HIV/AIDS IN GHANA

CURRENT SITUATION
PROJECTIONS
IMPACTS
INTERVENTIONS

NATIONAL AIDS/STI CONTROL PROGRAMME
GHANA HEALTH SERVICE

GHANA AIDS COMMISSION

4TH EDITION, SEPTEMBER 2004

REPUBLIC OF GHANA
GHANA AIDS COMMISSION
USAID
GHANA HEALTH SERVICE
National AIDS/STI Control Programme of the Ghana Health Service (NACP/GHS) and the Ghana AIDS Commission

September 2004

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Disclaimer: The people shown in the photographs on the cover of this document are not HIV/AIDS positive.
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<th>Description</th>
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<tbody>
<tr>
<td>AIDS</td>
<td>Acquired immune deficiency syndrome</td>
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<tr>
<td>AIM</td>
<td>AIDS Impact Model in SPECTRUM Software Modules</td>
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<td>API</td>
<td>AIDS Programmes Effort Index</td>
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<td>ANC</td>
<td>Antenatal clinic</td>
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<td>ARV</td>
<td>Anti-retroviral</td>
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<td>AYA</td>
<td>African Youth Alliance</td>
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<td>CIDA</td>
<td>Canadian International Development Agency</td>
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<td>CCISD</td>
<td>Centre de Cooperation Internationale en santé et Development</td>
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<tr>
<td>DemProj</td>
<td>Demographic Projection Model SPECTRUM Software Modules</td>
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<td>DFID</td>
<td>British Department for International Development</td>
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<td>DRI</td>
<td>District Response initiative</td>
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<td>EPP</td>
<td>Estimations and Projections Package</td>
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<td>FHI</td>
<td>Family Health International</td>
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<td>GAC</td>
<td>Ghana AIDS Commission</td>
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<td>GarFund</td>
<td>Ghana AIDS Response Fund</td>
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<td>GDHS</td>
<td>Ghana Demographic Health Survey</td>
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<tr>
<td>GFATM</td>
<td>Global Fund to Fight AIDS, Tuberculosis and Malaria</td>
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<td>GHS</td>
<td>Ghana Health Service</td>
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<tr>
<td>GPRS</td>
<td>Ghana Poverty Reduction Strategy</td>
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<td>GSMF</td>
<td>Ghana Social Marketing Foundation</td>
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<tr>
<td>HAART</td>
<td>Highly Active Antiretroviral Therapy</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>ILO</td>
<td>International Labour Organization</td>
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<td>IPAA</td>
<td>International Partnership Against AIDS in Africa</td>
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<tr>
<td>JHU/CCP</td>
<td>Johns Hopkins University Centre for Communications Programme</td>
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<tr>
<td>MAP</td>
<td>Multi-country Assistance Programme</td>
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<tr>
<td>MDGs</td>
<td>Millennium Development Goals</td>
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<tr>
<td>MOH</td>
<td>Ministry of Health</td>
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<tr>
<td>MSM</td>
<td>Male Sex Workers, &quot;men who have sex with men&quot;</td>
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<tr>
<td>MTC</td>
<td>Mother-to-child</td>
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<td>MTCT</td>
<td>Mother-to-child Transmission</td>
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<tr>
<td>MTP</td>
<td>Medium-term Plan</td>
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<tr>
<td>NACP</td>
<td>National AIDS/STI Control Programme</td>
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</table>
NGOs  Non-governmental Organisations
NSF  National Strategic Framework
OI  Opportunistic Infections
PLWHA  Person Living with HIV/AIDS
PMTCT  Prevention of Mother-to-child Transmission
PPAG  Planned Parenthood Association of Ghana
RTI  Reproductive Tract Infection
START  Support, Treatment, and Antiretroviral Therapy
STI  Sexually Transmitted Infection
STP  Short-term Plan
TB  Tuberculosis
UNAIDS  Joint United Nations Programme on AIDS
UNDP  United Nations Development Program
UNGASS  United Nations General Assembly Special Session on HIV/AIDS
USAID  United States Agency for International Development
VCT  Voluntary Counselling and Testing
WARP  West Africa Regional Programme
WAPCAS  West Africa Project to Combat AIDS and STIs
WHO  World Health Organization
Foreword

Ghana's resolve and commitment to reverse the trend of the HIV/AIDS epidemic has undergone a paradigm shift in its multi-sectoral approach, the introduction of anti-retrovirals (ARVs) and research to understand the epidemic in our particular environment, as well as the move to take advantage of the options that are open to us.

The HIV/AIDS epidemic continues to be a major challenge both to public health and the socio-economic development of the country. If unchecked, the epidemic will threaten, or even reverse, some of the important, hard, won gains in sectors such as health, education, and human resource development, among others. The physical, psychological, and emotional devastation brought about by the epidemic is causing great suffering not only to the people of Ghana, but also other peoples in our sub-region and the world at large.

The virus that causes AIDS has already infected and is affecting many Ghanaians. Recent sentinel surveillance results based on the 2003 findings showed that about 3.6 percent of the entire adult population aged 1549 (close to 400,000 people) is currently infected in Ghana. This is indeed a worrying sign, and even more disturbing is the fact that most of these people do not even know they are infected.

It is for this reason that the Ministry of Health, the Ghana Health Service, and the Ghana AIDS Commission recognise the importance of providing accurate and up-to-date information on the extent and magnitude of the HIV/AIDS epidemic in Ghana. This revised edition is the fourth to date in a series of booklets titled HIV/AIDS in Ghana: Current Situation, Projections, Impacts, and Interventions, first produced in 1995. It seeks to provide the most recent data and information on HIV/AIDS in the country and uses information from the sentinel surveillance survey conducted by the National AIDS/STI Control Programme of the Ghana Health Service (GHS/NACP) in 2003 and supplemented by the 2000 Population Census. Using models (SPECTRUM and Estimations and Projections Package [EPP]), this information is projected into the future to estimate the potential socio-economic implications and consequences of the epidemic. 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. One such area of critical intervention is in the prevention of mother to child transmission (PMTCT).

Current estimates show that if the HIV/AIDS epidemic does not abate, it will have significant implications on the country's economy, especially for health care costs that will have to be paid by the government of Ghana to meet care and treatment needs. For example, if all pregnant women who are HIV positive were to receive the nevirapine therapy, it would cost about C11 billion ($1.2 million) per annum. Another $47 million would be needed to treat HIV-infected persons at WHO Stages III and IV of the illness with ARVs only, not taking into account the cost of viral load testing. This indeed underscores the resources and capacity that will need to be mobilised to combat the HIV epidemic in the coming years.

Given the enormous resource needs as indicated above, prevention efforts must aim to reduce the rate of HIV transmission in our communities through wide, ranging behavioural change interventions and programmes. This, together with other time-tested interventions, should give hope that halting the spread of HIV is achievable.
I am pleased that this “HIV/AIDS in Ghana” booklet 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 good use of this book in their day to day planning for HIV/AIDS activities and programmes. In view 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 Ghana and the Ministry of Health 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 the epidemic and move Ghana forward towards reducing transmission and the mitigation of its impacts.

I wish to thank representatives from the various organisations and agencies, including the Ghana AIDS Commission, who contributed to the development of this booklet. I also wish to thank the U.S. Agency for International Development (USAID) for the financial support and POLICY Project, Ghana for the technical assistance rendered in the development of the document.

Dr. Kwaku Afriyie
Minister for Health
Introduction

The HIV/AIDS epidemic has become a serious health and development challenge in many countries around the world. According to recent estimates by the Joint United Nations Programme on AIDS (UNAIDS), about 38 million people worldwide are infected with HIV, and about 25 million HIV-infected people live in sub-Saharan Africa. There are no signs that the spread of the disease is abating; in 2003 alone, an estimated 3 million people contracted HIV in sub-Saharan Africa, while about 2.2 million people died from AIDS, related causes on the subcontinent. In many African countries, more women are infected than men.

The virus that causes AIDS has already infected and is infecting many Ghanaians. By the end of 2003, close to 4 percent (3.6%) of the country’s adult population was estimated to be HIV-infected. This translates to about 395,000 Ghanaians aged 15-49 years. Most of these people do not even know they carry the virus. From the mid-1980s when the epidemic began to the end of 2003, about 200,000 persons may have already developed AIDS, and about 168,000 may have died of AIDS, related causes even though all of these deaths were not officially recorded. Although the availability of antiretroviral (ARV) drug treatment could reduce the total number of persons who may die from AIDS, the cost of these drugs is still beyond the reach of many persons living with HIV/AIDS (PLWHAs) in Ghana. The disease continues to be one of the most serious development issues in the country, which could likely have implications on achieving the goals of the Ghana Poverty Reduction Strategy (GPRS) and on reaching the Millennium Development Goals (MDGs).

Despite this situation, much can be done to alter the course of the HIV/AIDS epidemic in Ghana. HIV is not spread by casual contact, by mosquitoes, or in the air or water. HIV is spread by certain types of human behaviour; therefore, it can be controlled by changes in those behaviours. Continued involvement from all sectors of Ghanian society is needed to promote interventions to reduce high, risk sexual behaviours, treat and control other sexually transmitted diseases, maintain a safe blood supply, ensure safe use of needles, and mitigate the problems of those already infected with HIV and those otherwise affected by the epidemic through the provision of various care and support programmes. More than 95 percent of the adult population aged 15-49 remains free of the infection, and all of these people have the opportunity to protect themselves from the disease.

This report is designed as an advocacy tool to assist policy makers and other relevant stakeholders in stimulating dialogue about sustainable, contextually appropriate responses to HIV/AIDS in Ghana. An exhaustive review of the complexities and data related to the epidemic is beyond the scope of this document. Instead, this report seeks to provide an overview of the current HIV/AIDS situation in Ghana; project the future direction of the epidemic using the best available data; highlight some of the key social and economic impacts of the pandemic; and discuss strategies that will be needed to reduce the spread of HIV/AIDS, improve care and support, and mitigate associated impacts.
The information in this booklet is provided in the following five sections:

**Background: Setting the Stage**
What we know about HIV/AIDS in Ghana today

**Eyes on the Horizon**
Numbers of people who might develop AIDS in the future

**Issues in Focus**
Specific programmatic issues related to the HIV/AIDS challenge and some of the social and economic impacts of HIV/AIDS

**The National Response**
Interventions, policy issues, the National Strategic Framework, and institutional structures that have been put into place to combat the epidemic

**Moving Forward**
What needs to be done to prevent the continuing spread of HIV/AIDS and to mitigate its impact in Ghana

This material is also available as an interactive computer presentation. Requests for presentations of this material or copies of this booklet should be directed to the National AIDS/STI Control Programme (NACP) or Ghana AIDS Commission (GAC) at the following addresses.

**National AIDS/STI Control Programme**
Disease Control Unit, Ministry of Health/Ghana Health Service
P.O. BOX KB 493
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Section One

SETTING THE STAGE

This section focuses on the history of the HIV/AIDS pandemic in Ghana. It provides basic facts about HIV/AIDS, outlines the primary modes of transmission and other contributing factors, and presents current estimates on the magnitude of the epidemic.
Section One: Setting the Stage

Understanding HIV and AIDS

AIDS stands for acquired immune deficiency syndrome. It is a disease caused by the human immunodeficiency virus or HIV. The virus acts by weakening the immune system, making the body susceptible to and unable to recover from opportunistic infections (e.g., tuberculosis). A person is said to have developed AIDS when there has been significant deterioration of the immune system; it is generally characterised by the presence of specific opportunistic infections and cancers.

While there is currently no cure for HIV/AIDS and vaccines and microbicides to prevent HIV transmission are still under development, ARV therapy and prompt treatment of reproductive tract infections (RTIs), opportunistic infections (OIs) such as tuberculosis (TB), malaria, and candidiasis has been shown to extend life for many people.

HIV Transmission Mechanisms

HIV is present in the blood, sexual fluids, and breast milk of people who are infected with the virus. HIV is also present in the saliva of an infected person, but scientists note that it is not in quantities sufficient to transmit infection if there are no ulcerations in the person's mouth. Similarly, the risk of dried fluids transmitting the virus is considered to be close to zero.

There are several myths associated with how one can acquire the virus. HIV cannot be caught

- Through the air or by coughing and sneezing
- By kissing, touching, or shaking hands
- By sharing crockery or cutlery
- Through contact with toilet seats
- Through insect or animal bites
- Through sharing a common swimming pool
- By eating food prepared by someone with HIV.

In Ghana, as in the rest of Africa, two transmission mechanisms account for most new HIV infections: heterosexual contact and mother-to-child transmission (MTCT). HIV can also be
transmitted through contaminated blood, for example, through transfusions or the sharing of needles or blades that have been in contact with the blood of an HIV-infected person.

