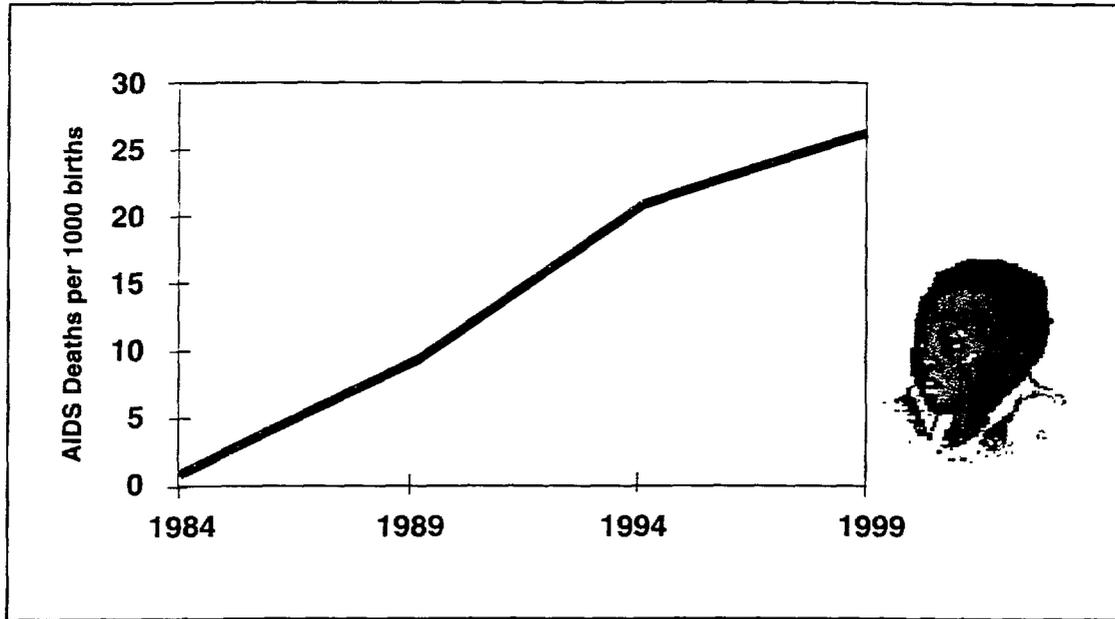
Many grandparents will be left to care for young children. Other families are already headed by adolescents and the number of these households is increasing. At the community and national level, there will be an increased burden on society to provide services for these children, including orphanages, health care and school fees. Many orphans will never receive adequate health care and schooling, increasing the burden on society in future years. Though extended families continue to absorb most orphans in Zambia, the number of street children in urban areas is rising. Perhaps half of all street children are orphaned children, indicating growing pressures on extended families to cope with the rapidly increasing orphan population. Strategic planners for the national programme have identified vulnerable children and orphans as a social priority area.

Child Survival

AIDS also affects child survival. About 30 to 40 percent of infants 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 is undoubtedly already a major cause of child death, one that threatens to continue 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, while the child mortality rate is the number of children who die before reaching their fifth birthday per 1000 live births. At best, both rates seem to have either stagnated or declined only modestly for several years, instead of declining steadily as might have been expected. The *1996 Demographic and Health Survey* actually showed an increase in both rates. This reversal has been documented in the mid-term review of the National Programme of Action for Children in Zambia.
- This trend is largely due to the impact of AIDS on child survival, though other factors may have contributed as well. The impact of the HIV/AIDS epidemic can be seen by looking at the under-5 mortality rate from AIDS - the number of AIDS deaths among children under the age of 5 for every 1000 live births. Under the projection assumptions, the under-5 mortality rate from AIDS would rise from less than 1 per 1000 births in 1984 to about 9 in 1989 and 26 per 1000 births in 1999, a level at which it would remain in ensuing years.

Under Five Mortality Rate from AIDS



Beyond the direct impact of AIDS on infant and child mortality, children who have lost one or both parents to the epidemic are likely to be more susceptible to malnutrition and other childhood diseases. Consequently, child mortality is also likely to rise from non-AIDS causes with the rapid increase in the number of orphans.

Population Size and Growth

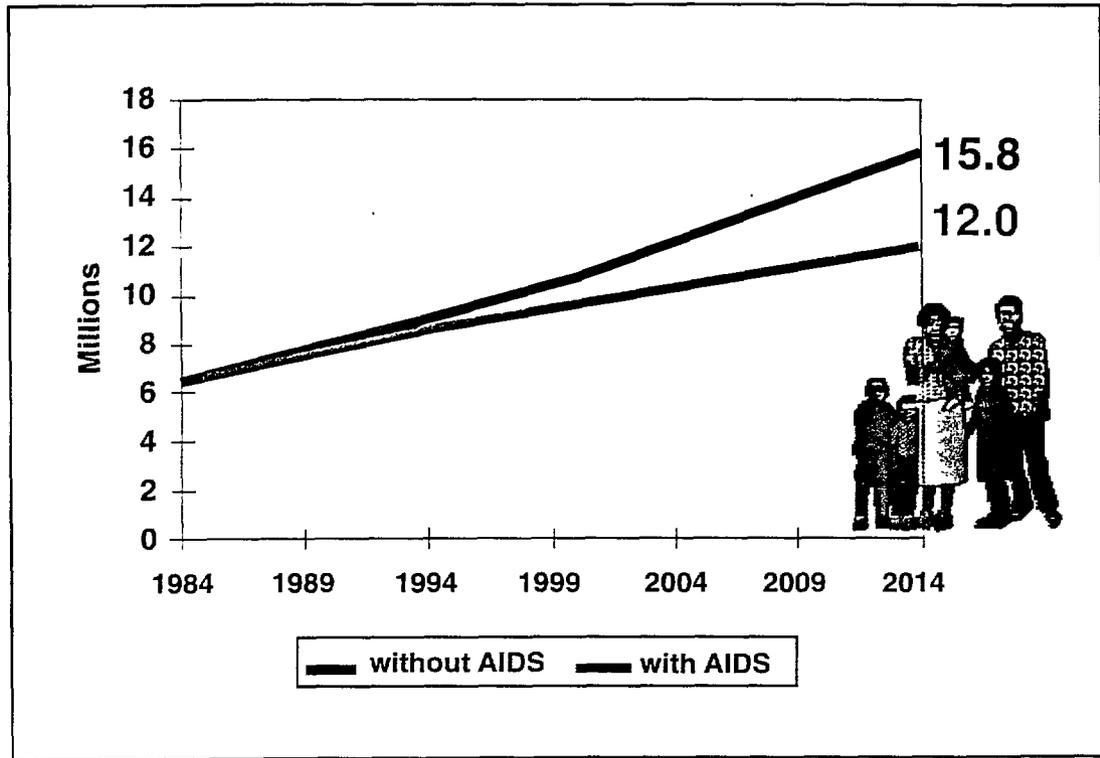
It appears that rising mortality from AIDS may already be having a significant influence on the rate of growth of the population. According to the projection model used in this analysis, the population in 1999 is probably growing by less than 2 percent per year. In the absence of AIDS, the population would be growing by 3 percent per annum.

In Zambia, the fertility rate, the average number of children per woman, fell from 6.5 children per woman as reported in the 1992 Demographic and Health Survey to 6.1 at the time of the 1996 Demographic and Health Survey. Both the following projections assume a further decline in the fertility rate to near 4.0 children per woman by the end of the projection period. The first projection, however, assumes no AIDS epidemic, while the second projection assumes an AIDS epidemic as described above.

With no AIDS, the population would grow to 12.1 million persons in 2004 and to 15.8 million in 2014. At that time, the population would still be growing by 2.4 percent per year.

With AIDS causing increased deaths, the population would nonetheless grow from 7.8 million persons in 1990 to 10.3 million persons in 2004 and to 12.0 million in 2014. The population would be increasing by 1.3 percent per year in 2014.

Projected Population Growth



AIDS will have a significant impact on population size, but the population will continue to grow. Even with declining birth rates, continuing HIV transmission and high HIV prevalence, Zambia still has positive population growth over the projection period. The AIDS epidemic, in addition to its direct impact on mortality, could have a secondary influence on death rates. For example, the large increase in the number of orphans, the economic disruption of households, the increase in mortality from tuberculosis and other causes, and additional factors could contribute to higher mortality and an even lower rate of population growth. In the wake of rising mortality, however, fertility decline could be slower which would result in a higher rate of population growth.

As a result of the emergence of the HIV/AIDS epidemic, policymakers have expanded some of the goals and objectives of the 1989 National Population Policy. Particular concerns include increased demand for health services, the rising orphan population and high mortality among productively active persons aged 20 to 34. The revised National Population Policy incorporates objectives and strategies to lessen the spread of HIV and other sexually transmitted diseases.

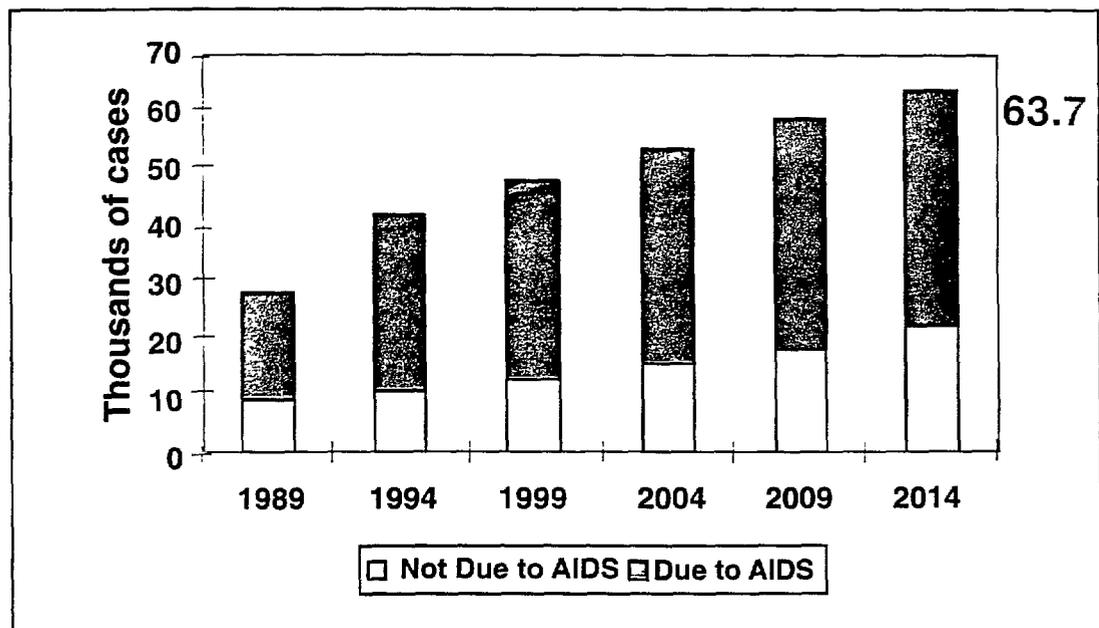
Increase in Cases of Tuberculosis

The number of reported tuberculosis (TB) cases has been rising rapidly in the past decade. The Ministry of Health reports that between 1964 and 1984, the average case rate remained constant at 100 per 100,000 population. There were some 7,000 reported cases of TB in 1984. Since the advent of the AIDS epidemic in Zambia, the TB case rate has increased nearly five-fold, to over 500 per 100,000 population in 1996. The number of reported TB cases was over 40,000 in 1996, more than 100 each day.