- **Heterosexual Contact.** The majority (80 percent) of infections are transmitted through heterosexual contact. Although the probability of transmitting HIV during intercourse can be quite low, a number of factors increase the risk of infection dramatically. One is the presence in either partner during unprotected sex of a sexually transmitted infection (STI), such as syphilis or gonorrhoea. These diseases form ulcers and sores that facilitate the transfer of the virus.

A significant number of Ghanaian adults do suffer from STIs, and many have multiple sexual partners but do not use condoms to protect themselves. The 2003 sentinel surveillance results show that there is a high rate of syphilis infection among young people, with Cape Coast and Eikwe in the Western region accounting for nearly 70 percent of all syphilis infections.

It is estimated that most new HIV infections in Ghana are due to heterosexual contact. While homosexual contact can also be an efficient mode of HIV transmission, it is important to stress the overwhelmingly dominant role of heterosexual contact in spreading the virus in Ghana. Programmes designed to slow the spread of HIV will need to focus on reducing transmission through unprotected sexual contact. In the longer term, strategies will also have to address the underlying social and economic factors contributing to the spread of the disease.

- **Mother-to-Child Transmission.** Many children are infected through MTCT. They may become infected from their mothers during pregnancy, at the time of birth, or through breastfeeding. Without prevention and treatment interventions, 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 when their parents die from AIDS. MTCT accounts for approximately 15 percent of all HIV transmission.

The chart above shows that other modes of transmission contribute much less to the spread of the disease in Ghana. Nonetheless, it is still important to guard against sharing of contaminated blood and blood products, reused needles, and other unsterilised medical tools such as knives or razor blades, which might transfer the virus. It is also especially important to stop some traditional practices, such as female circumcision, and unsafe delivery practices that can increase the potential exposure of infected blood between the woman and the health care provider, putting them both at risk.

**Key Concept: PMTCT Plus**

Traditionally, strategies for prevention of mother-to-child transmission (PMTCT) have focused primarily on protecting the infant from HIV transmission either during pregnancy and childbirth or through breastfeeding. Increasingly, however, health advocates and public health officials are recognising the need to provide support for mothers - not just their children - as failure to do so condemns the children to becoming orphans at an earlier age. "PMTCT Plus" strategies emphasise not only preventing HIV transmission from mother to child, but also providing care, support, and treatment to mothers and other affected family members. These approaches are designed to improve support for children and also improve the viability of families. Comprehensive PMTCT Plus packages would include voluntary counselling and testing, prophylaxis and treatment for opportunistic infections, ARV therapy, and psychosocial support, among others.
Incubation Period

After transmission of HIV, a person does not immediately develop AIDS. Often there is a lengthy period from infection with HIV to development of the AIDS that may last 5-10 years or even longer. With the provision of ARV drugs, treatment of opportunistic infections (OIs), and better nutrition, this period can be lengthened. The average time from infection with HIV to development of AIDS without ARVs is estimated to be 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 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 realizing it.

HIV Incubation Period (Adults)

No one is quite sure why some infected individuals develop AIDS at a slower or faster pace than others. HIV-infected persons in countries where the overall health of the population is poor may have shorter incubation periods, on average, than those in countries with better health conditions.

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. A few may survive as long as 10 years, but all infected infants will eventually develop AIDS and die if they receive no ARV treatment.

What are ARVs?

Anti-retroviral (ARV) drugs interfere with the replication of HIV. ARV therapy, which is normally a combination of two or more ARV drugs, assist in restoring the immune function of the treated person by suppressing the viral load. Notably, ARVs increase survival but are not a cure. Although the costs of ARV therapy are declining, they are still out of reach for most people in developing countries. However, more international resources for care and treatment are becoming available through various mechanisms and efforts by the national governments, donors, and multi-national companies.
HIV Incubation Period (Children)

30 - 40% of babies of HIV positive mothers are infected

Infected

<1 - 5 years

AIDS

<1 year (on average)

Death

Common Signs and Symptoms of AIDS

In Ghana, an individual infected with HIV is said to have developed AIDS when he or she has a combination of major and minor signs and symptom, typically, two of each type.

Major Signs and Symptoms

- Prolonged fever (more than one month).
- Prolonged and chronic diarrhoea (usually over a month).
- Significant weight loss (over a period of time and more than 10 percent of body weight).

Minor Signs and Symptoms

- Persistent cough for more than one month.
- Persistent skin infection.
- Aggressive skin cancer (Kaposi's sarcoma).
- Oral thrush (candidiasis).
- Recurrent shingles ("ananse").
- Enlargement of the lymph glands.

High-Risk Groups vs. High-Risk Behaviours

While HIV infection may be detected more often in certain groups, this does not mean there is something inherent in those groups of people that cause HIV infection. Rather, it is the practice of high-risk behaviours, such as unprotected sex, and sharing needles, in the presence of the virus that initially promotes transmission within so-called "high-risk groups." Since HIV is transmitted primarily through unprotected sex, contaminated needles, and contaminated blood, during the early stages of an epidemic the virus is likely to spread among those groups that practice high-risk behaviours. These groups are also referred to as "vulnerable populations", though, again, it is important to remember that HIV is not limited only to those groups.

Unfortunately, association with HIV/AIDS often confounds the situation for populations that are already stigmatised or marginalised by society. Stigmatisation and association of HIV/AIDS with certain groups promotes a disregard for the underlying factors that drive the
spread of HIV such as poverty, unemployment, low level of education, and lack of access to information, medical, and social services. This stigmatisation also provides a false sense of security for those who are not members of the stigmatised groups and hinders a meaningful development of prevention and care efforts.

When trying to develop prevention, care, and support programmes, policy makers and programme planners must also consider the diversity that exists within vulnerable populations. For example, persons who engage in transactional sex (commercial sex workers) in Ghana can be divided into two categories: seaters and roamers.

- **Seaters** are generally less educated Ghanaians living in relatively controlled areas where their profession is known, and where they wait for clients to come to their homes. They stay in these localities for some length of time, generally several years.
- **Roamers** are street, bar, or hotel sex workers. They are mostly young Ghanaian women and are a more mobile group. They dress in a provocative manner to attract potential customers. They usually have a “day job,” such as sewing or hairdressing.

Other vulnerable groups include **men who have sex with men (MSM)** and mobile populations. A recent study noted the existence of MSMs in Ghana, but there is still limited information about this group (Attipoe, 2004). **Mobile populations** across the region are also a varied group, one that includes refugees, truck drivers, migrant workers, military or uniformed personnel, and tourists, among others.

An understanding of the needs and circumstances of these diverse groups must inform policy and programme development, an effort that should be led by the Ghana AIDS Commission (GAC) and its partners.

**Reducing Risk to Prevent Infection**
One key method that can be used to prevent the transmission of HIV is the consistent use of condoms. Condoms are essentially impermeable to HIV-sized particles. Although no protective method other than abstinence is 100 percent safe, condoms, if used properly and consistently, are considered highly effective in reducing the risk of transmission. Injecting drug users can reduce the risk of contracting HIV by not sharing needles.

**The HIV/AIDS Pyramid**
From the beginning of the epidemic in 1986 to December 2003, 76,139 cases of AIDS were reported to the Ministry of Health/Ghana Health Service. However, reported AIDS cases represent only the visible part of the epidemic. A large number of cases go unreported, constituting what is often called the “hidden epidemic”, for several reasons:

- Some people never seek medical care for ailments and are unaware of the symptoms of AIDS.
- Some people lack access to health care services, especially in rural areas.
- Some physicians or nurses may not want to record a diagnosis of AIDS because of the stigma attached to the disease.
• Recording and reporting of AIDS cases is inadequate at all levels.
• People with AIDS do not necessarily die from the virus but from the OIs (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.

• Private laboratories do not report all their statistics on AIDS cases and are not required to do so.

The illustration to the right shows that the number of people reported to have developed AIDS in Ghana is only the “tip of the pyramid.” The true number of cumulative AIDS cases (1986 to December 2003) in Ghana is not known, but according to the projection model used in this study, it is estimated to be more than 200,000.

Yet, this constitutes only part of the problem. Many more people have been infected with HIV, the virus that causes AIDS, but have not yet been diagnosed and have not yet developed AIDS. The largest part of the pyramid, therefore, represents the number of Ghanaians who are currently HIV positive, estimated to be 395,000 as of December 2003. Most of these people do not know their HIV status and may unintentionally spread the epidemic.

The HIV/AIDS Epidemic in Ghana
With a current population estimated at 20.5 million (69 per km²), Ghana is located within the West African subregion. In many countries of West Africa, HIV sero-prevalence measured as the proportion of persons infected with HIV in the adult population ranges between 2 percent and 10 percent (Centre de Cooperation Internationale en Santé et Développement [CCISD], 2004).

The first AIDS cases were reported in Ghana in 1986. By the end of December 2003, a cumulative total of 76,139 AIDS cases had been officially reported. Current estimates, however, put the actual number of AIDS cases in Ghana closer to 200,000. AIDS cases have been reported in all 10 regions and all age groups. There are, however, important regional variations in the reported AIDS cases. These variations can be attributed to factors such as the composition of regional populations and a higher rate of HIV/AIDS in some population
groups compared to others, availability and accessibility of public health institutions, and the health-seeking behaviour of the people.

According to the UNAIDS/World Health Organization (WHO), any nation with an adult HIV prevalence of 1 percent or higher in the general population is characterised as experiencing a generalized epidemic. By this definition, Ghana's HIV prevalence depicts a generalised epidemic as indicated by data from the sentinel surveillance system, where median HIV prevalence was observed to be 2.4 percent in 1994 and has increased to 3.6 percent in 2003.

HIV prevalence rates are most pronounced among groups with sexual and social behaviours that put them at a higher risk of infection (e.g., persons who engage in transactional sex, those with multiple partners and youths). A recent study by Cote, Sobela, Dzokoto, et al (2004, p. 1-9) indicated an estimated HIV prevalence of 76 percent and 82 percent among sex workers in Accra and Kumasi, respectively. Sentinel survey data also show a higher prevalence of HIV among the youth aged 15-30. Furthermore, higher numbers of AIDS cases are reported in urban than rural areas.

Another characteristic of the epidemic in Ghana is that at the beginning of the epidemic, nearly 80 percent of those diagnosed had either travelled or had lived outside the country. This trend has since changed, with almost all of the new reported cases occurring among people without a history of travel.

In spite of its relatively low prevalence compared to some neighbouring countries in the West African subregion, Ghana must take effective measures now to avoid the disastrous consequences experienced by other countries where the HIV/AIDS epidemic spread faster. Of particular concern is the vulnerability of adolescents and young adults.

**Sentinel Surveillance System**

Since 1990, the Ministry of Health/Ghana Health Service (MOH/GHS) through the National AIDS/STI Control Programme (NACP) has conducted sentinel surveys among women attending antenatal clinics on an annual basis. This information is used for estimating the extent of HIV infection across the nation. The number of testing sites has increased from 20 in 1994 to 30 in 2003, and sentinel sites have been established in all 10 regions. However, human and financial resource constraints, logistics, and technical limitations have precluded the establishment of sites in all 110 districts. For 2003, the 30 sentinel sites were spread out in 28 districts throughout Ghana, including seven rural sites.

At these sites, health workers take blood samples from pregnant women as part of standard antenatal care. After routine laboratory tests for which the blood was originally drawn are complete and personal identifiers are removed, the samples are tested anonymously for HIV infection. Recommended by WHO, this procedure is used in almost all countries with a generalized HIV epidemic.

UNAIDS suggests that the best way to estimate the extent of the HIV/AIDS epidemic is to look at the percentage of persons aged 15-49 years who are infected with the HIV virus. The prevalence of HIV among pregnant women is therefore a good indicator of the spread of the
the epidemic in the general population, as the level of HIV infection among pregnant women is similar to the general population of men and women aged 15-49\(^1\) years.

To expand the range of sources for data on HIV infection among the general population, the 2003 Ghana Demographic and Health Survey (GDHS) household questionnaire included a protocol for HIV testing among the interviewees. The NACP is also planning to conduct multi-round, second-generation surveys in the future to augment the data collected from antenatal clinics for use in surveillance.

**Key Concept: Second-Generation Surveillance System**

Improving upon the first decade of HIV surveillance, WHO has developed guidelines for second-generation surveillance systems, which are intended to provide a more comprehensive picture of the nature of the HIV/AIDS pandemic\(^*\). In addition to HIV prevalence, the guidelines recommend monitoring the behaviours that are likely to put people at risk for infection (e.g., unprotected sex) and using supplementary sources of information, such as reproductive health surveys and surveillance of other related diseases (e.g., tuberculosis). Data from HIV sentinel surveillance systems can be used to characterise the epidemic as

- Low-level - not consistently exceeding 5 percent in any vulnerable group
- Concentrated - consistently above 5 percent in vulnerable groups but below 1 percent in the general population as measured in women attending antenatal clinics
- Generalised - over 1 percent in the general population as measured in women attending antenatal clinics

The NACP/GHS, with assistance from USAID, WHO, and other partners, has drawn up guidelines to implement second-generation surveillance to complement data from the antenatal clinics and to better understand the variations in HIV prevalence and trends.