The arrival of HIV/AIDS has caused a re-emergence of TB epidemics throughout southern Africa. As many as two-thirds of TB patients may be HIV positive. HIV infection weakens the immune system of otherwise healthy adults. Many, perhaps half, of all adults in southern Africa carry a latent TB infection, which is suppressed by a healthy immune system. When the immune system is weakened by HIV, it can no longer control the TB infection and overt TB disease can develop.

In the absence of AIDS, the number of new TB cases may have been limited to about 8,000 to 12,000 in 1996, based on the case rates seen in prior years. With AIDS, the number of new cases will continue to increase rapidly. Because of the AIDS epidemic, the additional number of annual TB cases due to AIDS could reach about 38,000 by 2004 and 41,500 by 2014. In these years, two out of every three new cases could be attributed directly to AIDS. These projections are almost certainly underestimates. New TB cases will transmit the disease to others and emerging drug-resistant strains will make it more difficult to treat cases and limit the spread of the infection.

HIV and Tuberculosis



The impact of HIV infection on tuberculosis is an especially serious problem because TB is contagious through casual contact. HIV threatens to increase the risk of tuberculosis for the entire population. Also, according to a recent Zambian study, the costs of TB treatment have increased, because AIDS patients who have TB stay in the hospital longer than other AIDS patients. Treatment of TB is very expensive and puts considerable strain on the health budget.

Because of inadequate treatment of some cases of TB among both HIV-infected and uninfected people, drug-resistant strains of TB are appearing, making it yet more difficult and expensive to treat the disease. The presence of TB in health care settings also threatens the health of other patients, especially HIV-positive patients.

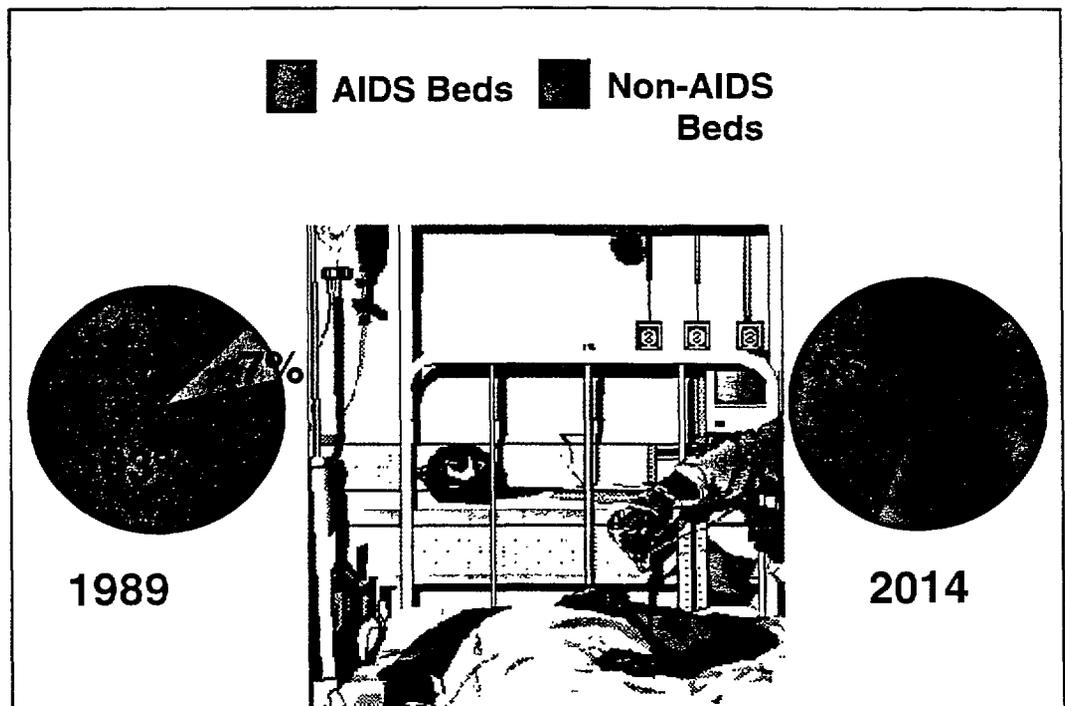
Health Care

The treatment of the opportunistic infections resulting from AIDS is expensive and will place considerable strains on the delivery of health services in Zambia. For example, the demand on health services caused by AIDS can be seen by looking at the occupancy of hospital and health centre beds. Already, health staff at some hospitals report that the majority of beds in medical wards are taken by HIV/AIDS patients.

The data available on these issues in Zambia is sparse, so these next two projections are intended to be illustrative. For those persons living with AIDS who need hospital care, the average length of stay is longer than for most other diseases. Estimates for different countries range from 15 to 80 days. The figure for Zambia is unknown but is probably towards the lower end of the range. In this analysis, the average length of stay for AIDS patients is assumed to be 30 days, but it may well be higher as AIDS patients tend to enter, leave and re-enter depending on the severity of the illness. Not all those with AIDS-induced opportunistic infections seek care in hospitals or health centres; here, it is assumed that 90 percent look for treatment in these facilities.

In this case, the proportion of available beds that would have to go to meeting the needs of AIDS patients would rise from about 7 percent in 1989 to 45 percent in 2014. Not only will the HIV/AIDS epidemic cause great suffering and death by itself, but it will also reduce resources available to deal with other health problems.

Illustrative Bed Occupancy Required for AIDS Patients

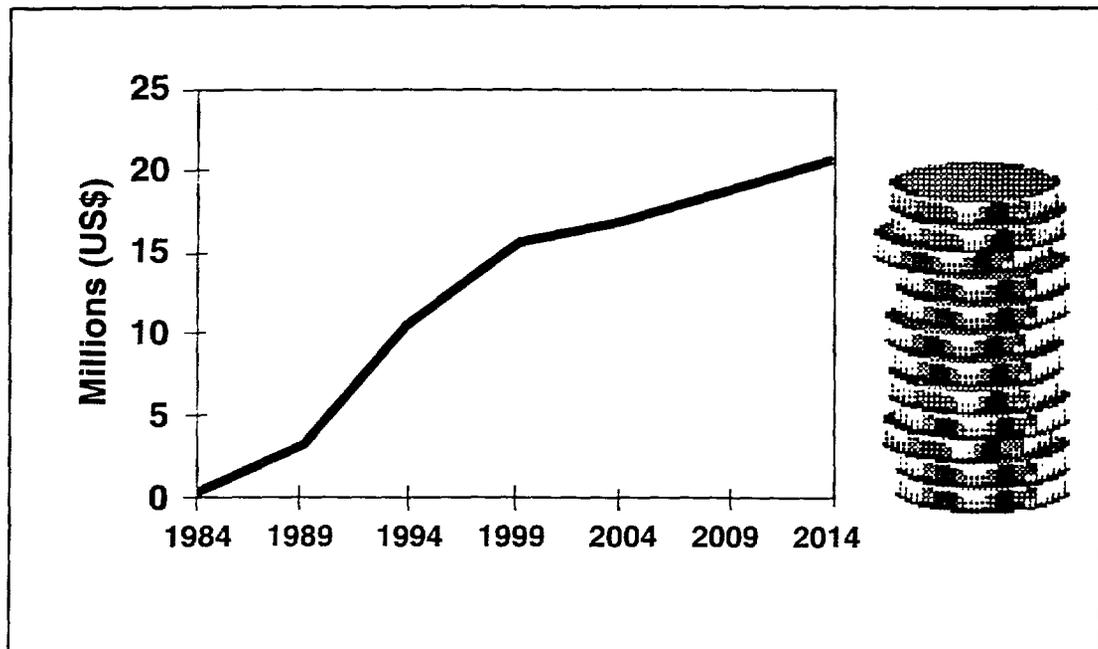


ef

Studies by the World Bank indicate that the average direct costs of treating an AIDS patient from the time of diagnosis until death range from U.S.\$100 to U.S.\$1100 in Africa. One Zambian study showed that the average cost for a day at University Teaching Hospital in Lusaka was U.S.\$7.25 while at Monze Hospital it was U.S.\$3.31. An average per day cost of U.S.\$5 would mean a cumulative 30-day stay for an AIDS patient suffering from opportunistic infections would cost U.S.\$150. If pharmaceuticals and other direct costs are added, an average cost of U.S.\$200 per AIDS patient may be usefully illustrative.

This would mean that AIDS care expenditures would rise from U.S.\$3.4 million in 1989 to U.S.\$18.3 million in 2004 and to U.S.\$22.1 million in 2014. Increasing expenditures on AIDS care threaten to divert spending from other important health care needs, and will place an enormous burden on the districts as they assume responsibility for delivering services under the health reforms. This projection is illustrative and actual costs may be higher.

Illustrative Annual AIDS Care Expenditures



ef5

Economic and Sectoral Impacts

Information on the economic impacts of the HIV/AIDS epidemic in Zambia is limited and most of what does exist comes from earlier in the 1990s. At least enough information exists from Zambia and neighbouring countries, however, to make suggestions on what might be happening. The economic impacts of the HIV/AIDS epidemic can be looked at from three levels: the macro economy, the firm and the household.

Macro Economy

Economic forecasting at the macro level is always difficult and establishing a direct relationship between the HIV/AIDS epidemic and future economic growth is fraught with difficulties because of the multitude of other intervening factors. On the one hand, AIDS sickness and mortality will strike the working age population disproportionately, affecting the quantity and quality of labour and overall production. The more AIDS exists among the economic elite, the best-educated people with the highest paying jobs, the greater will be the economic impact. The loss of skilled and experienced workers also means much higher replacement and training costs. However, most African countries have less skilled labour in surplus and there is little evidence that the epidemic has had a significant impact on economic growth to date. One early study for Zambia suggested that Gross Domestic Product per capita would be only 4 percent less by the year 2000 with the AIDS epidemic than without it.

Firms

AIDS may have a significant impact on some firms. AIDS-related illnesses and deaths among employees affect a firm by both increasing expenditures and reducing revenues. Expenditures increase for health care costs, burial fees and recruitment and training of replacement employees. Revenues may decrease because of absenteeism due to illness or attendance at funerals and time spent on training. Labour turnover can lead to a less experienced labour force with lower productivity.

Factors Leading to Increased Expenditure

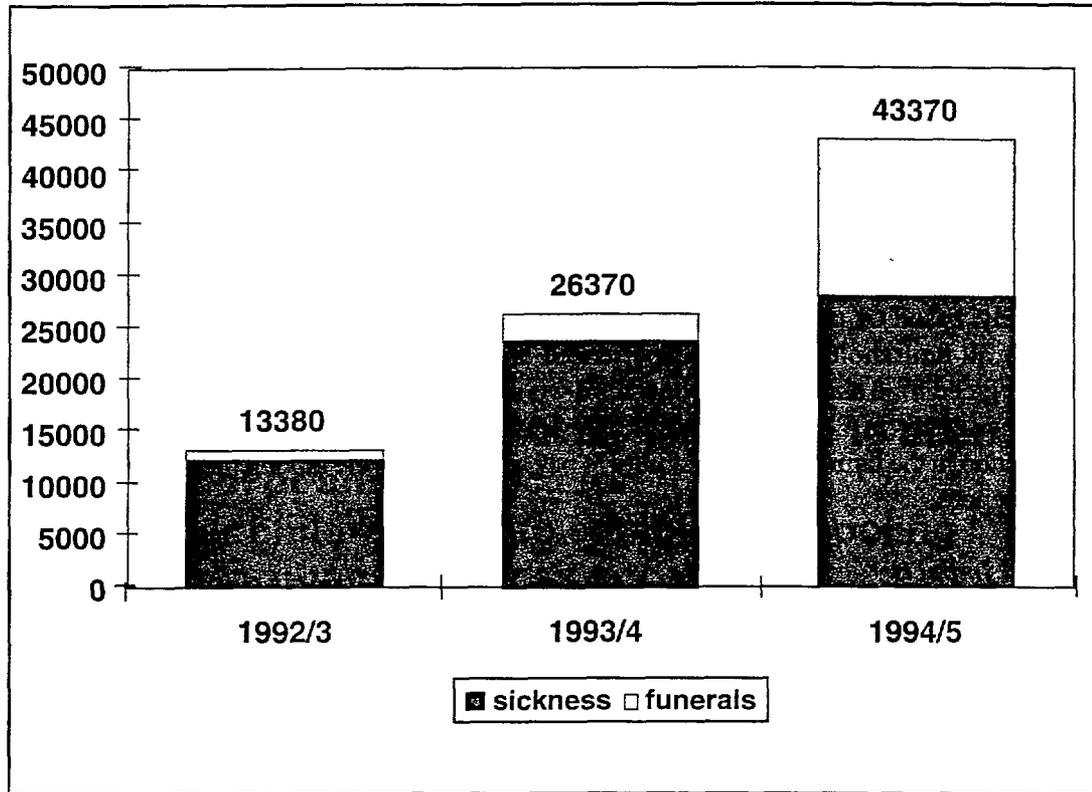
**Health care costs
Burial fees
Recruitment and training**

Factors Leading to Decreased Revenue

**Absenteeism due to illness
Time off to attend funerals
Time spent on training
Labour turnover
Reduced productivity**

Some examples can be given for Zambia. At Chilanga Works, the hours lost due to sickness and funerals increased by 3 ~ times between 1992/3 and 1994/5 because of the growing epidemic.