\(^1\) Prevalence estimates from antenatal clinics tend to underestimate prevalence among all women and overestimate prevalence among men. They also overestimate prevalence among young women and overestimate among older women. These differences compensate for each other. As a result, prevalence among pregnant women is generally a good estimate of prevalence among all adults aged 15-49.

For more details, see appendix on estimating national HIV prevalence at the end of this booklet.
Age-Sex Distribution of Reported AIDS Cases

The chart below shows the cumulative number of reported AIDS cases through 2003 by age and sex. As noted previously, 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 Ghana.

![Age-Sex Distribution of Reported AIDS Cases through 2003](image)


This chart illustrates several interesting facts:

- More than 90 percent of AIDS cases are found among adults aged 15-49. Since this is the most economically productive segment of the population, illnesses and deaths in this age group constitute an important economic burden. Many productive years and much investment in education and training will be lost. These illnesses and deaths also have important family consequences since most people in this age group are raising young children.

- To date, about two-thirds of reported AIDS cases in Ghana have been females. One reason for this appears to be that persons engaging in transactional sex and returning from other countries accounted for a significant proportion of infections during the early stages of the epidemic. In either case, because the virus is usually transmitted by heterosexual contact, the differences in rates of infection between men and women tend to be reduced over time.

- The peak ages for AIDS cases are 25-34 for females and 30-39 for males.

- The number of reported AIDS cases for females in the 15-24 age group is much higher than for males in the same age group. This is due in part to early sexual activity by young females and the fact that they often have older partners.
Children between the ages of 5 and 14 may be a special "window of hope." If these children can be taught to protect themselves from HIV infection before they become sexually active, they can remain free of HIV for their entire lives. To achieve this goal, action must be taken now.

Unique Aspects of the HIV/AIDS Epidemic in Ghana

Three points are especially important in considering the HIV/AIDS epidemic in Ghana:

- The situation is extremely serious. Analysis suggests that about 395,000 Ghanaians were living with HIV by the end of 2003. However, this does not take into account those who have already died as a result of infection or those who are becoming infected daily. Virtually all of these people will likely die from AIDS-related causes.

- The data do not suggest that the epidemic has stabilised. For example, analysis of MOH sentinel surveillance data at all sites indicates that median adult HIV prevalence in the 15-49 age group in Ghana rose from 2.4 percent to 3.6 percent between 1994 and 2003. Although we do not know the future trend, there is certainly a danger that prevalence in Ghana could increase in the future as it has in neighbouring countries if strong HIV prevention efforts are not sustained.

- HIV has spread more slowly in Ghana than in many other African countries. For example, in several southern African countries, HIV prevalence among people 15-49 years old is now estimated at more than 15 percent. No one is quite sure why the epidemic has spread more slowly in Ghana and in some other West African countries. It's worth noting that many eastern and southern African countries had prevalence rates in the late 1980s similar to those currently found in Ghana and that the situation worsened rapidly. This suggests that an unchecked epidemic could still result in much higher prevalence levels in Ghana.

Clearly, while HIV/AIDS has taken a slower course in Ghana, the epidemic is serious and is already at a stage where it will have a profound impact on the various sectors of the nation.


![HIV Prevalence Chart](image)

While the sentinel data indicate that HIV infection exists in all parts of the country, there are important regional differences. As shown above, in 2003 the median HIV prevalence rates ranged from 2.1 percent in the Northern region to 6.6 percent in the Eastern region. The Eastern region has consistently reported the highest levels of HIV infection, mainly from the Agomanya and Koforidua sites. Prevalence in Greater Accra has been surprisingly low, considering that in most African countries some of the highest prevalence rates are usually found in the capital city and major urban centres. In Ghana, Greater Accra initially had one of the lower rates in the country, but the rate has been gradually increasing. Somewhat lower rates are found in the northern regions of the country, but the differences among regions have narrowed as the epidemic progresses.

A good way to summarise regional differences is to look at the median prevalence in the three geographic regions of the country. The median prevalence in the 15–49 age group is estimated to be 4.5 percent in the Southern Belt, 4.2 percent in the Middle Belt, and 2.6 percent in the Northern Belt. The overall national figure of 3.6 percent disguises these important regional differences.

This section provides projections of the future impact of the HIV/AIDS epidemic in Ghana, if HIV prevalence remains at current levels over the next ten years. This is only one of many scenarios that might unfold. Notably, the projected impact could be larger if HIV prevalence continues to go up.
Section Two: Eyes on the Horizon

Estimated and Projected Adult HIV Prevalence

HIV prevalence estimates and projected impacts in Ghana were determined using the Estimations and Projections Package (EPP) and SPECTRUM models. Details on the underlying methodology for each of the models, together with the inputs use, are provided in the appendix at the end of this document.

While estimated HIV prevalence among Ghanaians aged 15-49 years has grown modestly over the last 10 years compared with that in many other African nations, there is little evidence to suggest that this rise has peaked. According to the 2003 HIV sentinel survey report, only three sentinel sites (Takoradi, Jirapa, and Ho) showed a stabilisation or decline in HIV prevalence over the last five years. At all other sentinel sites, HIV prevalence consistently rose, in some cases by as high as 100 percent (National AIDS/STI Control Programme [NACP], 2003).

What is the Estimations and Projections Package (EPP)?

EPP is a tool developed by UNAIDS Reference Group on Estimates, Modelling and Projections and programmed at the East-West Center. The model is used to estimate and project adult HIV prevalence from surveillance data in countries with generalised epidemics such as that in Ghana. The input to EPP is surveillance data from various sites (by rural and urban stratification) and years showing HIV prevalence among pregnant women. EPP is used to fit an epidemic model curve to data from urban and rural sites. The fit curve smoothes out the year-to-year fluctuations in the sentinel data. Values from this curve (rather than the actual sentinel site point estimates) are used to estimate national prevalence. The national prevalence projections produced by EPP are then imported into SPECTRUM to calculate various indicators and impacts. Figure 1 below shows the estimated HIV prevalence using EPP compared to the sentinel site data for years 1994–2003. More information about the model can be obtained by visiting the following UNAIDS website: [http://www.unaids.org/en/resources/epidemiology/epl_softwaretools.asp](http://www.unaids.org/en/resources/epidemiology/epl_softwaretools.asp).
What is SPECTRUM?

SPECTRUM is a suite of models that can be used to prepare national and sub-national projections for HIV/AIDS, population, and reproductive health factors. SPECTRUM was developed by the POLICY Project and has been used widely by governments and non-governmental organisations to develop estimates. UNAIDS uses Demographic Projection Software in SPECTRUM Module (DemProj) and the AIDS Impact Model (AIM) to derive the national and regional estimates it releases every two years.

Using Ghana-specific demographic data from the census and other surveys, combine with assumptions on future fertility, mortality, and migration developed by local experts in the country. DemProj was used to project the population of Ghana by age and sex together with other demographic indicators. Using the estimated HIV prevalence from EFP, other available HIV/AIDS data in Ghana, and regional epidemiological patterns developed by the UNAIDS Reference Group Estimates, Models, and Projections, AIM was used to calculate the projected impact of HIV/AIDS in Ghana - using indicators such as the number of people infected with HIV, new infections, AIDS cases, AIDS deaths, new cases of tuberculosis, AIDS orphans, and other consequences. To learn more about SPECTRUM, visit the POLICY Project website at http://www.policyproject.com/software.cfnn.

In order to be able to project the impact of HIV/AIDS on the Ghanaian population in the future, it is necessary to make an assumption about future levels of adult HIV prevalence in the country. However, the pace and extent at which HIV prevalence in Ghana might rise or decline in the future is not known. This section provides a conservative projection of what the situation might be like in the next ten years (up to 2014) if the HIV continues to ravage the nation at the current rate. These projections are not a prediction of what is expected to happen, since it is anticipated that ongoing and up-and-coming HIV prevention, care, and treatment programmes in Ghana will eventually lead to a reduction in the incidence and prevalence of HIV. Yet, it is worth noting that HIV prevalence could also rise to higher levels than those currently being observed or projected here.

Number of HIV Infections

The number of persons infected with HIV in Ghana has risen steadily since the start of the epidemic in the mid-1980s. By 1994, an estimated 118,000 Ghanaians were living with HIV and the number more than tripled to about 404,000 in 2004.

Even if the current adult HIV prevalence levels do not increase over the next six years, the number of persons infected with HIV will continue to grow because of the increase in

Estimated and Projected Number of PLWHAs, 1986-2015

the adult population (as a result of population growth). Should HIV prevalence increase, this number will be much higher. In addition, the number of PLWHAs could even be higher when the epidemic is arrested. Improvements in care and treatment efforts, especially in the provision of ARV therapy and the treatment of OIs would prolong the lives of PLWHAs. As noted previously, about 90 percent of the persons infected with HIV are in their most productive years (15–49 years old). Hence, the implications of the HIV/AIDS epidemic on the overall productivity of the Ghanaian labour force and economy are significant.

**Number of AIDS Cases**

The estimated number of HIV infections presented to the right includes those who have developed AIDS. According to the NACP, an HIV-infected person with a CD-4 cell count of 250 or less in his/her blood is considered to have developed AIDS. One of the cells most affected by HIV, CD-4 cells are used to assess the level at which the immune system has been affected by the virus. A person who is HIV negative normally has a count of about 500–1,500 (average of 1,000) cells per cubic millimetre of blood. As HIV infection progresses, CD-4 cells decrease in number. When a person's count drops below 250 cells per cubic millimetre, ARV treatment is recommended to boost his/her immunity. Thereafter, CD-4 cell count can also be used to measure the efficacy of ARV therapies.

Health personnel also identify an AIDS case as one that presents with a number of OIs such as tuberculosis, bacterial pneumonia, cerebral toxoplasmosis, malignancies (Kaposi's sarcoma [Adjei, 2004]), and tumours.

As shown above, the number of annual new AIDS cases has risen dramatically over the last ten years, from an estimated 5,500 in 1994 to 36,000 in 2004. In this projection, the estimated number of new AIDS cases will continue to rise over the next six years even though the estimated HIV prevalence does not increase, in part because most of the people who will develop AIDS in the near future are already infected with HIV. This underscores the current momentum of the HIV/AIDS epidemic in Ghana, which will continue to place a severe strain on the health system and on families with HIV-infected persons.
Annual and Cumulative AIDS Deaths

One of the ultimate impacts of the HIV epidemic is the increased mortality from AIDS-related causes among the most economically viable segment of the population. The number of people dying from AIDS-related causes in Ghana continues to rise, as evidenced in both the estimated annual and cumulative AIDS deaths. In 2004 alone, it is estimated that about 33,000 persons will die of AIDS-related causes, about 90 persons every day. In the 18 years since the beginning of the epidemic in Ghana, the disease is estimated to have claimed about 200,000 people. Notably, because of the long incubation period, most AIDS deaths in the last two years are amongst persons who became infected about six years before HIV prevalence reached current levels. Unfortunately, as shown in the charts that follow, the estimated number of cumulative AIDS deaths will likely more than double to about 437,000 by 2010.

However, the introduction of affordable ARV therapies in the country, in addition to prompt treatment of RTIs and OIs, could significantly increase the survival of persons living with AIDS and avert most of the AIDS-related deaths. Even if successful HIV prevention programmes lead to a reduction in new HIV infections, increased provision of ARV therapy would significantly increase the total number of people infected with HIV in the population by prolonging the survival time of those infected. This would underscore a success in HIV/AIDS programmes along a continuum that begins with primary prevention and PMTCT and includes treatment, care, and mitigation. It is therefore imperative that policy makers, programme planners, and other stakeholders are mindful of the inter-relationships among HIV/AIDS indicators such as HIV prevalence and the level of ARV provision in the population and how they can be used in measuring the success/progress of HIV prevention, care, and treatment programmes.

Estimated and Projected Annual AIDS Deaths, 1986-2015

[Diagram showing estimated AIDS deaths from 1986 to 2015]

Annual Deaths Among 15- to 49-Year-Olds

While the HIV/AIDS epidemic has contributed to increased mortality in almost all age groups of the Ghanaian population, the impact is most severe among adults in the prime working ages of 15-49. The figure to the right estimates the annual number of deaths among this group due to HIV/AIDS, as well as those due to all other causes. The data show that deaths from non-AIDS-related causes do not increase much over time. (This marginal increase is due to increased size of the population even though non-AIDS-related mortality is estimated to go down slightly over time). In contrast, the number of AIDS-related deaths among 15- to 49-year-olds increases considerably. This rapid increase in deaths in the productive age group has negative consequences for the economic and social development of the country.

Source: AIDS Impact Model, 2004
Section Three

ISSUES IN FOCUS

HIV/AIDS affects individuals, families, communities, countries, and regions in a variety of ways. While the pandemic has several consequences, this section highlights some of the key social, demographic, and economic implications of HIV/AIDS in Ghana.

"Nowhere has the impact of HIV/AIDS been more severe than sub-Saharan Africa. All but unknown a generation ago, today HIV/AIDS poses the foremost threat to development.... By any measure, and at all levels, its impact is simply staggering."

~ Professor Fred T. Sai,
  Presidential Advisor on Population, RH/HIV/AIDS
  Presidential Address, Ghana Academy of Arts and Sciences, 1999.
Section Three: Issues in Focus

Gender and HIV/AIDS

While both men and women are vulnerable to HIV infection, it has become apparent that women have been disproportionately affected by the HIV epidemic in Ghana. HIV/AIDS researchers and analysts note that in a mature generalised epidemic, more women than men typically get infected with HIV. Data from the National AIDS/STD Control Programme show that almost two-thirds of the AIDS-reported cases are females, an indication that the disproportionate rate of HIV infection among females has been around for a while. This imbalance may occur for a number of reasons, including the fact that women are more biologically prone to infection than men during unprotected sexual intercourse. Similarly, women are more vulnerable to other RTIs/STIs, the presence of which greatly enhances the risk of HIV infection.

Also, because most STIs among women do not cause recognisable symptoms in the short term (as they do in men), women infected with STIs are more likely to go untreated for a longer period.

There is an important link between a woman's inability to make choices about her life and her susceptibility to HIV infection. Most Ghanaian women lack education, regular income, and complete control over their lives and their reproductive health needs. Women 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 health, pleasure, and well-being. Women are therefore poorly empowered both socially and economically, without the skills and the confidence to negotiate for safer sex. Also, culturally accepted power relationships between couples favour males, allowing men to take undue advantage of women and accelerating the spread of HIV. In addition, some older men tend to have partners who are much younger than them, increasing the risk of infection among young females.

Adolescent sexuality (especially for females) is another important concern, since young women are vulnerable to HIV infection in a number of ways.
First, sexually active young women are at a higher risk because the physiological immaturity of their reproductive systems provides less of a barrier to HIV transmission. Second, some adolescent women tend to have sexual relations with older men for economic reasons, and this puts them at an elevated risk of infection. Indeed, a higher rate of HIV prevalence is reported among adolescent women compared to adolescent men.

Adding to the disproportionate burden of HIV infection on women, care of persons infected and affected by HIV/AIDS is primarily the responsibility of the women within the family. Such responsibility has a significant and negative impact on the women as individuals and on the family as whole. For instance, at the individual level, girls in the household may be asked to drop out of school to assume care-giving responsibilities for the sick. Women's health may be affected due to heavy physical work of lifting and caring for the patients and/or orphaned children. At the family level, because of women's key role in food production, lost time from agricultural work can have a substantial impact on food security and the overall welfare of the household.

**Children/Orphans Affected by HIV/AIDS**

Children affected by HIV/AIDS include those living with HIV/AIDS, those with a close family member living with HIV/AIDS, and those who have lost one or both parents to the disease. An increase in the number of orphans is one serious consequence of AIDS deaths to men and women in their prime childbearing ages. The estimated number of AIDS orphans (children under the age of 15 who have lost one or both parents to AIDS-related causes) in Ghana will double over the next ten years, increasing from 132,000 in 2004 to 291,000 by 2015. Notably, the number of estimated orphans from AIDS-related causes could rise even higher if the epidemic continues to spread. Even more alarming, the number of orphans from AIDS-related causes will remain high in the short term even if the HIV epidemic is controlled because orphanhood due to HIV/AIDS lags for a period of five or more years.

**Estimated and Projected Number of AIDS Orphans (in thousands), 1989-2015**

![Graph showing the estimated and projected number of AIDS orphans from 1989 to 2015.](image)

Notably, HIV/AIDS-related vulnerability among children is not only apparent among the orphaned children, but also those whose parents are alive. In some cases, children, especially those from poor or marginalised households, may be at risk of being trafficked and sexually exploited, thereby increasing their risk for HIV infection. HIV/AIDS strategies must seek to improve care and support for children, reduce stigma and discrimination (e.g., ensure access to educational and safe employment opportunities), prevent MTCT, provide ongoing support to mothers affected by HIV/AIDS, and address the socio-economic factors that make children vulnerable to HIV infection.

The impacts and implications of orphanhood from AIDS-related causes at the family and society level cannot be overemphasised. At the family level, there is an increased burden and stress to the extended family members who assume responsibility for orphaned children, in some cases resulting in a lack of emotional and physical care and supervision. At the community and national levels, social systems are severely strained by large numbers of orphans needing services such as health care and school fees.

**Costs of HIV/AIDS-Related Health Care**

As stated earlier, about 400,000 Ghanaian men, women, and children are estimated to be currently infected with the HIV virus, and this number could increase over the coming years if the trend in the spread of the HIV/AIDS epidemic does not abate. This statistic highlights the magnitude of the situation that has significant implications for the Ghanaian government, which will need to pay the cost of care and treatment for the persons infected. As HIV infection progresses in an individual, it produces increasingly severe medical complications that need to be addressed at each stage of the disease. The first symptoms may be common complaints such as headaches and diarrhoea. Later, OIs such as tuberculosis may appear, and eventually the immune system is weakened to the point where the person dies, often because of one or more OIs. Three classes of care and treatment are available to address these problems in Ghana: palliative care, prevention and treatment of OIs, and ARV therapy.

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

OIs are those that take advantage of the weakened immune system of people with the HIV-virus. Such infections are usually rare or much less serious in people with healthy immune systems. Most OIs, which include tuberculosis, pneumonia, thrush, and toxoplasmosis, are

<table>
<thead>
<tr>
<th>Type of Treatment</th>
<th>Approximate Cost (US$ per patient per year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palliative care</td>
<td>$19</td>
</tr>
<tr>
<td>OIs</td>
<td>$33</td>
</tr>
<tr>
<td>Inexpensive</td>
<td></td>
</tr>
<tr>
<td>Expensive</td>
<td>$199</td>
</tr>
<tr>
<td>ARV therapy</td>
<td>$350-$10,000</td>
</tr>
</tbody>
</table>

treatable with relatively inexpensive drugs that can extend the life of an infected individual for a number of years. More expensive drugs are required to treat other OIs, such as cryptococcosis and herpes simplex virus. These infections are not only more expensive to treat, but they appear during the later stages of progression to AIDS.

ARV drugs have proven effective against HIV infection by decreasing the viral load and increasing the survival and quality of life for persons infected with HIV globally, especially in the western world. Although efforts by African governments including Ghana, international drug companies, and the donor community have reduced drug prices per patient to as low as $350 per year in some countries, this is still prohibitively expensive for the majority of Ghanaians who need the treatment. In addition, the infrastructure costs incurred by the health care system in order to support advanced drug treatment on a large scale are high.

In 2002-2003, HIV clinical care activities in Ghana began to undergo a dramatic change, receiving a major boost and national visibility. The Support Treatment and Antiretroviral Therapy (START) programme, a collaborative effort between Family Health International (FHI) and MOH/GHS, was introduced as a pilot programme in Manya and Yilo Krobo districts in the Eastern region. START offers a comprehensive prevention, care, and support package for PLWHAs, including voluntary counselling and testing (VCT), clinical care services such as management and prophylaxis of OIs, and ARV therapy, PMTCT, and home-based care. Lessons learned from these pilot activities will be analysed and evaluated, and successful approaches will be replicated at other sites in Ghana.

Studies undertaken by FHI (Torpey, 2003) under the START programme found that the annual cost of treating persons infected with HIV varies depending on the stage of their illness and the level of clinical care and viral load monitoring that the patients receive. For instance, while it costs $23-33 per year to treat HIV-infected persons at WHO stages I and II (patients who do not require

<table>
<thead>
<tr>
<th>Stage of Illness</th>
<th>Cost per Patient per Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage I</td>
<td>$23.86</td>
</tr>
<tr>
<td>Stage II</td>
<td>$32.54</td>
</tr>
<tr>
<td>Stage III and IV - no viral load tests</td>
<td>$660.21</td>
</tr>
<tr>
<td>Stage III and IV - with viral load tests</td>
<td>$1,120.21</td>
</tr>
</tbody>
</table>

ARV therapy), the cost per patient at WHO stages III and IV (those who develop AIDS and need ARV therapy) rises to $1,120 and $660 per year with and without viral load measurement, respectively.

The study also found that although viral load monitoring was useful, it was not essential for patient monitoring. Currently, it is estimated that about 71,000 persons living with HIV in Ghana are at a stage where they need ARV treatment, which would cost about $47 million (without viral load tests) or $80 million (with viral load test) in the year 2004 alone. In contrast, it would cost about $9.4 million to provide health care to all Ghanaians at stages I and II in 2004. As illustrated in the graph below, only a small fraction (about 850) of the 71,000 PLWHAs in Ghana who need ARV treatment are currently receiving it.

Another important component of HIV/AIDS-related health care is the prevention of MTCT of HIV during pregnancy. This is done through early HIV testing of pregnant women and provision of treatment to those who test HIV positive and to their newborns. Currently, the government of Ghana incurs a cost of ~400,000 cedis to provide nevirapine, an ARV drug that reduces the chance of MTCT, and other treatments to one pregnant mother and her child. An estimated 750,000 women become pregnant in Ghana each year and given the current HIV/AIDS situation, a sizable number of these women would need counselling and testing to determine their HIV status. If all pregnant women who are HIV-positive were to receive nevirapine, it would cost about 11 billion cedis per annum. Such costs underscore the resource and capacity needs that will need to be mobilised to combat the HIV epidemic in the coming years.

Additionally, by providing family planning options to HIV-positive women, many mistimed or unwanted pregnancies would be avoided. This approach has been identified as a very cost-

2 The WHO clinical classification of HIV/AIDS-related illness for Stage III includes weight loss of >10%, unexplained diarrhoea for >1 month, thrush, oral hairy leukoplakia, pulmonary TB in past year, severe bacterial infection, and/or bedridden for <50% of days in the past month. WHO Stage IV is classified as CDC-defined AIDS and/or bedridden >50% of days in the past month.
HIV/AIDS and Tuberculosis
There is a high prevalence of latent tuberculosis (TB) in many sub-Saharan African countries, including Ghana. TB is one of the OIs known to afflict people with weakened immune systems, such as those with HIV. Indeed, data from the Ghana Health Service indicate that about 60% of the reported 11,500 new TB cases in 2003 were amongst persons aged 15-49 years of age.

SPECTRUM estimates indicate that the number of new TB cases in Ghana has risen by 37 percent because of the HIV epidemic. Unfortunately, TB infections and TB-related mortality will likely continue to increase in the coming several years as a result of the HIV infections that have occurred to date. This high level of mortality and disease burden also impacts the number of children who become orphaned and/or vulnerable in Ghana.

As efforts to combat the HIV/AIDS epidemic intensify, there is a need to recognise the secondary TB epidemic and develop programmes to address the situation. It is also worth noting that since TB is potentially transmissible to non-HIV-infected persons, strong TB prevention programmes should be part of any intervention since they are cost effective and efficient.
Impact of HIV/AIDS on Childhood Survival and Life Expectancy at Birth

Without treatment, about 25-40 percent of infants born to HIV-infected mothers become infected either during pregnancy, during birth, or through breastfeeding. Most of these children will develop AIDS and die within two years, and very few survive past the age of five. As the HIV/AIDS epidemic spreads in Ghana, AIDS will increasingly become a major cause of child death, one that threatens to continue to reverse many of the recent gains made by child survival programmes.

In 2015 approximately 2,500 Ghanaian children under five will die due to the HIV/AIDS epidemic.

Estimated and Projected Deaths among Children Under 5 Years per 1,000 Births, 1984-2015

![Graph showing estimated and projected deaths among children under 5 years per 1,000 births, 1984-2015.]


One indicator that can be used to assess the impact of HIV/AIDS on child survival is the child mortality rate, the rate at which children born in a given period die before the age of five. Typically, it is expected that child mortality would decline as a nation's health, economic, and environmental conditions improve. However, as a result of HIV/AIDS, it is estimated that declines in child mortality in Ghana will be more modest over the next 10 years (see chart above).
AIDS-related mortality also has a negative impact on the life expectancy at birth in Ghana. Life expectancy at birth is an estimate of the average number of years a child born today may be expected to live given the current age-specific mortality rates. This figure is calculated by determining the proportion of males and females who die at each age from different causes. As such, a large number of deaths of people in their early years in a given society would lead to a low life expectancy at birth, while a society with few deaths at young ages would have a higher life expectancy.