Hours Lost to Sickness and Funerals: Chilanga Works



At INDENI, the costs for medical care, salary compensation for families of the deceased and funeral grants more than doubled between 1991 and 1993 because of AIDS. Studies of Lusaka firms in 1993 and 1994 indicated that the impact of AIDS was already being felt in increased sick leave, absenteeism, funeral expenses and death benefits. All these costs affect profit levels.

Many of the companies that collect information on HIV/AIDS retain it as confidential. Also, much of the available information is from earlier in the 1990s when AIDS sickness and mortality were at much lower levels than they will be over the next several years. Though the clear picture that emerges is that companies are spending more and more money each year on AIDS-related expenditures, the worst impact of the epidemic on firms is yet to come.

Households

The household impacts begin as soon as a member of the household starts to suffer from HIV-related illnesses. An adult illness leads to a loss of income or household productivity when he or she is unable to work. Household expenditures for medical care may increase substantially. Other members of the household may miss school or work less to care for the sick member. When HIV eventually leads to AIDS and death, the impacts are even more severe. There will be a permanent loss of labour, which may mean less labour for the farm or may result in a loss of family income or remittances. Health care costs mount dramatically in the final stages of AIDS. Funeral and mourning costs can consume a major portion of household savings, leaving the household ill-equipped for the future. In many cases, children are removed from school to save educational expenses and increase household labour. Of course, if one spouse dies of AIDS, the other may also be infected and die within a few months or years. At times, widowed adult women may find it necessary to provide sexual favours to help support the household, which further increases the risk of HIV transmission.

One study, based on case histories from around Zambia, reported economic setbacks in virtually all households that had experienced an AIDS-related death. About half of the families faced food shortages and one-third were threatened with a break-up of the family. In another study in Luapula, households with AIDS patients indicated that the risk of malnutrition in the family and the inability to pay school fees were among the major economic consequences.

Sectoral Impacts

Zambia has been one of the leaders in sub-Saharan Africa in developing a multi-sectoral response to the HIV/AIDS epidemic. In part, this has happened because leaders have recognised that AIDS affects the development effort in virtually all sectors. (Many of these impacts have been discussed in an earlier report: NASTLP and World Bank. HIV/AIDS in Zambia: A Policy Maker's Perspective, 1996).

For example, in agriculture, large numbers of women and children will become even more vulnerable to food insecurity as sickness and death from HIV/AIDS continues to rise. This is especially important because malnutrition is already common; the 1996 Demographic and Health Survey reports that about half of children aged 1 to 4 are stunted in their growth due to malnutrition.

In part, women will be increasingly faced with competing demands to maintain crop production, care for family members suffering from AIDS, and protect their own health. When a family member becomes sick with AIDS, it is usually the woman who cares for the sick person. Death from AIDS causes social dislocation especially among the matrilineal peoples of Zambia, as mothers and their children sometimes have to move back to the villages of their mothers or other matrilineal kin, especially if household resources are claimed by the husband's relatives.

In education, for example, AIDS among teachers results in increasing absenteeism and disruption in the schools. Training costs for teachers (and other education officers)

rise to replace those lost to the epidemic. Less public finance will be available for the schools, in part because of the diversion of public funds to address the manifold impacts of the epidemic. Because an AIDS death to an adult results in the loss of household labour and/or income, children are often required to leave school and remain at home or go to work to compensate for losses and to avoid school fees. For social and cultural reasons, girls are asked to leave school more often than boys to care for sick family members. Orphans often lose the necessary financial, material and emotional support that they need for successful schooling.

Impact of HIV/AIDS on Education

-  **Reduction in number of trained teachers**
-  **Increased teacher absenteeism**
-  **Reduction in number of education officers**
-  **Reduced public finance for schools**
-  **Reduced family resources for schooling**
-  **Fewer children, especially girls, able to attend school or afford education**
-  **Fewer children able to complete schooling**
-  **More orphans with less access**



Gender and AIDS

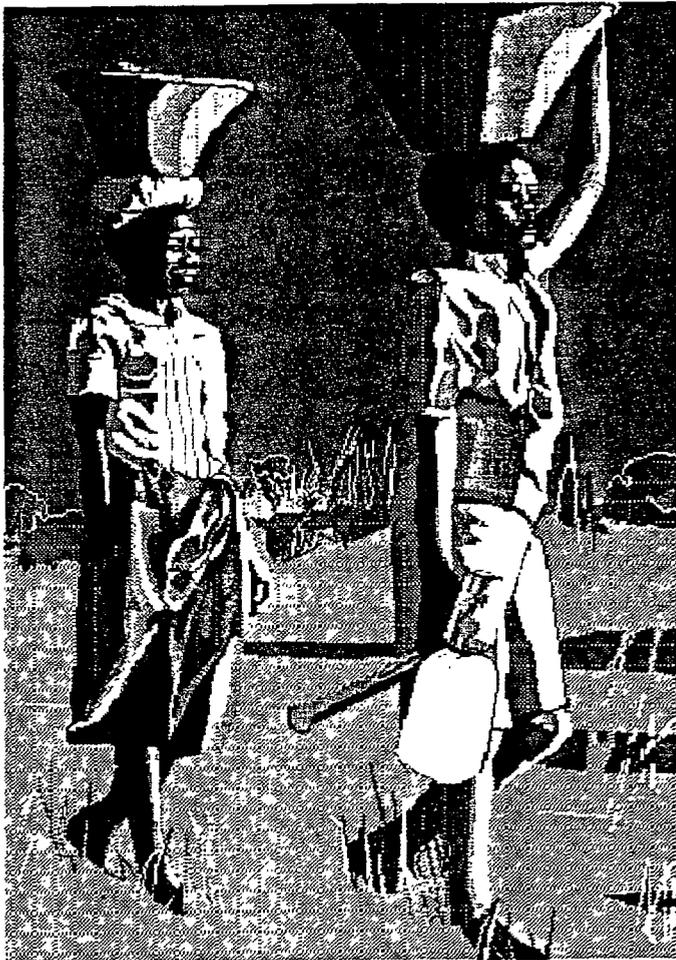
Although women constitute about half of Zambia's population, they are disproportionately affected by the HIV/AIDS epidemic. For a long time, HIV/AIDS researchers and analysts believed that over the course of an epidemic, about equal numbers of men and women would become infected. Now, many believe that in a mature epidemic such as that now experienced in Zambia, more women than men will be infected. The Ndola multicentre study reveals this pattern. In this case, women are nearly 1.4 times more likely to be infected than men. The overall ratio of female to male infections, inclusive of both urban and rural areas, may be near 1.2 in Zambia.

This imbalanced sex ratio may occur in part because women are more prone to infection than men. Research indicates women are two to four times more vulnerable to HIV infection than men during unprotected intercourse because of the larger surface areas exposed to contact. Similarly, women are more vulnerable to other sexually transmitted diseases, the presence of which greatly enhances the risk of HIV infection. STDs that bring on recognisable symptoms in men are often asymptomatic in women and, therefore, remain untreated. The 1996 Demographic and Health Survey (DHS) indicates that men are twice as likely as women to seek treatment for STDs. Whatever the exact dynamics, young women attain high HIV infection levels at notably younger ages than young men.

Generally, women lack complete control over their lives and are taught from early childhood to be obedient and submissive to males, particularly males who command power such as a father, uncle, husband, elder brother or guardian. In sexual relations, a woman is expected to please her male partner, even at the expense of her own pleasure and well-being. Dominance of male interests and lack of self-assertiveness on the part of women puts them at risk. Women are taught to never refuse having sex with their husbands, regardless of the number of partners he may have or his non-willingness to use condoms, even if he is suspected of having HIV or another STD. Also, to enhance male pleasure, a number of women continue to practice dry sex, which can increase vulnerability to infection through exposing genital organs to bruising and laceration.

Adolescent sexuality is increasingly becoming an important concern. The 1996 DHS found that the median age at first sexual intercourse is between 16 and 17 years for women and men. The survey also revealed that youths in this age range are less likely to know how to prevent STDs and HIV infection than adults. Young women are at a higher risk because the physiological immaturity of their reproductive systems provides less of a barrier to HIV transmission. The *Zambia Sexual Behaviour Survey 1998* reported no changes in adolescent sexual behaviour between 1996 and 1998.

Exchange of sex for money or gifts is a coping strategy for dealing with poverty and may not be perceived as commercial sex work. Studies on adolescent reproductive health, including patterns of sexual behaviour, indicate this to be a frequent occurrence. Males are expected periodically to provide gifts and/or money to their partners. Failure to do so results in curtailment of the relationship and formation of a new one with someone else. The unstable and temporary nature of these relationships often results in multiple partners over time.



Women can be especially vulnerable to the AIDS epidemic...

...subordinate position to males can make it difficult to protect selves against HIV

...certain cultural and economic practices can increase the risk of transmission

...burden of care in AIDS-affected households falls on women and children

AIDS has a serious economic impact on family life, particularly the situation of women. Care of the sick continues to be a responsibility of the family with women serving as the major caregivers. Since women are the major food producers in the country, this can have a substantial impact on food security.

Women, also, are the immediate nurturers of orphaned children, many of whom are survivors of AIDS-affected households. There are already about 520,000 orphans as a result of AIDS in Zambia and the number is expanding rapidly due to the epidemic.

A study on widows, widowers and orphans suggests that 16 percent of all households in the country are headed by widows and 2 percent by widowers. The study suggests that the majority of widow-headed households are resource poor and lack access to food and basic services.

Coping strategies for widows and widowers differ substantially. Widowers tend to remarry within a year of their bereavement whereas widows are less likely to voluntarily enter into a new relationship. However, the practice of widow inheritance continues to be prevalent in parts of the country, particularly in rural areas. Remarriage or entering into a new sexual relationship, voluntarily or involuntarily, by women and men whose partners died of a suspected AIDS-related disease is likely to spread HIV. This problem is made worse by the lack of accessible and confidential voluntary counselling and testing.

Girls become more vulnerable when living in an AIDS-affected household. Girls, more often than boys, have to share or totally assume care-giving responsibilities for siblings and ailing parents. This results in girls prematurely leaving school in order to shoulder these responsibilities. It also results in early marriage for both girls and boys who are heading households with younger children. Young people sometimes enter marriages of convenience just to have someone to share parental responsibilities.