As a nation's economic conditions and standards of living improve, people tend to live longer. The Ghana Statistical Service estimates that in 1984, life expectancy at birth in Ghana was about 50 years. This was before the inception of the HIV/AIDS epidemic. Based on the 1984 and 2000 census results and the projections model used in this analysis, two scenarios were examined, trends in estimated life expectancy at birth given the current AIDS epidemic, projected trends in life expectancy at birth if there were no HIV/AIDS in Ghana. After 1990, AIDS deaths began to have an impact on life expectancy at birth, and by 2004 AIDS-related mortality is estimated to have reduced the average life expectancy at birth by four years. Given the current HIV prevalence, this impact could increase to five years by 2015, depending on actual trends in HIV prevalence over the 10 years.

**Population Size and Growth**

The two factors that primarily determine a country's future population growth are fertility and mortality. Over the last 20 years, Ghana's strong family planning and reproductive health programmes have led to a reduction in total fertility rate (TFR), the average number of births per woman, from 6.6 children in the early 1980s to the current 4.4 children as reflected in the 2003 GDHS. According to Ghana's National Population Policy, the goal is to reduce TFR to 4.00 by 2010 and to 3.0 by 2020. It is apparent, therefore, that this decline in fertility has contributed to a decline in population growth over the last 20 years and will continue to do so in the future.
Rising mortality from AIDS can also be expected to impact the future growth of the Ghanaian population, as it has elsewhere in eastern and southern Africa. The projections shown to the right assume a continual decline in the total fertility rate over the next 10 years to 3.6 by 2015. This graph compares the projected population of Ghana with and without HIV/AIDS. The results show that by 2004, there would be about one-quarter of a million fewer people in Ghana, principally due to HIV/AIDS. Assuming the current HIV prevalence remains the same over the next 10 years, the impact of HIV/AIDS on the Ghanaian population would be more than three-quarters of a million fewer people, and this figure could be even higher if the HIV/AIDS epidemic continues to spread. An important point to remember is that this difference mainly represents Ghanaian adults in the productive age groups, who are who are no longer alive to care for their children and elderly parents, and to contribute to the economic wellbeing of their communities. However, as shown, the population of Ghana will continue to grow, although at a slightly slower pace.

Cross-Border Issues

A variety of factors experienced across the West African subregion, including economic changes (both positive and negative), transportation links, periods of instability and war, and greater economic cooperation among countries, have all contributed to increased mobility and, subsequently, the spread of HIV in Ghana. Presently, Ghana is home to mobile population groups and refugees who have been granted temporary or extended residence. Mobile
populations include seasonal agricultural workers, herders, fishermen, truck drivers, construction workers, uniformed personnel, refugees or displaced groups, sex workers, businesspersons, tourists, and others. Several factors contribute to the HIV vulnerability of mobile populations. Border areas, trade communities, and mining settlements have become home to the entertainment and sex industries that serve mobile populations. Separation from families, coupled with disposable income, may increase the likelihood that persons from these groups will engage in high-risk behaviours, such as unprotected sex and drug and alcohol abuse. In addition, many of those who migrate do so because of economic hardship or political instability. Already disadvantaged, they may turn to occupations and high-risk behaviours that offer easy access to cash but also increase their risk of HIV infection.

If HIV prevention efforts target only selected mobile populations (e.g., truck drivers and migrant labourers), other groups (e.g., military personnel, businesspersons, and tourists) may downplay or deny their own risks for HIV infection. Given that the HIV/AIDS pandemic is not confined to any one nation's boundaries, regional collaboration is needed to develop effective strategies to address it.

Cross-Border Initiatives in West Africa: Anti-AIDS Corridor Project and West Africa Project to Combat AIDS and STIs

Both long-distance drivers and sex workers who operate along a busy route in the Abidjan-Lagos corridor, which crosses Accra and four other countries, are being targeted by a new, $US 16.6 million project funded by the World Bank. Recognising that "HIV doesn't respect borders, it exploits borders," the Anti-AIDS Corridor Project is designed to stop the spread of HIV/AIDS along the transport corridor, which is used by up to three million people a year. With 3-9.7% of adults estimated to be HIV positive, the West African nations involved in the project have lower rates of HIV prevalence than some Southern African nations. However, sex workers are far more likely to be infected, as evidenced by rates as high as 85.4% in Cotonou, Benin, and 74% in Accra, Ghana's capital city. The overall goal of the Anti-AIDS Corridor Project is to help stop the spread of the epidemic in less affected countries. Programme funds will be used for education, condoms, and health services along the transport corridor, depending on the interests and needs of the individual countries.

Initiated by four institutions and under the Canadian International Development Agency, the West Africa Project to Combat AIDS and STIs (WAPCAS) provides support to nine West African countries in their efforts to minimise STI and HIV transmission. The project encourages basic health care services to use the syndromic approach in the management of STIs/RTIs through a combination of clinical and community applications, which allow them to raise their level of efficiency. The highest policy is given to core groups living in areas considered high risk for STI and HIV transmission. Conscious of the fact that HIV/AIDS is a social disease, and that the community plays a major role in developing health strategies, adapted to at-risk groups, project activities emphasise reinforcement of hundreds of existing urban health care facilities and promotion of the complementary function of these and community services. The goals of WAPCAS are to

- Ensure a syndromic control of STIs in commercial sex environments through the use of appropriate generic drugs
- Build on field expertise and reinforce local skills in and effort to modify behaviours and promote prevention
- Contribute to greater gender equity, recognising the imbalance of power as the core of women's greater vulnerability of HIV
- Provide follow-up/monitoring and conduct relevant operational research
- Defend its strategies, promote the visibility of its operations, and enhance communications.
Implications for Development

The HIV/AIDS pandemic in Ghana presents social, economic, and health problems with significant implications for the development of the nation. The impacts of HIV/AIDS are felt at all levels, family, community, country, and region, and across all sectors, business, education, agriculture, and labour, among others. Efforts to address this problem need to be multi-sectoral and must not treat the disease only as a public health or medical issue. The following are some of the HIV/AIDS-related development issues facing Ghana:

- **Resource allocation for HIV/AIDS programmes.** A reduction in the national adult HIV prevalence rate in Ghana will only be possible through targeted national and local responses supported by political commitment and mobilization of resources. As the epidemic worsens and its impacts reach all sectors of society, the GAC and its partners will need to plan more strategically to stem the spread of the epidemic. This would mean, in part, knowing more precisely the costs of combating the disease in order to set priorities for additional funds. As mentioned before, the national response to the epidemic has evolved considerably since the development of the National Strategic Framework (NSF) in 2000. The World Bank took the initiative to establish the Ghana AIDS Response Fund (GarFund), which has been supporting the national response. Other partners, including USAID, the British Department for International Development (DFID), and GLOBAL Funds, have also been supporting programmes. However, plans to scale up ARV and VCT programmes require additional resources. Ghana will, therefore, be expected to maintain and even increase resource allocations if various intervention programmes being put into place are to be sustained into the future.

- **Labour supply, productivity, and educational investment.** The majority of HIV infections and AIDS cases are found among adults (aged 15 to 49) who, as a group, are the most productive segment of the workforce. HIV/AIDS will contribute to a loss of workers among this group and, subsequently, may affect productivity in industrial, agricultural, and other sectors. With the loss of workers also comes the loss of investment that went into their training and education. Business costs will increase due to labour replacement, recruitment, and the need for new training. A decline in agricultural productivity will adversely affect Ghana's predominantly agrarian society, negatively affecting national economic output, household income, and the overall health and nutrition of the population.

- **Workplace polices and programmes.** The world of work is not only affected by HIV/AIDS; it also represents an important mechanism for implementing prevention, care, and support programmes. All efforts to reduce stigma and discrimination against PLWHAs must incorporate workplace policies and programmes. For example, policies are needed across the employment sectors that address the workplace rights of PLWHAs. To that end, the government of Ghana has enacted policies and legislation that are aimed protecting the rights of persons infected and/or affected by HIV/AIDS in the workplace. The International Labour Organization (ILO) has also developed a very useful code of practice on HIV/AIDS (ILO, 2001) that is being implemented by the government and a number of private-sector organizations in the country.
Section Four

THE NATIONAL RESPONSE

This section focuses on interventions, policy, the National Strategic Framework, and institutional structures that have been established to combat the HIV/AIDS epidemic in Ghana.

"The greatest challenge facing us as a nation is how to translate the knowledge gained into appreciable levels of behaviour change in the face of the HIV/AIDS pandemic."

~ H.E. President John Agyekum Kufour, President of Ghana in a Speech at NACRCON Research Conference, 2004
Section Four: The National Response

An Enabling Environment

The success of HIV/AIDS prevention, care, support, and mitigation programmes depends, in part, on the creation of an enabling environment. An enabling environment facilitates behaviour change to reduce HIV transmission and promotes the quality of life for PLWHAs and their families. In a supportive environment, people are not afraid to seek the information or treatment they may need. Strategies to build an enabling environment include strengthening policy responses and political commitment.

Policies articulate values and priorities, outline frameworks and objectives, and provide for the human and material resources needed to carry out projects. Ranging from national strategy documents to local-level guidelines for service delivery, policies provide the foundation on which to build effective HIV/AIDS programmes. Commitment to address HIV/AIDS at all levels of the government and active civil society participation in policy advocacy and formulation are necessary components of strong policy responses.

The advent of HIV/AIDS has posed a public health challenge to many countries including Ghana. Increasing demand for health care services to cope with both adult and under-five morbidity, rising numbers of orphans and vulnerable children, and a shrunken labour force with its resulting losses in productivity are some of the challenges that the country has to face as the epidemic spreads.

In order to address the HIV/AIDS challenge in Ghana, the government of Ghana had to provide a framework for policy direction and subsequently developed a draft national policy document and the NSF. Initially, the response to HIV/AIDS was to manage the epidemic as a disease rather than a developmental issue. Consequently, in 1985, the government of Ghana established the National Technical Committee on AIDS to advise it and to implement measures to contain the epidemic. Following the confirmation of the first two cases of AIDS in 1986 and recognising the potential impact that HIV/AIDS could have on the socio-economic development of the country, the government established the National AIDS Control Programme (NACP) in 1987.

The NACP was charged with the responsibility of coordinating the national response to the HIV/AIDS epidemic. A short-term plan (STP1) was developed for the prevention and control of HIV/AIDS/STIs. Realising that the problem of HIV/AIDS and its prevention and control were a challenge to national development and that effective implementation of the national response requires the input of all and not just a few selected sectors or agencies, the NACP subsequently developed its first and second medium-term plans (MTP 1 and MTP 2) for the prevention and control of HIV/AIDS. These plans spanned the period from 1989 through 1996. The MTP 2 in particular, recognised the involvement of multilateral organisations, bilateral agencies, and international and local nongovernmental organisations (NGOs).

Even with the implementation of programmes under the MTP 2, it became evident that the multifaceted and multi-dimensional nature of the epidemic required a holistic, coordinated, developmental approach to address the emerging challenge. This realisation led to further consultation in 1999 with groups including the United Nations Development Programme
(UNDP), the United States Agency for International Development (USAID), and other development partners, together with a team from the International Partnership against AIDS in Africa (IPAA). As a result, a supra-ministerial, multi-sectoral body, the Ghana AIDS Commission (GAC), was established by a Cabinet decision in May 2001 to advise and coordinate all HIV/AIDS related activities. The GAC provides policy formulation, coordination, supervision, and resource mobilisation. The Commission was given legal status by ACT 613 of Parliament in December 2001.

The GAC has undertaken the task of intensifying efforts to combat the adverse impacts of the HIV/AIDS epidemic in Ghana. Intervention efforts are being informed and guided by two broad policy documents, the National HIV/AIDS/STI Policy and the NSF on HIV/AIDS, covering the period of 2001-2005. The Policy was developed through a participatory process and spells out roles and responsibility for the various ministries, departments, and agencies.

**National Strategic Framework (NSF)**

The strategic framework is aimed at preventing and mitigating the socio-economic impact of HIV/AIDS on individuals, communities, and the nation. Its objectives are to reduce new infections among the 15-19 age group, improve service delivery, reduce individual and societal vulnerability, and establish a multi-sectoral and multi-disciplinary institutional framework to coordinate programme implementation. The areas of interventions under the framework are prevention of new transmission of HIV, care and support for PLWHAs, and creation of an enabling environment for the national response.