Children in AIDS-affected households suffer many types of deprivations because of decreased resources available for food, health care and education. As members of families become ill, resources are diverted to their care and sustenance. In a situation of severely limited resources, many parents prefer to send their sons to school rather than their daughters because they believe education for a girl is unnecessary, and the most important life-skill preparations for girls are for marriage.

IV. INTERVENTIONS TO CONTROL THE SPREAD OF AIDS

Interventions

National AIDS Control Programmes

The Role of Zambian Leaders

Conclusion

INTERVENTIONS TO CONTROL THE SPREAD OF AIDS

Both GRZ and NGOs involved in HIV/AIDS programmes recognise the importance of a continuum of care. This continuum includes efforts to prevent HIV infection in the first place, to provide counselling, spiritual and emotional support and medical care to persons who are HIV-infected or who are living with AIDS, and to sustain those otherwise affected by the epidemic, such as widows and orphans. While it is imperative to limit the spread of HIV in the country, it is also necessary to help PLWHAs lead secure lives free from discrimination, and to support persons who are otherwise affected by the epidemic

Interventions

HIV prevalence is now so high that the impact of AIDS is going to be very severe in Zambia regardless of what happens in the future. Nonetheless, much can be done to lessen the impact of the disease and eventually bring the epidemic under control. Different interventions can be adopted to influence the transmission mechanisms of HIV. Collectively, they can slow the spread of AIDS.

Mother-to-Child Transmission. A mother who is infected with HIV has a 30 to 40 percent chance of transmitting the virus to her newborn child. Various approaches can be used to reduce the number of children who are infected.

- Providing voluntary counselling and testing and access to family planning services. To reduce mother-to-child transmission, it is important that young women know whether they are infected. If they are HIV-positive, they may wish to use family planning to avoid pregnancies. Voluntary counselling and testing needs to be available for couples where one or both of the partners is infected to help them understand the HIV test and the choices facing them. Voluntary counselling and testing must also be made available to those about to marry. In Zambia, just 5 percent of women have been tested for HIV and know the results.
- Reducing transmission during breastfeeding. About one-third of mother-to-child transmission occurs through breastfeeding. Curtailing breastfeeding could reduce transmission of HIV but would also eliminate the significant health benefits that children get from breastfeeding. For that reason, international guidelines have tended to recommend continued breastfeeding, especially during the early months following birth. Perhaps in some cases mothers could be counselled on alternative ways to feed the child.

The debate over whether HIV-infected mothers should breastfeed or not is a dynamic and on-going one. Much research and discussion is taking place in Zambia so that HIV-infected mothers and health professionals can make informed decisions in difficult circumstances.

- Using anti-retroviral therapy. Mother-to-child transmission can be reduced through the use of certain anti-retroviral drugs. To date, zidovudine (AZT) has been the primary drug used to prevent mother-to-child transmission. Research has shown that AZT treatment for the mother in the period just before and during childbirth can reduce transmission rates by up to 50 percent. However, such treatments are very expensive. Recent reporting indicates that it costs \$268 for the AZT regimen now used in developing countries, which is prohibitively high for widespread use in most African countries. Besides cost, the AZT treatment is a long-term regimen that requires repeated, regulated and consistent use of the drug. Because of the expense, some users in Zambia and elsewhere abuse the treatment by not taking the full dosage or by not taking the drug the required number of times.

A recent study on nevirapine (NVP) is showing some encouraging results for Zambia and other countries in the region. NVP is another anti-retroviral that has recently been tested in Uganda. The drug is easy to administer – the test dosages have been a single dose to an HIV-infected women during labour and another dose to the infant within three days of birth. The early results indicate that NVP may be more effective than AZT and much less expensive – under \$4 per woman.

Blood Transfusion. Health officials need to continue efforts to avoid infection through blood transfusion by keeping the blood supply as safe as possible. This means screening blood through laboratory tests and screening potential blood donors through interviews to reject as donors those that have a high probability of infection.

Interventions to Limit Transmission through Heterosexual Contact. The major mode of transmission is through heterosexual contact and it is especially in this area that interventions have to be intensified and applied nationally. Public health and behavioural change interventions include promoting reductions in the number of sexual partners; encouraging delays in the onset of sexual activity among adolescents; promoting the correct and consistent use and availability of condoms; strengthening programmes for STD control; and encouraging voluntary counselling and testing. Programmes to raise the status of women, reduce poverty and improve the quality of the health system can also affect the course of HIV/AIDS in Zambia.

Interventions to limit transmission through heterosexual contact -

...Reducing the overall number of sexual partners

...Delaying the onset of sexual activity among adolescents

...Promoting the use and availability of condoms, including female condoms

...Controlling other sexually transmitted diseases

...Encouraging voluntary counselling and testing and ensuring availability of services

Promoting abstinence before marriage and mutual faithfulness to one partner. One set of interventions focuses on encouraging people to abstain from sex before marriage and remain faithful to a single partner. This could be done through a combination of mass media, counselling and education programmes. Delays in the onset of sexual activity among adolescents can have a significant impact on the spread of HIV. Reducing the overall number of sexual partners, but especially limiting the number of concurrent partners, can also have an effect. Given the extremely high rates of HIV infection among commercial sex workers, a reduction in the number of men who have unprotected sexual contact with sex workers can be important in bringing the epidemic under control. Overall, these strategies could make an important contribution to reducing the spread of HIV, although they would not be, by themselves, a complete solution.

Promoting the use and availability of condoms, including female condoms. A second intervention is to promote condom use through mass media, counselling 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. The availability of condoms in rural areas may need to be improved. Given the vulnerability of women, greater availability and use of female condoms could help control the spread of the disease.

About 27 percent of Zambian couples are discordant, meaning that one partner is HIV-infected but not the other. The correct and consistent use of condoms is the best way to prevent HIV transmission in these circumstances.

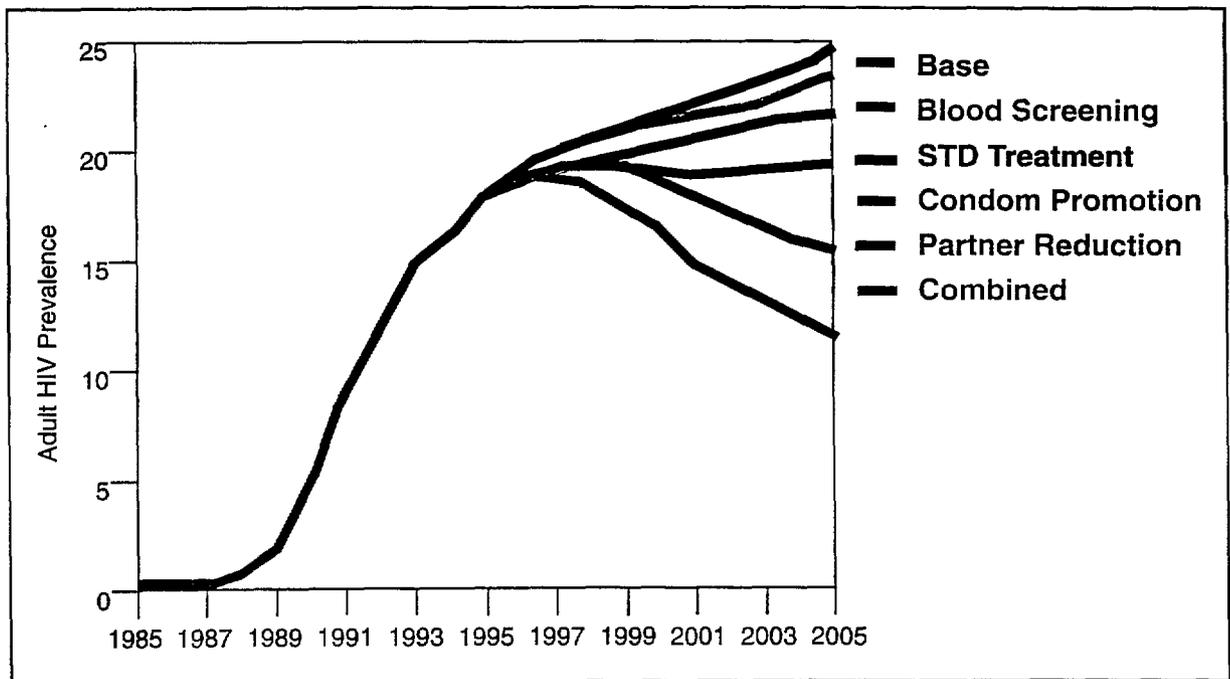
Controlling other sexually transmitted diseases. Another intervention focuses on controlling the spread of sexually transmitted diseases such as syphilis, gonorrhoea and chancroid. A recent study in Mwanza, Tanzania, for example, found that an improved STD prevention and treatment programme was associated with a reduction in the number of new HIV infections of 42 percent. Services to detect and control STDs can be critically important for managing the HIV/AIDS epidemic. In Zambia, it may be especially important to ensure a consistent supply of drugs to treat STDs in all localities, and to equip health providers with the necessary diagnostic skills and tools.

Encouraging voluntary counselling and testing (VCT) and ensuring availability of services. When people know their HIV status, they can respond accordingly. People who are infected can adjust their behaviour to reduce their chances of infecting others. People who are uninfected can lead lives that enable them to remain free of HIV. Recent reporting from the population-based surveys indicates a surge in readiness for HIV testing in both rural and urban areas. However, the demand for HIV testing surpasses the current availability of services in the country. It is important to encourage VCT but also to ensure the availability of services in all communities.

Combined interventions. Each of the intervention packages described above can make an important contribution to controlling the spread of HIV. Alone, none is likely to solve the problem completely; some people will respond to or be affected by one type of intervention while others will respond to or be affected by another. 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 Zambia. Rather, it is based on simulation modelling, a widely accepted tool among international health planners. It shows the expected impact of interventions in an illustrative high prevalence country. In the absence of interventions – the base projection or the top line on the graph – the HIV adult prevalence rate rises to about 23 percent in 2005. An effective blood screening programme – represented by the second line from the top – reduces prevalence only modestly. However, an effective STD control programme brings expected prevalence down by about 12 percent, and condom promotion and partner reduction interventions reduce HIV prevalence even more. Most importantly, when all four interventions are implemented simultaneously, the projected prevalence is nearly 55 percent less in 2005 than it would be in the absence of interventions.

Effects of AIDS Interventions



The fundamental message is a hopeful one. The simulation modelling suggests that with a concerted effort on a number of fronts, a high prevalence country can turn the rising prevalence curve downwards and start to bring the HIV/AIDS epidemic under control. Overall, there are several important lessons to be learned concerning 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, there is now evidence from Uganda and Thailand that significant reductions in HIV incidence and prevalence can occur at a national level. Both countries recognised 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 anti-retroviral therapy.

Signs of Change in Uganda

Recent trends in Uganda are a sign of hope for Zambia and 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 15-19 year olds have levelled off in rural areas and are declining in urban areas. Survey results from the early 1990s and mid-1990s suggests 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. There has also been greater use of condoms in high-risk sexual encounters by the young.

Exactly what has brought about behavioural changes is unclear, making it difficult to draw lessons for Zambia and elsewhere. Some data indicate a close relationship between changed behaviour and the death of a close friend or relative from the disease. This suggests rising mortality as a grim catalyst for changing sexual practices. More positively, many Ugandan leaders have given consistently strong support to AIDS control efforts, and knowledge about AIDS, its risks and consequences, and means of prevention have been widely diffused throughout the country.