### Some Key Components of the Strategic Framework

- Expanded multi-sectoral approach
- Supportive policies and laws
- Access to information and comprehensive services
- Decentralisation, community participation, and individual responsibility in all HIV/AIDS programmes
- Adequate resource mobilisation
- Effective surveillance, evaluation, and research

To date, several programmes have been put in place with considerable achievement, including the following:

- Near universal awareness of HIV/AIDS-97 percent among females and 99 percent among males. However, risk perception is still low: About one-third of the population believes they are not personally vulnerable to HIV infection.
- Establishment of an epidemiological surveillance system for HIV and AIDS and preparation to conduct behavioural surveillance.
- Provision of facilities for voluntary pre- and post-test counselling and testing and the development of national VCT guidelines.
- Development of STI management guidelines and training programmes for both public and private health institutions.
• Recent development of a policy guideline to assist programme managers and service providers in designing programmes and providing RTI/STI services.
• Provision of World Bank funding, through GarFund, to support the NSF.
• Media sensitisation activities, mass media events, and other public sensitisation programmes funded by GarFund and other donors.
• Care and support for PLWHAs, including programmes for orphans and other children made vulnerable by HIV/AIDS.
• Development of programmes for other vulnerable and at-risk population groups, including sex workers and mobile populations.
• Introduction of pilot ARV therapy and PMTCT programmes.

Decentralised Implementation Structure
As noted earlier, the GAC is mandated to direct and coordinate all activities to fight the disease throughout the country. It is to provide effective leadership in the coordination of all programmes and activities of all stakeholders at the national, regional, and district levels. HIV/AIDS focal persons are being posted within the regional administration to work and to serve as liaison officers within the District Assemblies.

In carrying out its mandate, the GAC is facilitating local and culturally appropriate responses through various approaches. A key programme area in responding to the HIV/AIDS challenge in Ghana is the District Response Initiative (DRI). The DRI is a response to the internationally recognised need to intensify action on HIV/AIDS in Africa by accelerating and expanding the scope and intensity of programmes at the local level. The DRI in Ghana involves 10 districts in 7 of the 10 regions of the country, and it is essentially intended to develop a framework for expanding the response to HIV/AIDS at the local level. DRI seeks to move HIV/AIDS activities from the vertical, health sector-focused approach to a more integrated, multi-sectoral, development-oriented approach. It is being implemented through the Ministry of Local Government with GAC and its partners.

Together with the national-level leadership of the GAC, the DRI is reinforcing and empowering actions at the local level to strengthen community-level responses.

Joint Programme Review
Expected to end in 2005, the current NSF has resulted in notable achievements. However, the nature of the national response has changed due to broadening participation of several development partners and sourcing of financing under the Global Fund To Fight AIDS, Tuberculosis and Malaria (GFATM) to implement programmes in VCT, PMTCT, and the provision of ARVs. Moreover, recent national development policies and other international declarations give new impetus in the fight against the epidemic. Locally, the Ghana Poverty Reduction Strategy (GPRS), a medium-term governmental development framework, recognises the potential devastating impact of HIV/AIDS on socio-economic development, and recommends mainstreaming HIV/AIDS programmes in multi-sectoral operations.
**Joint Programme Review**

To ensure that Ghana’s national response is still on track to meet NSF objectives and to contribute to broader national development goals, a rapid assessment is being conducted to provide the basis for determining the future direction of the national response. This Joint Programme Review involves a broad participation of partners and stakeholders to ensure collective acceptance and ownership of the outcome, and to avoid separate or multiple reviews by different stakeholders and funding agencies, which can take a long time and put stress on partners.

The goal of the Joint Programme Review is to identify achievements, gaps, challenges, constraints, and opportunities in relation to the five strategic interventions areas identified in the NSF. Objectives include:

- Objectively assessing the management, coordination, and institutional mechanisms related to the implementation of the national response
- Critically assessing policies and programmes
- Objectively assessing the flow, adequacy, and utilization of HIV/AIDS resources and forecasting resource needs for scaling up the national response
- Recommending strategic priorities that can be monitored forwarding the future and using the results to revise the NSF.


The Millennium Development Goals and the United Nations General Assembly Special Session on HIV/AIDS (UNGASS) provide additional direction and standards for the implementation of national responses. The Joint Programme Review has therefore been commissioned by the GAC to inform the development of a new strategy.

**Research, Monitoring, and Evaluation**

Research plays an important role in developing the framework for the national response. GAC and its partners in the expanded national response have a need to collect and report information on progress toward the scale-up of programmes. One of the efforts undertaken to assess the efficacy of national programmes is the global AIDS Programme Effort Index (API) survey.

The AIDS Programmes Effort Index (API) is a composite indicator of a number individual items grouped into key categories, intended to measure the degree of effort put into national HIV/AIDS control programmes by domestic organisations, individuals, and international organisations. It measures the strength of effort for programme inputs, as opposed to programme outputs or results, such as HIV prevalence. Each item is scored from 0 to 10 by knowledgeable in-country individuals from a variety of backgrounds, including government institutions, NGOs, academic and research institutions, major religious institutions, community-based organizations, and donor agencies.

National respondents were asked to complete only those sections of the questionnaire that match their areas of expertise. The results are intended to show a profile of effort as judged by national experts. The API was applied to 54 countries in early 2003 by the POLICY project in collaboration with USAID and UNAIDS. “Yes/No” answers, combined with qualitative scores ranging from 0 to 10, indicate where effort is either sufficient or may need
additional attention or resources. The questionnaire comprises 181 items within 10 programme components (as shown in the chart below). The API is meant to assess the current environment as well as changes that respondents recall over the previous two years.

The results for Ghana are based on responses from the most knowledgeable respondents from the national AIDS programme, other government organisations, NGOs, and international donors.

![Ghana's API Profile](chart)


The chart above shows the programme effort indices for each component in 2003 and 2001. As shown, Ghana's strongest ratings are in the areas of political support, policy and planning, organizational structure, and mitigation programmes, each of which received a combined index score of programme effort over 80. The programme component that most needs increased effort is care and treatment; this was the only programme component rated below 60. During the past two years, Ghana has either maintained its index score (in monitoring and evaluation [M&E]) or has increased programme effort (in all other categories). Two components which saw particularly large improvements include organisational structure and mitigation programmes. Overall, Ghana has improved its total API score by 18 points, from 56 to 74, in the past two years.

**Interventions**

**Prevention**

As noted in Section One, there is currently no cure for AIDS, and vaccines and microbicides to prevent HIV transmission are still in the developmental stages. Success in slowing the spread of the virus depends on changing the behaviours and addressing the socio-economic
Factors that put people at risk of contracting HIV. Improved access to VCT has already been noted as a critical aspect of both prevention and care efforts. Other key elements of prevention programmes are discussed below.

**Sexual transmission.** Sexual behaviours rank among the hardest behaviours to change due to a variety of factors-including

- Lack of information on reproductive health issues, family planning options, and disease prevention measures
- Lack of health care resources
- Poverty
- Low levels of education
- Unequal power dynamics within relationships
- Low self-esteem among marginalised and high-risk groups such as commercial sex workers.

Even when people are knowledgeable about AIDS and how HIV transmission is prevented, high-risk sexual behaviour is slow to change. In part, this may be due to a low perception of individual risk, fatalistic attitudes, denial, the need to self-affirm through sexual performance, or the use of alcohol or drugs, which can impair judgment. In many cases, however, we do not understand the reasons why people do not practice safer sex. Developing effective, culturally appropriate strategies to reduce the sexual transmission of HIV is one of the most pressing and complex issues facing policy makers and programme planners in Ghana. This requires in-depth research and action.

To prevent the spread of HIV through sexual contact, interventions must seek to encourage abstinence and fidelity, increase condom use (e.g., male and female condoms) among those who are sexually active, reduce the number of sexual partners, diagnose and treat STIs/RTIs, and delay the onset of sexual activities among adolescents, especially girls. Ghana must continue to work to find ways to empower people who may be placed in high-risk situations, and the GAC, NACR, and the other partners must also develop strategies to address other modes of sexual transmission (e.g., from clients of sex workers to their wives). Community-, work-, and school-based programmes must play an active role in prevention activities. In particular, more programmes like “Young and Wise” being implemented by the Planned Parenthood Association of Ghana (PPAG) and the African Youth Alliance (AYA) in Ghana should be further developed to help young people make healthy decisions regarding sexual behaviours, before initiating sexual activity, and also to improve their educational and economic opportunities.

**Mother-to-child transmission.** Preventing MTCT involves interrelated strategies, including

- Reducing the vulnerability of women to HIV
- Improving and encouraging pre- and post-conception VCT for all women
- Expanding family planning counselling and services to reduce unwanted pregnancies among HIV-positive women
- Providing appropriate ARV regimens for HIV-positive mothers and their infants during pregnancy, delivery, and the postpartum period
• Ensuring safer delivery practices known to decrease the risk of MTCT, supporting and providing mothers with information on safe infant feeding practices
• Enhancing services to provide ongoing support for mothers, infants, and children affected by HIV/AIDS.

A comprehensive PMTCT Plus (see box on page 5) package would promote support services for the mother and her affected family members, including treatment for OIs, psychosocial counselling, and ARV therapy and nutritional supplements. Beyond recognising the human rights of mothers living with HIV/AIDS, PMTCT Plus strategies are also increasingly being seen as essential to reducing the number of AIDS orphans and ensuring the long-term stability of families. Research on prevention of MTCT is constantly leading to new discoveries, and policy and programme planners must keep informed of these breakthroughs as they seek to develop appropriate treatment services and guidelines. For example, research suggests that a single dose of nevirapine given to the mother at delivery and to the infant within 72 hours of birth can significantly reduce the chance of HIV transmission (Jackson and Fleming, 1999). This approach is more cost-effective and easier to implement than short courses of other ARV therapies. Additionally, some studies suggest that exclusive breastfeeding and early weaning provides greater protection against HIV transmission than mixed breast milk/replacement formula feeding.

**Blood safety.** The social, medical, and economic burden related to the high prevalence of HIV in African countries is heavy. Adding to this burden is the devastating effects of co-existing infections such as STIs/RTIs, anaemia, malaria, TB and other conditions, which raise serious concerns regarding the safety of the blood and blood products. In order to ensure a safe blood supply, UNAIDS recommends establishing a national blood transfusion service that has its own budget and staff but is accountable to the government or a government-appointed NGO. Other recommendations include recruiting voluntary, non-paid donors who are at low-risk for HIV and other infections; screening all donated blood for HIV and other common diseases; and using donated blood in an appropriate and rational manner (UNAIDS, 1997).

The safety of blood transfusions depends on the availability of blood, which is contingent on numerous factors. These include adequacy of storage facilities; sound policy of recruitment and retention of voluntary, non-remunerated blood donors; quality assurance in testing for STIs/RTIs and processing of blood and blood by-products; and appropriate use of blood transfusions. Like other countries, Ghana must develop guidelines, standards, and training programmes to address issues such as blood collection and screening, confidentiality, and proper storage.

UNAIDS also recommends promoting and providing access to blood substitutes, where appropriate, and working to prevent anaemia and other causes of blood loss by treating pregnant women with iron supplements and providing malaria prophylaxis. Other examples of initiatives Ghana should consider include

• Improving nutrition and controlling malaria in children to help alleviate chronic anaemia, which is often treated through repeated blood transfusions.
• Promoting safe, hygienic medical procedures and universal precautions, which has been proven to help reduce HIV transmission through contaminated blood.
Intense efforts must therefore be directed at the MOH/GHS to ensure the approval/adoption of the National Blood Policy developed in 2000/2001, which provides more guidance on the promotion of blood safety.

**Care and Support of PLWHAs**

Providing ARV therapy is a key component of care and support for PLWHAs, and some estimates suggest that less than 5 percent of Ghanaians in need of ARVs currently use or have access to them. Some of the important issues surrounding the provision of ARV therapy include cost, access, consistency of supply and delivery, intellectual property rights regarding drug patents, complexity of use, adherence to treatment regimens, and the emergence of drug-resistant strains of HIV.

At the same time, comprehensive care goes beyond simply providing access to ARV therapy. The range of comprehensive care and support programmes for PLWHAs and their families would include MTCT Plus programmes; prevention and management of OIs; palliative care; capacity development; workplace programmes; information, education, and communication activities; VCT; legal services; psychosocial support; nutrition counselling and support; and pain management and support relating to end-of-life issues.

This comprehensive care and support should involve a range of sectors, public health officials, home-based or community-based care providers, faith-based groups, PLWHAs, businesses, and others, and each will need additional training and resources to respond to care needs.

**Reducing Stigma and Discrimination**

Stigma toward HIV-positive individuals hinders all efforts to prevent the spread of the virus, improve care and support to PLWHAs, and mitigate the social and economic impacts of the epidemic. When people fear rejection from families, communities, co-workers, health care providers, and others, they will not seek counselling, testing, or care services. Stigma is not limited only to those living with HIV/AIDS; it extends to families of PLWHAs, members of groups that practice socially unacceptable high-risk behaviours, and those who assist PLWHAs. Discrimination, often referred to as "enacted stigma," can deny PLWHAs and their families equal and equitable access to housing, employment, education, health care, and more.

Reducing stigma and discrimination is essential to the success of all types of services. Strong policy responses, political commitment, advocacy, public awareness campaigns, empowerment of PLWHAs, and multi-sectoral approaches are necessary to confront stigma and discrimination.

**Developing Human and Institutional Capacity**

Enhancing individual and institutional capacity to address HIV/AIDS will often require developing new skills and capabilities. For example,

- PLWHAs may need help in building advocacy skills.
- Health care providers may need training in non-stigmatising practices and the latest medical advances.
• Psychologists and social workers need to be trained to address the special needs and problems faced by HIV-positive sex workers and other PLWHAs and their families.
• The government requires assistance in collecting and analysing data to inform decision-making processes.
• Businesses need help developing workplace HIV/AIDS policies and programmes.

Government and civil society organisations must actively promote opportunities to develop the in-country and regional capacities needed to address the HIV/AIDS pandemic.

Gathering, Analysing, and Disseminating Accurate Information

Up-to-date, accurate information on routes of transmission, treatment options and available medical and social services to test and treat HIV is a valuable tool for breaking the silence that often surrounds HIV/AIDS in Ghana. The Ghana AIDS Impact Model (AIM) has been a valuable source of information and analysis for HIV/AIDS decision-making and for advocacy and media outreach activities, as reflected in the Stop AIDS, Love Life and the Reach Out campaigns. Surveillance, economic, epidemiological, and other relevant data are also used for strategic planning purposes and to develop age-appropriate intervention programmes by a number of agencies/organizations in the country.

Still, strategies that can be used to spread accurate, non-stigmatising information about HIV/AIDs should continue to be embraced in various intervention programmes, including community-based advocacy activities, work- and school-based prevention programmes, peer outreach efforts, and sensitisation training for journalists, health care professionals, and other community leaders. Governments must also continue to work to develop research, monitoring, and surveillance guidelines and capacities as well as the capacity to collect, analyse, disseminate, and use data to inform decision-making. In addition, civil society organisations need to be encouraged to play an active role in studying the socio-economic factors that contribute to high-risk behaviours leading to vulnerability to HIV, particularly among marginalised or hard-to-reach and most-at-risk populations.
Section Five
MOVING FORWARD

This section outlines principles and strategies that are integral to implementing comprehensive, effective HIV/AIDS programmes. It also highlights some of the promising programmes already under way and new initiatives being put in place by the GAC, the GHS/NACP, and NGOs with the support of Ghana's development partners.

"The government of Ghana and other partners need to take a firm stand against the HIV/AIDS pandemic by making the necessary sacrifices to invest in long term support of people living with HIV/AIDS. ....We do not have any excuse for allowing HIV/AIDS to continue raking havoc in all spheres of our lives."

~ Dr. Kwaku Afriyie, Minister for Health, Ghana
at the launch of the 2004 World Health Report
June 30, 2004
Section Five: Moving Forward

HIV/AIDS has the potential to cause severe deterioration in the well-being of the people of Ghana. However, overcoming the HIV/AIDS problem is not impossible. While much work to fight the disease is already under way, more can be done now to keep the epidemic from getting worse and to mitigate the negative effects. Additional responses that are necessary include

- Promoting public-private partnerships
- Enhancing the role of PLWHAs and following the principles of Greater Involvement of People Living with HIV/AIDS (GIPA)
- Targeting interventions for high-risk groups
- Scaling up the provision of ARV therapy and comprehensive care and treatment
- Promoting sustainable capacity building at the subnational level
- Promoting programmes for orphans and vulnerable children
- Building an enabling environment through continued strong political commitment at the national, regional, district, and subdistrict levels.

Promoting Public-Private Partnerships

The magnitude of the problems of HIV/AIDS will require the active involvement of a large number of new partners and significant leveraging of private-sector resources. Both industry and labour have long-standing social protection programmes that can be widened in order to mobilise their workforces and to provide services to those infected and affected by the disease.

In many parts of the African continent, the economic impacts of HIV/AIDS have already moved from speculation to startling reality. In Ghana as well, HIV/AIDS is having a significant impact on some of the sectors. Mining and service industries dependent on migrant labour, whose itinerant lifestyles makes them highly vulnerable to infection, have been found to experience high rates of HIV/AIDS. According to results from an HIV/AIDS impact study in a brewery in Ghana (Forsythe, 2001), re-training costs and productivity losses due to HIV/AIDS amounted to about 22 percent of total operating costs for the firm. An additional 14 percent of the operating costs was lost through staff absenteeism and labour turnover. Another HIV/AIDS impact study conducted among selected business organizations in Ghana (Nabila, Antwi, and Kwankye, 2001) found that the average annual cost of ARV treatment per patient incurred by a firm amounted to about 45 million cedis.

However, the overall impact of HIV/AIDS on economic growth and development remains poorly understood, and more studies in this area are needed. With support from DFID and in collaboration with other partners, the GAC is in the process of conducting a more in-depth study on this issue.

Recognising the challenge and threat that HIV/AIDS poses, a number of major multinational companies and local corporate entities have led the way in setting up workplace programmes for their staff. The GAC, GHS/NACP, and other NGOs are actively working together to
encourage cooperation and provide direct services or seed-funding for these and other types of community initiatives. Additionally, public-private partnerships can support a number of strategies to mobilise and coordinate community care initiatives, including collaborative efforts of employers to address community problems and industry/labour support for government efforts to provide care to various at-risk populations. Some of these programmes can include the provision of VCT and treatment services. Such private initiatives show that businesses have the capacity to do a great deal more in the fight against the epidemic, given the necessary skills, contacts, and resources.

Continued dialogue is needed to strengthen emerging public-private partnerships and to design effective working mechanisms for collaboration on various interventions, including HIV prevention, laboratory diagnosis, and the scaling up of ARV treatment.

Enhancing the Role of PLWHAs Through GIPA

Another area for renewed emphasis is that of programming for PLWHAs. The recent promulgation of the GIPA principles underscores this point. GIPA principles call for the meaningful participation of PLWHAs in policy making, programme design and implementation, community mobilisation, and evaluation. PLWHAs must be at the centre of responses to the HIV/AIDS pandemic in Ghana. Developing the capacities of PLWHAs has now been recognised in the various strategic documents including the GAC Strategic Framework and the new USAID HIV/AIDS strategy for 2004-2010.

PLWHA and their families are often the most effective advocates for behaviour change, and they intimately know about the factors that make people vulnerable to HIV and about the services that are needed to improve care and support. Promoting GIPA lends relevance and credibility to interventions, greatly improving programmes, but also builds the confidence and skills of PLWHA, a necessary aspect of empowering those affected by HIV/AIDS.

In Ghana, PLWHAs still need better access to VCT, and care and support services, which can help them to understand how to prevent the spread of the epidemic to others. In view of this, efforts should now be directed at various formations through strong network activities. Networks can also provide a platform for the participation of PLWHAs in meaningful national consultations, capacity development and strengthening, establishing community support including decrease discrimination, and policy development. This will also further serve as a permanent means for advocacy for the rights of PLWHAs and their empowerment.

Targeting Interventions for High-Risk Groups

Experience in Ghana and other countries show that heightened incidence of HIV among most at-risk groups acts as a nexus for the spread of HIV to the general population. Indeed, a recent study conducted in Accra indicates that about 84% of HIV cases among males age 15-59 years in Accra were attributable to transactional sex (Cote, Sobela, Dzokoto, Nzambi, et al, 2004, p 1-9). As such, the need for targeted interventions for high-risk groups in Ghana cannot be over-emphasised. Unfortunately, there is still limited information in Ghana about the behavioural factors and other social dynamics among most at-risk groups—including long-distance drivers, mobile populations, and uniformed officers—that put them at risk of HIV infection.
In order to understand more fully these dynamics and to better develop effective interventions, specific research efforts have been proposed to inform programme design and implementation. The information to be obtained from such studies shall enable more precise targeting and design of interventions and resources that will help in tracking the effects of national and subnational programmes.

One important lesson from the study referenced above is the need to provide a comprehensive HIV/AIDS intervention programme that includes education, condom distribution, and treatment of STIs not just for sex workers but for their clients as well.

**Scaling Up Comprehensive Care and ARV Therapy: The 3 by 5 Initiative**

One of the critical components of the care and support of PLWHAs is the administration of ARV therapy. In June 2003, the National AIDS Control Programme, with support from USAID and FHI, started a treatment programme to provide comprehensive care and support in the Manya Krobo District in the Eastern region. Programme planners hope that this will serve as a model that can be scaled up throughout the country. During the initial phase of the programme, 100 patients received comprehensive care.

With additional support from the Global Fund, the MOH introduced highly active antiretroviral therapy (HAART) for the care of PLWHAs beginning in December 2003. The goal was to provide ARV therapy to 2,000 PLWHAs at four sites (St. Martin de Porres Hospital in Agomanya, Atua government Hospital, Korle-Bu, and Okomfo Anokye Teaching Hospitals) by the end of 2004. To date, 850 patients are on ARV therapy at these four sites, with a small number of patients accessing care through private providers.

The ARV therapy delivery model in Ghana is primarily hospital based and led by physicians. Counselling is done by other cadres and drugs are dispensed by pharmacists. Various eligibility criteria, including biological and social factors, have been developed. Biological criteria include HIV positive status, WHO stage III or IV, CD-4 cell count of less than 200, total lymphocyte count of less than 1,200. Social criteria including having an identified adherence monitor, geographical access to services, and motivation to initiate and continue therapy.

To ensure that this programme succeeds, a number of enhancements will be critical, including the following:

- The development of appropriate ARV therapy policies, implementation plan, and programme management and coordination mechanisms
- Procurement, supply, and management systems for medicines and diagnostics, including placing ARV therapy on the National Essential Drug List
- Strengthened health system and referral mechanisms
- Trained human resource, technical guidelines, and training materials
- Partnerships with the public sector, NGOs, and private sector, including employers, PLWHAs, civil societies, and communities
- Resource mobilisation to ensure a continuous supply of drugs
• Documentation and sharing of information
• Quality assurance for ARV therapy diagnostics and clinical services, operational research, and monitoring and evaluation.

All of these efforts are now being underpinned by the 3 by 5 Initiative launched by WHO and UNAIDS in December 2003. The initiative is a follow-on to the WHO declaration that the lack of treatment for PLWHAs is a public health emergency requiring urgent action. The initiative aims to scale up ARV therapy in developing countries and it is expected to put 3 million PLWHAs on ARV therapy by the end of 2005.

3 by 5 Initiative: Implications for Ghana

The goal of the 3 by 5 Initiative is to provide universal access to ARV therapy to those who need it within the context of a comprehensive response to HIV/AIDS. The initiative aims to put 2 million PLWHAs on ARV therapy in Africa. Ghana's target is to reach 2,000 PLWHAs by 2004 as an interim target towards universal access. Ghana will have to scale up ART to 29,000 people (an increase of 25-fold) by the end of 2005. This would entail a massive roll-out of all related care and support activities - including VCT; ART; client selection; OI management; counselling; PMTCT; nutrition for PLWHAs; information, education, and communication (IEC); community mobilisation and support; and home-based care. Clearly, achieving this target will present critical challenges to the health system - particularly the need to address priority human resources requirements.

Other challenges facing Ghana include
- Strengthening health systems, particularly laboratory capacity, monitoring, and quality assurance
- Addressing the problem of limited human resources (quantity and quality)
- Training/re-training most health workers on ARV therapy
- Strengthening programme coordination and collaboration
- Addressing the issue of user-friendly ARV formulations for children
- Providing nutritional support
- Developing treatment guidelines that address drug resistance
- Addressing the issue of low treatment literacy in the population
- Developing programmes to reduce stigma and discrimination.

Ensuring that these critical programme inputs are provided will require political leadership, stewardship, development of appropriate standards for practice, development of comprehensive care and treatment plan as part of the overall response.


Promoting Sustainable Capacity Building at the Subnational Level

The enormous programme challenges associated with scaling up various interventions will demand tremendous increases in capacity, especially at the community level. NGOs, faith-based organisations (FBOs), and other civil society groups, as well as government agencies that work at the district level, must be able to recognise, initiate, and support effective local responses involving community mobilisation and care and support interventions. These
increases in capacity will require their exposure to state-of-the-art knowledge and the exchange of programmatic experience.