Whatever the reasons for changing behaviour in Uganda, it is encouraging to witness change in an African country seriously affected by the HIV/AIDS epidemic. Similar signs of change in prevalence levels among the young are now starting to appear in parts of Zambia. Although there is not enough evidence to reach conclusions about national trends, these signs should serve as a reminder that high HIV prevalence is not immutable and that strong efforts from all sectors of Zambian society can make a difference in the future course of the epidemic.

Treatments. Highly active anti-retroviral therapy (HAART) has received much international publicity in recent years. HAART 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. However, several considerations need to be taken into account when considering HAART in the context of developing countries such as Zambia. Most importantly:

- Many HIV-infected persons cannot tolerate the side effects of the drugs and for them the combination therapy treatments are useless. Only about half of prospective users can tolerate the therapy.
- The drugs have to be taken under the strictest conditions, including time of day and with meals or on an empty stomach. Even small variations from the prescribed pattern can render the treatment ineffective. Patients also need constant access to sophisticated medical laboratories to track viral counts in the body.
- Perhaps most importantly, the costs of these treatments are prohibitively high, around \$8,000 (about K20 million) per patient per year in an actual developing country setting and even more in the industrialised countries. * (By contrast, in Zambia, the government spends less than \$10 (K25,000) for all health services.)

The new combination drugs are important in that for the first time a medical treatment has proven effective against HIV. This creates hope for the future. But for the moment, even in the most developed countries, this is a highly expensive experiment with an unknown outcome affecting a minority of HIV-infected individuals. In developing countries, the first experimental programmes are just beginning.

It is possible to treat, for a long time, many of the opportunistic infections that develop because of the weakened immune system. These treatments can improve the quality of life and delay the death of a person with AIDS.

* World Bank. Confronting AIDS: Public Priorities in a Global Epidemic. New York: Oxford University Press. 1997, pp. 174-178.

Vaccines. For many HIV/AIDS researchers and policymakers, the real hope is for a widely available vaccine that can prevent HIV infection in the first place. Research on vaccines continues in many laboratories around the world, with more than two-dozen experimental HIV vaccines currently being tested. Zambia has a national working group designed, in part, to establish guidelines for future participation in vaccine trials. However, most scientists believe that vaccines are not likely to be ready for mass use for at least the next five to 10 years, if then. Even if vaccines do eventually become available, there will be problems in producing large quantities and delivering the vaccine to large numbers of people.

Neither drugs nor vaccines will likely reduce the heterosexual spread of HIV in Zambia in the next several years.

In brief, it does not appear that either drugs or vaccines will contribute much to reducing the heterosexual spread of HIV in Zambia in the next several years.

National AIDS Control Programmes

Since the mid-1980s, the GRZ, acting through the Ministry of Health, has supported various programmes to control and prevent the spread of HIV. In 1986, the government established a National AIDS Surveillance Committee and an Intersectoral AIDS Health Education Committee to coordinate all HIV/AIDS programme activities. Later, in 1987, the coordinating team implemented a Short Term Plan to ensure a safe blood supply and established 33 blood screening centres around the country. Also in 1987, the coordinating group, with assistance from the World Health Organisation/Global Programme on AIDS and other donors, developed the First Medium Term Plan (MTP1). The Zambia National AIDS Prevention and Control Programme (NAPCP) assumed responsibility for plan implementation. NAPCP eventually created eight units to address HIV/AIDS prevention and control: Programme Management, IEC, Counselling, STD/Clinical Care, Epidemiology and Research, Laboratory Support, Home-Based Care and NGO Coordination. NAPCP also appointed AIDS Coordinators at provincial and district levels, though these personnel had other public health responsibilities as well.

In 1992, based on a desire to integrate the response to related problems, the government restructured the programme and organised the National AIDS/Sexually Transmitted Disease/Tuberculosis and Leprosy Programme (NASTLP). After the First Medium Term Plan came to an end, NASTLP embarked on preparation of the Second Medium Term Plan (MTP2) in 1993. MTP2 covered the 1994-1998 period, and established a multisectoral approach to the prevention and control of HIV/AIDS in Zambia. The plan was designed to extend efforts beyond the Ministry of Health and to ensure the full participation of all government ministries, NGOs, churches and social groups and the private sector in plans and programmes to address the epidemic in Zambia.

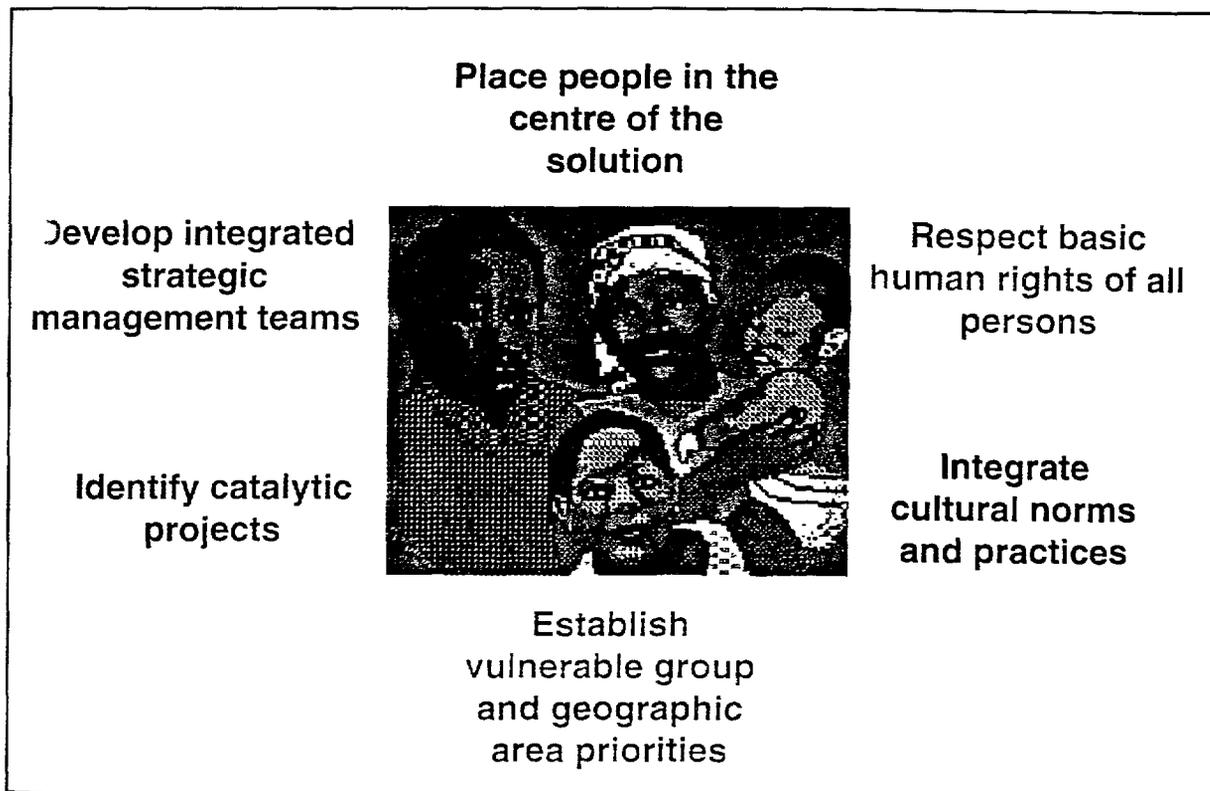
Under the current health reforms, many HIV/AIDS services are to be integrated into a basic package of health services at district level. Sector ministries are being encouraged and assisted to develop strategic plans to integrate HIV/AIDS activities into programmes, taking advantage of the comparative advantages of each ministry. A restructured national programme will be responsible for advocacy, development of common policies, provision of technical guidelines and facilitation of their implementation, and mobilisation of resources. To do this effectively, a new, two-tiered AIDS coordination structure is being created. This will include a National HIV/AIDS Council, supported by a Secretariat.

In November 1997, the Government began the transition to the new structure. CBOH assumed responsibilities for coordinating HIV/AIDS health services and put into place measures to develop a multisectoral strategic plan to cover the period 1999 – 2000. A Strategic Planning Working Group, broadly based to include representatives from GRZ ministries, PHLWA, UNAIDS and UNICEF, HIV/AIDS researchers, NGOs and others, consulted widely with other groups and individuals to ensure broad participation in development of the plan.

The draft plan identifies guiding principles for the national response to HIV/AIDS. These include efforts to

- Place people in the centre of the solution
- Respect the basic human rights of all persons
- Integrate cultural norms, values and practices into the response
- Establish vulnerable group and geographical area priorities
- Identify catalytic projects that can be scaled up to cover priority vulnerable groups
- Develop an integrated strategic management team for each of the priority areas to develop and monitor best practices and progress in up-scaling each.

Guiding Principles of the National Response



Priority geographical areas are

- Lusaka
- Copperbelt Province
- Districts along the main trucking routes
- Districts with well-defined fishing areas, for example, Luapula Province (Nchelenge) and Southern Province (Monze, Mazabuka, Gwembe Valley, Siavonga, Kafue and Zambezi)
- Districts with refugee populations
- Towns with regular cross-border trading

Social priority areas are

- People living with HIV/AIDS
- Orphans
- In and out-of-school youth
- Commercial sex workers
- Public sector workers
- Private sector workers

The national response will build on current projects and programmes that demonstrate best practices. These projects and programmes will serve as “catalytic” activities that will be replicated among priority populations and in priority areas. The National HIV/AIDS Council and Secretariat will provide oversight and coordination for these catalytic projects, while implementation will be the responsibility of the appropriate government line ministry.

HIV/AIDS and Human Rights

Zambia has identified respect for the basic human rights of all persons as one of the cornerstones of its national response to the HIV/AIDS epidemic. This position is not only compassionate and humane but also good public policy.

Based on perceived or actual HIV/AIDS status, some important issues arise.

Stigma. Social ostracism and alienation that lead to deterioration of civil, economic, or political rights can be a consequence of the stigma associated with HIV/AIDS. A common problem experienced in many countries in addressing this epidemic is that people often avoid learning about or admitting to being infected with HIV because of the stigma attached to the disease and fear of discrimination. Such avoidance limits diffusion of knowledge about HIV in the general population and increases the risk of transmission to loved ones and others.

Testing and Confidentiality. Information from the population-based surveys indicates that one reason more people do not have themselves tested is concern that the results will not be kept confidential. Stigma and discrimination often follow when HIV status is disclosed. Voluntary HIV testing needs to be done with informed consent and clients need to be confident that the results will remain private. In turn, HIV-positive individuals have a responsibility to notify spouses and other sexual partners.

Employment. Discrimination in the workplace based on HIV/AIDS status may include such consequences as, (a) not having an opportunity to apply for a job, (b) mandatory testing at recruitment, (c) questions on recruitment forms/interview related to HIV status, (d) unjustified restrictions due to HIV status relating to promotion, job location, or employment benefits, or (e) dismissal from the job. Again, people will be less likely to learn about or admit their status if they fear serious economic consequences.

Information. The right to freedom of expression and information entitles persons to seek, receive and impart openly HIV-related prevention and care information. The Zambia strategy supports the dissemination and free exchange of prevention and care information.

In this context, recognizing and respecting the human rights of persons living with HIV/AIDS (PLWHA), as well as other persons affected by the epidemic, makes good sense. Protecting the human rights of PLWHA promotes openness, tolerance and involvement of the public in HIV prevention programs, which can reduce opportunities for the spread of HIV and eventually bring the epidemic under control.

The Role of Zambian Leaders

Strong and determined support from Zambian leaders can be a critical factor affecting the success of HIV/AIDS programmes and the future course of the epidemic. Much of this document has discussed programmatic intervention and prevention strategies. This final section will look at and illustrate what individual leaders can do now.

The government has a mandate and responsibility to: (1) collect information on the course and nature of the epidemic; (2) develop a programme of behavioural research; (3) evaluate the costs and effectiveness of alternative interventions; (4) determine fundamental strategies and intervention programmes; (5) mobilise national and international resources and decide on the most efficient, effective and equitable allocation of these resources; (6) develop a supporting set of laws and regulations; and (7) establish national policies. Government is also responsible for broader development programmes that are ends in themselves but that also can have an impact on the HIV/AIDS epidemic.

But political, governmental, non-governmental, religious, business, education and other national and community leaders who are not directly involved in the implementation of HIV/AIDS prevention programmes can contribute as well. If the leaders of Zambia – not the top 10 or top 100 but the top 10,000 leaders – all do their share, this epidemic can be turned around.

What, for example, could a Parliamentarian do now to help control the spread of HIV in Zambia?

Share or “diffuse” knowledge about HIV/AIDS among constituents, especially information about transmission, fatal consequences and ways to prevent infection

Engage in policy dialogue to ensure that the epidemic remains high on the national agenda

Participate in strategic planning at national and district levels

Support the HIV/AIDS programmes of NGOs and sectoral ministries

Use influence of position to oppose discrimination against HIV-infected persons

In his/her legislative and political capacity, support measures to ensure

- a sustained monitoring effort and behavioural research programme
- a supportive environment of laws and regulations
- strong IEC, condom use, STD control, and youth education programmes
- sufficient national and international resources to address the epidemic

What can these leaders do to help stem the spread of HIV in Zambia? Some illustrations follow but the list could be many times longer depending on the role of the leader or the organisation. Large employers, for example, have opportunities that others do not.

Evidence from Uganda and elsewhere suggests that the spread, or “diffusion,” throughout the population of information about the epidemic – its extent, the nature of the disease, how HIV is spread, the fatal consequences and how individuals can protect themselves and their loved ones – is key to achieving widespread changes in high-risk behaviour. Parliamentarians, district leaders, religious, military and police, and business leaders, for example, have numerous opportunities to share information, such as found in this briefing book, with their constituencies. This is a practical and critically important process to which all well-informed leaders can immediately and realistically contribute.

Political leaders can also contribute to a policy dialogue on the HIV/AIDS epidemic that keeps the issue high on the national agenda. Political leaders can speak out often about the HIV/AIDS epidemic and state open and strong support for intervention programmes. This gives both visibility and credibility to HIV/AIDS intervention programmes and helps develop a consensus about the most effective and acceptable prevention and mitigation strategies. HIV/AIDS statements can be included in speeches at all realistic opportunities.

National leaders can review the forthcoming HIV/AIDS national strategic plan and offer suggestions on how it can be used with their constituencies. Under the health reforms, each district will need to incorporate HIV/AIDS into its overall process of health planning and provision of health services. Political and other leaders can exert influence to see that this planning activity is carried out as soon as possible in a rational and equitable manner, and, given the importance of the epidemic, participate actively in the planning.

One of the most common problems in addressing the HIV/AIDS epidemic is that persons have often avoided learning about or admitting to being infected with HIV because of the stigma attached to the disease and because of fear of discrimination. However, avoidance limits diffusion of knowledge about HIV in the general population and it increases the risk of transmission to loved ones and others. Political and other leaders can help by publicly acknowledging the need to care for and support persons living with AIDS and HIV infection and working against discrimination.

Zambia has been a pioneer in recognising that AIDS is much more than just a health problem; rather, it affects all areas of society and all components of the development effort. It is therefore important that all government sectors, NGOs, private sector organisations, religious institutions, unions, professional societies and others make their contributions. From their positions of influence, political and other leaders can participate actively and contribute to the success of HIV/AIDS activities in the NGOs and the line ministries.

What, for example, could an NGO/community leader do now to help control the spread of HIV in Zambia?

Integrate messages and information about prevention, care and support into ongoing activities, such as youth and adult education

Identify and serve as an advocate for vulnerable groups, for example young women and orphaned children subject to sexual exploitation or abuse

Develop IEC messages and programmes that stress the importance of family and moral values in stopping the spread of HIV, for example remaining faithful to one partner or encouraging delays in the onset of adolescent sexual activity

Participate in care and support programmes for HIV-infected people

Participate in strategic planning activities at district level

In their administrative, legislative and leadership roles, leaders in different areas can take measures to

ensure that the personnel, funds and authority needed to carry out the sentinel surveillance and population-based surveys on a systematic and timely basis are available and that behavioural research to strengthen the effectiveness of interventions is carried out;

create a supportive environment of enforced laws and regulations, for example minimising import duties and taxes on condoms, gloves and drugs to treat STDs and TB, that permit intervention and prevention measures to work as effectively as possible;

make information, education and communication (IEC); condom use; STD control; youth education and other intervention and prevention programmes as strong as possible;

help mobilise sufficient national and international resources to address the epidemic.

What, for example, could a district planner do now to help control the spread of HIV in Zambia?

Develop as much district-specific information about the epidemic as possible, make it available, and interpret the implications of HIV/AIDS projections for district-level development

Place HIV/AIDS strategic planning and incorporation of HIV/AIDS into the health reforms and the essential package of services high on the district planning agenda

Encourage local responses to the epidemic and support involvement of a broad range of government and non-governmental organisations

Support the development/continuation of HIV/AIDS focal point persons in the line ministries at district level and integrate HIV/AIDS activities into sectoral programmes

Churches and other religious organisations are in a unique position to influence HIV/AIDS policy and develop specific programmes. Churches exist in every community in the country. Those of the same denomination are often linked with each other through policymaking umbrella organisations. Churches can develop HIV/AIDS policies and regulatory guidelines within their own organisations and governing bodies, and can participate in policy dialogue and programme development in the larger community.

Religious organisations can also work with one another in the struggle against the epidemic. In September 1997, for example, Christians from several denominations, along with representatives from the Bahai and Islamic communities, formed an Interfaith Networking Group to collaborate in the fight against HIV/AIDS.

What, for example, could a religious leader do now to help control the spread of HIV in Zambia?

Integrate HIV/AIDS and psychosocial counselling into youth and adult programmes

Disseminate messages on the ABCs of HIV preventions – abstinence; be faithful to one partner; or, in the absence of the first two, use condoms

Discourage acts of discrimination or stigmatisation against PLWHA and persons living in AIDS-affected households

Cooperate with NGOs, community-based groups and other churches in the community to support home-based care programmes

Develop a programme of care and support for orphans, widows and widowers

Conclusion

Zambia is undergoing an HIV/AIDS epidemic of the utmost gravity. The impact on the collective health and the social and economic well-being of the people of the country is potentially stunning. With a prevalence rate over 19 percent, there is no way for the country and its institutions, communities and households to avoid the tragic and grim consequences of the epidemic.

Yet the final message has to be one of hope and resolution. More than 80 percent of the adult population remains uninfected, and each uninfected woman and man can take active measures against transmission of the virus. It is possible to intervene to achieve widespread changes in behaviour that will result in reductions in HIV incidence and prevalence. The leaders of Zambia have a critical role to play in seeing that this happens, that people living with HIV and AIDS are assisted with compassion to lead secure lives free from discrimination, and that people otherwise affected by the epidemic receive necessary support.

V. DISTRICT ESTIMATES

With the health reforms, the districts have become increasingly responsible for the allocation and use of health resources, including those for HIV/AIDS programmes. This responsibility makes it useful to get some idea of what the epidemic looks like at district level. Since it is not possible for each district to have a sentinel surveillance or population-based survey, the district estimates are derived from the provincial estimates (see technical note). Therefore, some variance in district estimates is inevitable from survey to survey. Of particular note, the 1998 sentinel surveillance survey indicated lower HIV prevalence in Northern and Luapula provinces than was the case in 1994. Consequently, the district estimates shown below will appear lower for both provinces than earlier estimates. In both cases, the sentinel surveillance sites were somewhat different in 1998 than 1994. It is not possible, therefore, to make conclusive statements about HIV prevalence and trends in these areas until at least one additional sentinel surveillance survey has been carried out. Finally, the boundaries and population composition of the new districts have been clarified over time, which helps give a more accurate picture of the distribution of HIV across the country.

Zambia HIV Prevalence Estimates by District, 1999

Province/ District	HIV Prevalence 15-49	HIV + Total 15-49	HIV + Urban 15-49	HIV + Rural 15-49	HIV + Total 50+	HIV + 15 and older
Central	18.7%	79,418	33,016	46,402	7,802	87,220
Chibombo	16.5%	14,111	1,938	12,174	1,600	15,711
Kapiri Mposhi	16.5%	10,294	1,413	8,881	753	11,047
Kabwe Urban	25.6%	25,386	25,386	-	2,313	27,699
Mkushi	16.3%	6,701	722	5,978	713	7,414
Mumbwa	17.1%	13,884	2,444	11,440	1,402	15,286
Serenje	16.1%	9,042	1,114	7,928	1,021	10,063
Copperbelt	26.2%	197,534	185,618	11,917	12,591	210,125
Chililabombwe	25.8%	7,666	7,177	489	417	8,083
Chingola	28.1%	23,757	23,714	43	1,465	25,223
Kalulushi	24.4%	8,511	7,614	897	479	8,990
Kitwe	28.7%	54,762	54,762	-	3,502	58,264
Luanshya	26.6%	20,463	19,570	893	1,304	21,767
Lufwanyama	12.8%	3,128	462	2,666	281	3,410
Mpongwe	12.8%	2,294	339	1,956	207	2,501
Mufulira	26.9%	20,845	20,138	707	1,188	22,034
Masaiti	12.8%	5,006	740	4,266	450	5,456
Ndola Urban	28.4%	51,100	51,100	-	3,297	54,397

Province/ District	HIV Prevalence 15-49	HIV + Total 15-49	HIV + Urban 15-49	HIV + Rural 15-49	HIV + Total 50+	HIV + 15 and older
Eastern	16.5%	96,286	16,637	79,649	13,830	110,116
Chadiza	15.6%	6,097	583	5,514	821	6,918
Chama	16.0%	4,211	554	3,657	658	4,869
Chipata	17.9%	27,922	8,991	18,931	3,881	31,803
Katete	15.7%	13,055	1,251	11,804	1,948	15,003
Lundazi	16.0%	16,565	1,586	14,979	2,427	18,992
Mambwe	17.9%	4,171	1,343	2,828	580	4,751
Nyima	15.8%	5,581	536	5,045	808	6,389
Petauke	15.8%	18,683	1,793	16,890	2,705	21,388
Luapula	16.2%	44,696	12,001	32,695	5,739	50,435
Chienge	16.8%	4,036	1,309	2,727	491	4,527
Kawambwa	16.6%	6,553	2,126	4,427	873	7,426
Mansa	15.9%	10,209	2,521	7,688	1,209	11,418
Milenge	15.9%	1,524	376	1,148	180	1,704
Mwense	15.0%	6,439	864	5,575	920	7,359
Nchelenge	16.8%	6,313	2,047	4,266	769	7,082
Samfya	16.3%	9,621	2,757	6,864	1,297	10,918
Lusaka	27.2%	192,556	170,294	22,262	9,574	202,130
Chongwe	19.6%	13,184	4,125	9,059	761	13,945
Kafue	19.6%	16,114	5,042	11,072	931	17,045
Luangwa	18.7%	2,396	265	2,131	348	2,744
Lusaka Urban	29.5%	160,861	160,861	-	7,533	168,394
Northern	13.5%	65,882	15,669	50,213	8,482	74,364
Chilubi	12.5%	2,849	207	2,642	458	3,307
Chinsali	12.9%	5,946	935	5,011	825	6,771
Isoka	13.3%	5,730	1,082	4,648	697	6,427
Kaputa	12.8%	3,357	577	2,780	524	3,881
Kasama	14.8%	9,747	3,931	5,816	1,240	10,987
Luwingu	12.8%	4,748	670	4,078	693	5,441
Mbala	13.2%	7,651	1,325	6,326	863	8,514
Mpulungu	13.2%	3,125	541	2,584	353	3,478
Mpika	13.8%	8,965	2,647	6,318	1,130	10,095
Mporokoso	13.2%	4,527	782	3,745	542	5,069
Mungwi	14.8%	5,725	2,309	3,416	729	6,454
Nakonde	13.3%	3,512	663	2,849	427	3,939