Effective strategies to build capacity for long-term sustainability of programmes include the following:

- Strengthening the organisational capacity of community and faith-based organisations to better implement HIV/AIDS-related activities to meet the needs of PLWHAs. Capacity can be developed in management skills, planning, monitoring and evaluation, resource mobilisation and networking, and provision of training and support to lay/community counsellors.

- Strengthening early interventions with at-risk youth

- Promoting collaboration and coordination among partners (GAC, District Assemblies, GHS/MOH, DRI, etc.) for long-term local responses and identifying new public-private partnership opportunities. Example interventions include building capacity of NGOs to provide VCT services, training health staff about blood safety in both private and public institutions, addressing stigma and discrimination, training district assemblies (including members of executive and finance and administration committees) on planning and budgeting for HIV/AIDS.

Broadening training to include all health workers, not just those providing ARV therapy.

**Promoting Programmes for Orphans and Vulnerable Children**

Given the current disease burden of HIV/AIDS, as discussed in previous sections of this report, the number of AIDS orphans will continue to rise over the next decade. These children have the same basic needs as other children, economic and food security, education, nutrition, health, and emotional well-being. However, HIV/AIDS erodes the capacity of families and communities to respond to these needs. Already, AIDS is having and will continue to have negative impacts on many children.

While the response from community and civil society groups has been minimal in some areas, in many others, communities are being mobilised and are establishing systems to identify, protect and provide basic necessities to the most vulnerable children. For example, in Manya Krobo, the Queen Mothers Orphans Care Initiative is helping to care for orphans and vulnerable children in their various communities. This initiative builds upon the traditional cultural structures of care.

The children remain integrated into a family unit where they receive shelter, food, and education. Currently, in Upper Manya 50 percent of caregivers are Queen mothers.

Specific interventions must ultimately be based on identifying programme needs as well as strengthening existing community resources in a manner that does not undermine them. In recognition of this, the GAC and its partners, with technical and financial support from POLICY/Ghana and USAID, have begun drafting a policy guideline on orphans and

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1 In Ghana, the traditional role of Queen mothers often limited them to advising chiefs, settling family issues, and serving as custodian of local customs and values. Since the onset of HIV/AIDS, however, the role of Ghana’s Queen mothers has evolved dramatically.
vulnerable children to direct and support implementation of programmes. These policy guidelines will provide a common, holistic vision within a human rights framework that gives equal importance to the survival, growth, and development of children. The guidelines are designed to help governmental agencies, including the district assemblies and the HIV/AIDS focal persons, work with NGOs, FBOs, and other civil society groups to provide more effective, holistic support to children within their families and communities.

**Building an Enabling Environment Through Continued Political Commitment at the National and Subnational Levels**

While political, health, and other leaders will be directly involved in HIV/AIDS programme implementation, nongovernmental, religious, business, education, and other regional leaders who are not directly involved in the implementation of HIV/AIDS prevention programmes must contribute as well. If the leadership of Ghana all do their share, this epidemic can be turned around. Experience with health programmes in many developing countries shows that strong leadership support can be critical to success.

Examples of the types of support that leaders can provide are outlined below; however, numerous other types of activities are possible, depending on the role of a given leader or organisation.

**Disseminating accurate information.** Evidence from Ghana 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. National, regional and district leaders have numerous opportunities to share information with their constituencies. This is a practical and critically important process to which all well-informed leaders can immediately and realistically contribute.

**Participating in policy dialogue.** Political leaders can also contribute to a policy dialogue on the HIV/AIDS epidemic that keeps the issue high on the national agenda. In countries such as Uganda and Thailand, one factor that appears to have helped turn the tide against HIV/AIDS is that leaders spoke out early and often about the HIV/AIDS epidemic and offered open and strong support to intervention programmes. This outspokenness 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 should be included in speeches at all realistic opportunities. Parliamentarians and other leaders can contribute to the formulation of national and district strategic HIV/AIDS plans and can support implementation and funding efforts.

**Fighting stigma and discrimination.** One of the most common problems in addressing the HIV/AIDS epidemic is that people often avoid learning their HIV status or admitting to being infected because of the stigma attached to the disease and because of fear of discrimination. This avoidance limits diffusion of knowledge about HIV in the general population and it
increases the risk of transmission. Moreover, discrimination against individuals with HIV or AIDS violates their human rights and hampers prevention efforts. A key element of the National HIV/AIDS/STI Policy is the guarantee that the human rights of all Ghanaians will be respected. Political and other leaders can help by supporting this policy, publicly acknowledging the need to care for and support PLWHAs, and working against discrimination.

Continuing the Response

The purpose of this document is to provide information that can be used by various stakeholders in the development and implementation of HIV prevention and mitigation programmes in Ghana. Although the HIV disease is at epidemic proportions and threatening to claim the lives of hundreds of thousands of Ghanaians in the foreseeable future, more than 96% of the adult Ghanaian population is not infected with HIV. Indeed, it is possible to stamp out HIV/AIDS from Ghanaian society. But doing so will require efforts at the individual, family, community and national level, not only to avert HIV infection, but also to address the social, emotional and economic impacts that the disease is currently presenting to some sectors of the society. Governments, NGOs, civil society groups, businesses, development partners, and others working in concert with the Ghana AIDS Commission and the Ministry of Health/Ghana Health Service already have begun to develop and implement innovative strategies to respond to the HIV/AIDS epidemic in the country. Readers should ask how their organisations or communities can help in this response.
List of References


Atipoe, D. (2004). Revealing the Pandora Box or Playing the Ostrich? A Situational Appraisal of Men Having Sex With Men in the Accra Metropolitan Area and its Environs Ghana (a research project undertaken within the initiative of the West Africa Project to Combat HIV/AIDS and STI, with funding by CIDA).


Sentinel surveillance systems for HIV are designed to provide information on trends to policy makers and programme planners. The data are useful for understanding the magnitude of the HIV/AIDS problem in certain geographic areas and among special populations and for monitoring the impact of interventions. These data also can be used together with SPECTRUM computer models to prepare estimates of national HIV prevalence and the various epidemiological and economic impacts suitable for advocacy purposes and planning. This technical note provides a synopsis of the steps used to develop the national HIV estimates and AIDS Impact Model (AIM).

The estimate of HIV prevalence among all adults aged 15-49 rests on the assumption that prevalence among pregnant women attending antenatal clinics is a good indicator of HIV among all male and female adults (15-49) in the general population.

There are a number of reasons to suggest that antenatal clinic (ANC) data would overestimate the prevalence in the general population, including differences in the age distribution of pregnant women compared to all women 15-49, the proportion of the population 15-49 that is sexually active, and differences between female and male prevalence. ANC data represent sexually active women, with fertility higher at younger ages. In addition, as the AIDS epidemic matures there is clear evidence that women are at a greater physiological risk and are socially more vulnerable, and thus tend to have higher HIV prevalence than men. This has been true in Ghana since the beginning of the epidemic. UNAIDS is now using a female to male ratio of 1.3:1 in mature epidemics for current HIV infections.

However, there are also a number of reasons to suggest that the ANC data would underestimate the prevalence in the general population. Studies from several African sites have shown that women with HIV have lower fertility than those without infection by approximately 20 percent. HIV-positive women are thus less likely to be pregnant and, as a result, ANC data tend to underestimate prevalence among all women aged 15-49.

For the 15-49 age group, the consensus is that these factors cancel each other out and as a result, prevalence among pregnant women is widely felt to be a good indicator of prevalence among all adults 15-49, without any adjustments. Notably, this conclusion is only valid for the population 15-49. For some subpopulations, such as 15-19, there are significant differences in prevalence between pregnant women and all adults. As a result UNAIDS recommends that ANC prevalence can be used to represent prevalence among all adults 15-49 in generalised epidemics such as in Ghana.

Table 1 displays data from the Ghana sentinel surveillance system from 1992 to 2003 that were used in estimating national HIV prevalence. The estimates were prepared in consultation with stakeholders from a number of organisations, including NACP (Ministry of Health), WHO, UNAIDS, West African Regional Programme on HIV/AIDS, Ghana School of Public Health, Ghana Statistical Service, Reproductive and Child Health Programme, Population Impact Project (University of Ghana), and the POLICY Project. This work has built on previous activities in 2001 (NACP, 2001, August) and 1999 (NACP, 1999)
that prepared estimates for those years. The work has also benefited from new models produced by UNAIDS Reference Group on Estimates, Modelling, and Projections (2002, W1-W16).

**Curve Fitting and Estimating National Adult HIV Prevalence**

The Estimation and Projections Package (EPP)\(^4\) was used to fit the rural and urban epidemic curves to the HIV prevalence data for all urban and rural sentinel sites in Ghana. EPP is a simple epidemiological model that produces the basic epidemic curve shapes found in most HIV epidemics. The EPP curves smooth the annual fluctuations inherent in sentinel data as a result of sample size issues and other potential errors, and provide a picture of the entire course of the epidemic from the start to today.

The model can also be used to project future prevalence for a short time into the future in this case, up to 2004. In some cases, the model provides a good fit to the surveillance data and the curve can be used without further modification. In other cases, experts in consultation with stakeholders need to use their best judgment to determine the shape of the prevalence curves\(^5\).

The assignment of sentinel sites to the rural/urban population was based on the definition of a rural and urban settlement used by NACP, as defined by the Ghana Statistical Service. Urban and rural EPP models were then fit to come up with an agreed-upon estimate of national adult HIV prevalence from 1984 to 2005. Values from these curves (rather than the actual sentinel site point estimates) were used to estimate national prevalence. This estimated prevalence was then used to calculate additional indicators of interest about the HIV/AIDS epidemic.

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\(^4\)The EPP program is available free of charge. The program and manual can be downloaded from. [http://www.unaids.org](http://www.unaids.org)

\(^5\)Data from the rural site was adjusted downward based on the best judgement of the stakeholders, to make it more representative of the national rural population.
Table 1: HIV Prevalence by Sentinel Site by Year

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Estimating Adult Population, HIV Indicators, and The AIDS Impact Analysis

To get a sense of the impact of the HIV/AIDS epidemic in Ghana over the last 18 years, two modules of SPECTRUM were used, DemProj and AIM. DemProj was used to project the national population of Ghana by age and sex and to display a full range of demographic indicators. AIM was used to calculate HIV/AIDS indicators such as the number of HIV infections, AIDS cases, AIDS deaths, AIDS orphans, the number of people who need ARVs, impact of HIV/AIDS on life expectancy, and other such factors.

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* SPECTRUM is a system of policy models that includes modules for making demographic and HIV/AIDS projections. It has been developed by the USAID-funded POLICY Project. The model and manual can be downloaded from the Futures Group website (http://www.FuturesGroup.com).

The bases for the other demographic inputs were as follows:

- Total fertility rate and age distribution of fertility:
  - 1984 1984 Census
  - 1988 Demographic and Health Survey
  - 1993 Demographic and Health Survey
  - 1998 Demographic and Health Survey

- Model life table: Coale-Demeny North.
- International migration-The effect of international migration on the national population was assumed to be zero since there is minimal net migration.

Additional HIV/AIDS assumptions were derived as follows:

- Adult HIV prevalence-Using curve fits from EPP projections made for 1984-2004. We don't know exactly how the state of the epidemic might be many years from now. Hence, for purposes of this projection, the 2004 estimated prevalence rate was kept constant for the period 2004-2015 to provide a scenario of what the situation might be like if the current prevalence remains the same.

- Start year of epidemic - Assumed to be about 1984 since the first AIDS cases were identified in 1986.

- Incubation period - Following UNAIDS recommendations, the median time from infection to AIDS death for adults is assumed to be 9 years (8.6 years for males and 9.4 years for females). For children a faster progression to death is used (UNAIDS Reference Group on Estimates, Modelling, and Projections, 2002, W1-W16).

- Age distribution of HIV prevalence - For both males and females, rates have been calculated from the distribution of cumulative reported AIDS cases (1986-2003) from the HIV Surveillance Report (NACP, 2003). The reported rates have been adjusted five years younger to account for the lag from HIV to AIDS.

**Range of Uncertainty for Estimates**

There are many sources of potential error involved in preparing these estimates. Prevalence estimates at ANC sites may have an error of ±3-5 percentage points depending on sample size. There are also some uncertainties in finding the best fitting curves for the urban and rural sites and equating prevalence from about 24 antenatal clinics to represent the entire
country. UNAIDS recommends that the error range around national estimates in generalised epidemics with good surveillance systems, such as Ghana, is ±20% (UNAIDS Reference Group on Estimates, Modelling, and Projections, 2002, W1-W16). For this report, only point estimates were reported.

Further inquiries on the technical content of this document can be submitted to the NACP at the address on the title page.