Province/ District	HIV Prevalence 15-49	HIV + Total 15-49	HIV + Urban 15-49	HIV + Rural 15-49	HIV + Total 50+	HIV + 15 and older
North-Western	11.6%	26,551	7,063	19,488	3,616	30,167
Chavuma	11.0%	1,509	262	1,247	235	1,744
Kabompo	11.2%	3,132	599	2,533	480	3,612
Kasempa	11.4%	2,679	561	2,118	350	3,029
Mufumbwe	12.9%	1,750	779	971	282	2,032
Mwinilunga	10.8%	5,323	831	4,492	697	6,020
Solwezi	12.5%	9,357	3,544	5,813	1,137	10,494
Zambezi	11.0%	2,801	486	2,315	436	3,237
Southern	15.6%	82,651	44,299	38,352	7,026	89,677
Choma	15.7%	13,106	7,199	5,907	1,092	14,198
Gwembe	11.6%	2,754	595	2,159	332	3,086
Kalomo	11.5%	9,808	2,121	7,687	971	10,779
Kazungula	11.5%	3,446	745	2,701	341	3,787
Livingstone	31.0%	13,741	13,437	303	922	14,663
Mazabuka	17.2%	15,877	9,746	6,130	1,194	17,071
Monze	14.0%	8,156	3,682	4,473	772	8,928
Namwala	12.8%	4,520	1,575	2,944	443	4,963
Itezhi-tezhi	12.8%	2,328	811	1,517	228	2,556
Siavonga	16.3%	2,635	1,447	1,187	270	2,905
Sinazongwe	15.0%	6,282	2,940	3,341	462	6,744
Western	18.8%	60,009	9,446	50,563	8,354	68,363
Kalabo	18.5%	9,401	1,063	8,338	1,455	10,856
Kaoma	18.6%	11,146	1,131	10,015	1,569	12,715
Lukulu	18.1%	4,766	367	4,399	695	5,461
Mongu	20.1%	15,628	4,755	10,873	1,954	17,582
Senanga	18.3%	9,292	828	8,464	1,216	10,508
Sesheke	18.2%	5,401	919	4,482	893	6,294
Shangombo	18.3%	4,375	383	3,992	572	4,947
1999 National	19.6%	845,582	494,042	351,540	77,014	922,596

VI. TECHNICAL NOTE

The development of this document has been a participatory process that has included the involvement of representatives from many different government, NGO, donor and other organisations. Therefore, *HIV/AIDS in Zambia* is the result of a long and collective effort, and much of the information in this book is based on the conclusions of different meetings and consultations. Data for the HIV sentinel surveillance sites, the population-based surveys and reported tuberculosis cases come from MOH/CBOH.

Projections and Simulations. Unless otherwise indicated, the projections in this book are the output of an application of a microcomputer projection programme for HIV/AIDS known as the AIDS Impact Model or AIM. AIM, in turn, is one component of the SPECTRUM System of Policy Models, a series of reproductive health policy models developed by The Futures Group International in collaboration with Research Triangle Institute and The Centre for Population and Development Activities.

The simulation model results given on page 46 for alternative interventions come from Bernstein et al as in Section VI, Selected Sources. The projections incorporate the following assumptions for the different interventions.

Intervention

Blood screening:	100 percent blood screening
Condom promotion:	Effective condom use in 70 percent of commercial sex contacts and 13 percent of casual contacts
STD control:	Effective STD treatment for 40 percent of STD episodes among commercial sex workers and men; 10 percent effective among other women
treatment	
Partner reduction:	50 percent reduction in proportion of men engaging in commercial sex; 25 percent reduction in proportion of men engaging in sex with short-term casual partners
Combined:	All four interventions implemented simultaneously

Estimating HIV prevalence in Zambia. Only a small percentage of adults are ever tested and know the results. Because of the lack of testing and the long HIV incubation period, most persons who are HIV-positive do not even know that they are infected. How, then, is it possible to make provincial and national estimates of HIV prevalence in Zambia?

The UNAIDS-recommended measure to understand the extent of HIV in a population is HIV prevalence among 15 to 49 year olds, or the percentage of persons aged 15 to 49 who are infected with the virus. Ideally, it would be useful to take a large national survey every two years to find out HIV prevalence among 15 to 49 year olds. However, national surveys are expensive and difficult to organise and they simply are not used in Africa or elsewhere to determine the status of the epidemic. As an alternative, UNAIDS and its predecessor organisations have promoted the development of sentinel surveillance systems. This is a practical way for an African country to gather information about HIV/AIDS.

In Zambia, for example, MOH and CBOH implemented a sentinel survey in 1998. The implementation team designated certain health centres or hospitals as sentinel sites in each of the nine provinces. Lusaka had four sites; North-Western and Luapula three each; and the remaining six provinces each had two sites.

Pregnant women visiting for the first time for care of the current pregnancy are the key to the sentinel system. Health workers at all health facilities routinely take blood samples from these women to test for problems that might affect the pregnancy. What differs at a sentinel surveillance site is that blood samples from the women are then sent to a laboratory to be tested for HIV. Certain basic information is sent along with each sample – for example, age and urban or rural residence – but not the name of the woman who remains anonymous. HIV investigators know, for example, that a certain blood sample belongs to a 24-year-old woman resident in a rural area but not the identity of that woman.

The sentinel surveillance team collects and tests a certain number of samples at each site. These samples can then be used to understand HIV prevalence in an area. For example, in Eastern Province, the two sites were located at Chipata and Minga. The sentinel team collected and tested a total of 987 blood samples from pregnant women from these two sites. With this information, analysts determined that 28.0 percent of urban women and 13.1 percent of rural women tested at the two sites were HIV-infected.

These percentages can then be applied to the total number of urban and rural women aged 15 to 49 in Eastern Province to arrive at an estimate of HIV prevalence for the province. Because there are many more rural than urban women in Eastern Province, HIV prevalence in rural areas has to be given proportionately more weight than HIV prevalence in urban areas. When this is done and the calculations are completed, the analysis based on the sentinel surveillance results indicated that HIV prevalence among 15 to 49 year old women in Eastern Province is 14.6 percent. If the assumption is used that the sentinel surveillance results closely approximate HIV prevalence among all 15 to 49 year olds, then this procedure also gives an estimate of overall HIV prevalence. Similar calculations can be done for all provinces. These can then be weighted by the population size of each province to arrive at a national estimate of HIV prevalence.

For many countries that only have sentinel surveillance surveys, this would be the end of the process. But Zambia also has information from population-based surveys. Population-based surveys differ from the sentinel sites in that fluid samples are taken from both men and women and often from additional age groups. Because the population-based surveys are more expensive and difficult to organize than the sentinel surveys, they are usually restricted to a city or specified rural area. The population-based studies can provide much more detail on behaviour and risk factors than the sentinel surveys. In Zambia, the population-based sites are the same as certain sentinel surveillance sites; therefore, the population-based findings can be used to determine how accurately the sentinel surveillance results reflect prevalence in the entire 15 to 49 year old age group.

MOH/CBOH undertook population-based surveys in the Chelston area of Lusaka and in Kapiri Mposhi in 1995/96 and in 1998. (The only results available from the 1998 surveys at the time when this document was submitted to the printer were those from the rural areas of Kapiri Mposhi.) In addition, the Tropical Diseases Research Centre, as part of a multicentre study on factors affecting the spread of HIV in African towns, conducted a population-based survey on HIV prevalence and sexual behaviour in Ndola in 1998.

The results from these different population-based surveys are consistent with each other. When the sentinel surveillance results for antenatal care women aged 15 to 49 are compared to the population-based findings for all persons ages 15 to 49, the comparison shows that the sentinel results are only slightly lower than the population-based results in urban areas but tend to underestimate more substantially actual HIV prevalence in rural areas. Based on these observations, the estimates from the sentinel surveillance surveys should be adjusted to account for underestimation.

The adjustment to account for the fact that sentinel surveillance seems to underestimate actual HIV prevalence among 15-49 year olds can be done in two steps. First, age-sex specific HIV infection rates for urban and rural areas from the population-based surveys are applied to age-sex distributions of the population in each province. This application gives an HIV prevalence estimate for urban and rural areas and the entire province.

But because the same set of age-sex specific HIV-infections rates is applied to all provinces, the provincial results will be quite close to one another, varying only according to the age-sex distribution of the population ages 15 to 49. In actuality, the sentinel surveillance results show that HIV prevalence varies quite significantly from province to province. Therefore, a second step in the adjustment process is necessary to account for the variation among provinces. This second step is done by dividing provincial sentinel surveillance estimates by national sentinel surveillance estimates and then multiplying the result by the provincial estimate derived in the first step of the adjustment process. The final outcome is an estimate of HIV prevalence for 15 to 49 year olds by province that (1) adjusts the sentinel surveillance results to account for the observation that sentinel surveillance in Zambia underestimates actual HIV prevalence among 15 to 49 year olds, and (2) accounts for variation in HIV prevalence levels among provinces.

An example follows from Eastern Province to illustrate the overall approach.

1. The two designated sentinel surveillance sites in Eastern Province in 1998 were in Chipata and Minga. The sentinel surveillance team tested the blood samples of 987 pregnant women receiving care at these two sites.
2. The laboratory results showed that 28.0 percent of the women tested from urban areas and 13.1 percent of the women from rural areas were HIV-infected.

3. If percentage age-sex distributions from CSO provincial population projections are applied to the results of SPECTRUM model population projections, then there were 28,122 women ages 15 to 49 in the urban areas of Eastern Province in 1998. If 28 percent of these were HIV-infected, then 7,875 urban women were HIV positive. Similarly, if 13.1 percent of 254,194 rural women were infected, then the number of rural infections was 33,300.
4. If total infections (7,875 + 33,300) are divided by the total number of women in the 15 to 49 year old age group (28,122 + 254,194) and converted to a percentage, then estimated HIV prevalence for Eastern Province based solely on the sentinel surveillance results is 14.6 percent.
5. If the age-specific HIV infection rates for urban areas from the population-based surveys (an average of the findings from the 1995-96 Lusaka and 1998 Ndola surveys), are applied to an estimated distribution of the urban population of Eastern Province, the results show an estimated urban prevalence of 28.3 percent.
6. Urban prevalence in the Eastern Province sentinel survey (28.0 percent) is higher than estimated urban prevalence for the country as a whole (27.3 percent), as derived from the sentinel surveillance results. Therefore, the estimate from Step 5 has to be adjusted upwards. The calculation shows that $28.0/27.3$ is 1.026 and that 1.026×28.3 is 29.0. So, the final estimate of urban HIV prevalence for the 15 to 49 year old population for Eastern Province is 29.0 percent. This is less than 4 percent higher than the rate estimated directly from the sentinel surveillance system for Eastern Province and reflects the adjustment made to accommodate the population-based survey findings
7. If the age-specific HIV infection rates for rural areas from the population-based surveys (the results of the 1998 Kapiri Mposhi survey), are applied to an estimated age-sex distribution of the rural population of Eastern Province, the results show an estimated rural prevalence of 13.5 percent.
8. Rural prevalence (13.1 percent) in the Eastern Province sentinel survey is higher than that rural prevalence for the country as a whole (11.7 percent), as determined from the sentinel surveillance results. Therefore, the estimate from Step 7 has to be adjusted upwards. The calculation shows that $13.1/11.7$ is 1.12 and that 1.12×13.5 is 15.1. Therefore, the final estimate of HIV prevalence for the 15 to 49 year old population for Eastern Province is 15.1 percent. This is about 15 percent higher than the rate estimated directly from the sentinel surveillance system and reflects the adjustment made to accommodate the population-based survey findings.
9. The final estimates of HIV prevalence, ages 15 to 49 for Eastern Province are 29.0 percent for urban areas and 15.1 percent for rural areas. These can be applied to the total number of urban residents, ages 15 to 49 in 1998 (55,967) and rural residents (512,841) to determine the number of urban (16,216) and rural (77,439) HIV infections in the province.

10. Overall, the number of infections (16,216 + 77,439) divided by the population ages 15 to 49 (55,967 + 512,661) and converted to a percentage equals 16.5 percent.
11. This is the final prevalence estimate for Eastern Province. HIV prevalence among 15 to 49 year olds is estimated to be 16.5 percent.
12. The prevalence for all the provinces can be calculated in this manner and then the prevalence estimates for the different provinces can be weighted according to projected population size to arrive at an estimate for the country as a whole. In the final analysis, estimated HIV prevalence for 15-49 year olds in Zambia is calculated to be 19.7 percent.

In this way, the information gathered from the sentinel surveillance surveys and the population-based surveys can be used to arrive at a reasonable estimate of HIV prevalence in Zambia. This is an estimate that is dependent on certain assumptions. But by any account, it seems reasonable to conclude that HIV prevalence in Zambia is, at minimum, in the high teens and has been at that level since earlier in the 1990s.

VII. SELECTED SOURCES

"AIDS: The Heavy Toll on the Economy," Southern African Economist (April 15 - May 15, 1997), 3 - 8.

Bernstein, Robert S.; David C. Sokal; Steven T. Seitz; Bertran Auvert; John Stover and Warren Namaara. "Simulating the Control of a Heterosexual HIV Epidemic in a Severely Affected East African City: Computational Modeling of Single vs. Combined Intervention Strategies with the iwgAIDS and SimuAIDS Models." Interfaces (forthcoming).

Blacker, John and Basia Zaba. "HIV Prevalence and Lifetime Risk of Dying of AIDS." Health Transition Review, Supplement 2 (20), 1997, pp. 45 - 62.

Central Statistical Office. Census of Population, Housing and Agriculture, 1990: Descriptive Tables, Volume 10, Zambia Total. Lusaka: Central Statistical Office, 1994.

Central Statistical Office, Gender Statistics Unit. Gender Statistics Report. Lusaka: Central Statistical Office, 1996.

Central Statistical Office, Ministry of Health and Macro International Inc. Trends in Demographic, Family Planning and Health Indicators in Zambia, 1980-1996. Calverton, Maryland: Central Statistical Office and Macro International Inc., 1997.

Central Statistical Office, Ministry of Health and Macro International Inc. Zambia Demographic and Health Survey, 1996. Calverton, Maryland: Central Statistical Office and Macro International Inc., 1997.

Central Statistical Office, Ministry of Health, Project Concern International and MEASURE Evaluation. Zambia Sexual Behaviour Survey 1998. Lusaka: Central Statistical Office, 1999.

Central Statistical Office, Population and Demography Branch. Census of Population, Housing and Agriculture, 1990: Volume 10, Zambia Analytical Report. Lusaka: Central Statistical Office, 1995.

Central Statistical Office, Population and Demography Branch. 1990 Census of Population, Housing and Agriculture: Demographic Projections, 1990-2015. Lusaka: Central Statistical Office, 1995.

Chela, C.M.; R. Msiska; M. Sichone; B. Mwiinga; A. Martin; C.B. Yamba; S. Anderson and E. Van Praag. Cost and Impact of Home-Based Care for People Living with HIV/AIDS in Zambia, 1994. Ministry of Health and World Health Organization, Global Programme on AIDS, 1994.

Ching'ambo, Lloyd J.; Kamima Mwanza; Denny H. Kalyalya; Martin F. Phiri; and Simeon W.M. Kunkhuli. The Socio-Economic Impact of HIV/AIDS on Selected Sectors and Industries in Zambia. A study commissioned by the Swedish International Development Agency (SIDA), World Health Organisation (WHO) and the Ministry of Health of the Republic of Zambia, November 1995.

Drinkwater, Michael. The Effects of HIV/AIDS on Agricultural Production Systems in Zambia: A Summary Analysis of Case Studies Conducted in the Mpongwe Area, Ndola Rural District and Teta Area, Serenje District. Ministry of Agriculture, Food and Fisheries, 1993.

Forgy, Larry and Allast Mwanza. The Economic Impact of AIDS in Zambia. Lusaka: Report for the Ministry of Health and USAID, 1994.

Foster, Susan. Cost and Burden of AIDS on the Zambian Health Care System: Policies to Mitigate the Impact on Health Services. USAID report, 1993.

Fylkesnes, K.; A. Haworth; C. Rosensverd; P.M. Kwapa. "HIV Counselling and Testing: Overemphasising High Acceptance Rates a Threat to Confidentiality and the Right Not to Know," AIDS (forthcoming).

Fylkesnes, K. and K. Kasumba. "The First Zambian Population-Based HIV Survey: Saliva-Based Testing is Accurate and Acceptable," AIDS 12 (1998), 540-541.

Fylkesnes, K.; M. Sichone and K. Kasumba. "A Population-Based HIV Study Using Saliva Specimens: Socio-Demographic Determinants of Infection in Zambia," Paper presented at the Xth International Conference on AIDS and STDs in Africa, Abidjan, 1997.

Fylkesnes, K.; M. Sichone; and M. Karael. "HIV Epidemics and Behaviours: Evidence of Favourable Change in Lusaka, Zambia," Paper presented at the 12th World AIDS Conference, Geneva, 1998.

Fylkesnes, K.; Z. Ndhlovu; K. Kasumba; R. Musonda; and M. Sichone. "Studying Dynamics of the HIV Epidemic: Population-Based Data Compared with Sentinel Surveillance in Zambia," AIDS 12 (1998), 1227-1234.

Fylkesnes, Knut; Helge Brunborg; and Roland Msiska. Zambia: The Current HIV/AIDS Situation and Future Demographic Impact. Lusaka: Ministry of Health, 1994.

Fylkesnes, Knut; Rosemary M. Musonda; Kelvin Kasumba; and Zacchaeus Ndhlovu. Dynamics and Determinants of the HIV Epidemic: Major Zambian Epidemiological, Demographic and Behavioural Observations. Paper presented at the UNAIDS workshop on "Evidence of behavioural change in the context of HIV decline in Uganda," Nairobi, Kenya, February 1997.

Fylkesnes, Knut; Rosemary Mubanga Musonda; Kelvin Kasumba; Zacchaeus Ndhlovu; Fred Mluanda; Lovemore Kaetano; and Chiluba C. Chipaila. "The HIV Epidemic in Zambia: Socio-demographic Prevalence Patterns and Indications of Trends Among Childbearing Women," AIDS 11 (1997), 339-345.

Government of the Republic of Zambia and UNICEF. Master Plan of Operations and Programme Plans of Operations for a Programme of Cooperation between the Government of the Republic of Zambia and UNICEF for the Children and Women of Zambia. March, 1997.

Hunter, Susan. Orphans and HIV/AIDS in Zambia: An Assessment of Orphans in the Context of Children Affected by HIV/AIDS. UNICEF, 1998.

Hunter Susan S. and Jill Donahue. HIV/AIDS Orphans and NGOs in Zambia: Strategy Development for USAID/Zambia Mission Programming for Family and Community Care of Children Affected by HIV/AIDS. USAID report, June 1997.

Hunter, Susan S. and John Williamson. Developing Strategies and Policies for Support of HIV/AIDS Infected and Affected Children. USAID draft report, February 1997.

International Labour Organization, Eastern Africa Multidisciplinary Advisory Team (EAMAT). The Impact of HIV/AIDS on the Productive Labour Force in Zambia. Geneva: International Labour Organization, 1995.

Loewenson, Rene and Alan Whiteside. Social and Economic Issues of HIV/AIDS in Southern Africa: A Review of Current Research. SAfAIDS Occasional Paper Series No. 2, Helen Jackson ed. Harare, Zimbabwe: Southern Africa AIDS Information Dissemination Service, 1997.

Macwan'gi, Mubiana; Moses Sichone; and Patricia Nalufu Kamanga. Women and AIDS in Zambia: Situation Analysis and Options for HIV/AIDS Survival Assistance. Lusaka: National AIDS Prevention and Control Programme, Ministry of Health, 1994.

Ministry of Finance and Economic Development. Zambia's National Population Policy (draft), 1998.

Ministry of Health and Central Board of Health. Zambian Sentinel Surveillance: Time Trends in the 1990s. Lusaka, 1999.

Msiska, R. and K. Thuo. Zambia's Experience in Decentralisation of the National AIDS Programme and Development of the Second Medium Term Plan (1994-1998). Paper presented at the Fifth AIDS Programme Manager's Meeting, Arusha, Tanzania, October 1994.

Mukuka, L. and W. Kalikiti. The Impact of HIV/AIDS on Education in Zambia. Lukaka: Ministry of Health, 1995.

National HIV Sentinel Surveillance Team. Zambian HIV Sentinel Surveillance: Patterns and Trends of the HIV Epidemic (Draft Report). Ministry of Health, Central Board of Health, 1999.

Nsemukila, Geoffrey. Maternal and Childhood Mortality in Zambia: Determinants and Trends, 1965-1992, UNICEF Monograph No. 1. Lusaka: UNICEF, 1994.

Over, Mead; Martha Ainsworth; et al. The Economic Impact of Adult Mortality from AIDS and Other Causes on Households in Kagera, Tanzania. World Bank, 1996.

Stoneburner, Rand L. and Manuel Carballo. An Assessment of Emerging Patterns of HIV Incidence in Uganda and Other East African Countries. Final Report of Consultation for Family Health International, AIDS Control and Prevention Project (AIDSCAP). Geneva: International Centre for Migration and Health, 1997.

Sukwa, Thomas T. Y.; Frederick A. D. Kaona; and Rosemary M. Musonda. Preliminary Report on Multicentre Study on Factors Determining Differential Spread of HIV in African Towns (Ndola Site). Ndola: Tropical Diseases Research Centre, 1999.

Waller, Kate. Prospects for Agriculture in Southern Province: The Impact of HIV/AIDS on Farming Households in the Monze District of Zambia. Working Paper for the Workshop on *Prospects for Agriculture in Southern Province* at the Zambia College of Agriculture, 1997.

World Bank. Confronting AIDS: Public Priorities in a Global Epidemic. New York: Oxford University Press, 1997.

Zambia National AIDS/STD/TB & Leprosy Programme. Strategic Plan, 1994 - 1998: A Time to Act, A Time to Care. Lusaka, 1994.

Zambia National AIDS/STD/TB & Leprosy Programme and the Southern Africa Department of the World Bank. HIV/AIDS in Zambia: A Policy Maker's Perspective. Lusaka, 1996.

Zambia National HIV/AIDS/STD/TB Council. Zambia National HIV/AIDS Strategic Plan Summary, 1999 - 2001 (draft). May 1999.

For more information about this briefing book or to schedule a presentation for your organisation, please contact

Central Board of Health

Ndeke House

P.O. Box 32588

Lusaka, Zambia

Telephone: 253180/81/82

Telefax: 253173