

HIV/ AIDS and the implications for Management Of the Corporate Sector in South Africa

Ms. Neranjini Naidu

Submitted in partial fulfilment of the requirements for the degree of
MASTERS IN BUSINESS ADMINISTRATION

Supervisor: Professor Elza Thompson

September 2003

DECLARATION

This research has not been previously accepted for any degree and is not being currently submitted in candidature for any degree.

Signed.....*K. Ganesan*

Date*09 September 2003* 096251

ACKNOWLEDGEMENTS

This forms the culmination of three years that were filled with trepidation, anxiety and, at the time, infinitesimal stress. However, a conclusion seems imminent for the first time making all of the anxiety and stresses seem quantifiable.

This has come with sacrifice that goes well beyond my own and it is only pertinent that I acknowledge the people who have encouraged me and tolerated me through this endeavour.

Firstly, I would like to thank my children, Hariska and Shamikan for affording me the opportunity, space and time to pursue my study. You have been inspirational and the value of your tolerance goes beyond anything I can express in words. You will have to settle for 'thank you' but I have every intention of making up for it.

To my parents, for their support and willingness to make up the deficit that was created by my absence and for recognising that I needed to be nurtured intermittently through this period. I guess I always knew that I could count on you and this was not a test but the real thing.

To my brother, Dr. Chetty, for the encouragement and support that he provided when it all seemed so overwhelming.

I thank my dear friend, Dr. Moodley, for the guidance, encouragement and, unbridled enthusiasm.

To Professor Thompson, for the support and the encouragement she so willingly provided. The attention to detail was a challenge in trying to put it all together but was undoubtedly essential.

To my colleagues, for their enthusiasm especially when it came to reminding me that there was life beyond studying – I thank them for those lighter moments when I rediscovered my sanity. I know that this is bound to upset some, but I feel obliged to especially mention Zulekha and Eugene for their support that was both academic and social.

As I write this, the only question that keeps ringing in my head is; "Is it really over?".

ABSTRACT

This study endeavoured to critically appraise the current models that have been designed to evaluate the HIV/ AIDS epidemic. The flaw with the models is that they are not based on adequate data. Subsequently, the incorporation of the epidemic variables into Corporate Management has been lethargic especially with respect to small and medium business enterprises in South Africa. Nevertheless, larger corporations have evaluated the impact of the HIV/ AIDS epidemic in their individual companies that provide results on the magnitude of the epidemic on the corporate sector. A careful analysis of these results taking into account the nature of the business will allow for more realistic inferences of the skill demographic magnitude of the epidemic from which smaller companies that have not embarked on studies can have a platform to assess the potential magnitude of the disease and this forms the backbone of the disease. Once this is recognised and incorporated into the mindset of companies, then strategic decisions have to be taken to minimise the impact of the epidemic on the business functions to ensure firstly sustainability and then profitability. Recommendations are outlined in the study based on the experiences of the larger corporate players that have performed the appropriate analysis for this and the actions that have been instituted. Thereafter the thesis substantiates the need for implementing strategies to deal with HIV/ AIDS and the goals that companies should aspire. Lastly, based on workplace programs that have already been successfully incorporated into companies, the analysis and the program implementation is outlined.

TABLE OF CONTENTS

CHAPTER 1	1
1.1 Introduction and Research Proposal	1
CHAPTER 2	
2.1 Overview of the HIV epidemic	11
2.2 Economic implications of the HIV epidemic	17
2.3 Economic impact on Sectors	35
CHAPTER 3	
3.1 Determining the magnitude of the AIDS epidemic in SA	40
3.2 ASSA results	41
3.3 Corporate sector results	53
3.4 Making sense of the available statistics	60
3.5 Implications of findings to corporate sector	62
CHAPTER 4	66
4.1 GAP Analysis	67
4.2 Institutional Audit	69
4.3 Management Strategies	73
CHAPTER 5	
5.1 Implementing strategies to cope with HIV/ AIDS	77
CHAPTER 6	
Strategic options and aims for the implementation of a HIV/ AIDS program for employees	85
6.1 HIV/ AIDS program elements	85
6.2 Prevention	87
6.3 Elements of successful programs	90
CHAPTER 7	97
Conclusions	
REFERENCES	99

LIST OF TABLES	Page
2.1 HIV-1 Therapy Based on Viral Load Testing	15
2.2 Standard HAART Regimens	16

LIST OF FIGURES			Page
Figure 2.1	HIV prevalence trends in South Africa		16
3.1	Risk group prevalence	Total Population (TP)	41
3.2		Asian Population (AP)	41
3.3		Black Population (BP)	42
3.4		Coloured Population (CP)	43
3.5		White Population (WP)	43
3.6	Distribution by AIDS cases and death by age TP		43
3.7		AP	44
3.8		BP	44
3.9		CP	45
3.10		WP	45
3.11	Projected mortality – TP		46
3.12	Distribution of ANC HIV+ by age TP		46
3.13		AP	47
3.14		BP	47
3.15		CP	48
3.16		WP	48
3.17	Deaths	TP	49
3.18		AP	49
3.19		BP	50
3.20		CP	50
3.21		WP	51
3.22	Percentage employees with HIV in the mining sector		55
3.23	Sectoral incidence of HIV/ AIDS		58
3.24	Company studies in Provinces		59
3.25	Prevalence levels in skill demographics		62
6.1	HIV rapid testing algorithm		95

GLOSSARY OF ABBREVIATIONS

HIV	Human Immunodeficiency Virus
AIDS	Acquired Immunodeficiency Syndrome
ASSA	Actuarial Society of South Africa
STI	Sexually Transmitted Infection
HAART	Highly Active Antiretroviral Therapy
RNA	Ribonucleic Acid
NRTI	Nucleoside Reverse Transcriptase Inhibitor
NNRTI	Non Nucleoside Reverse Transcriptase Inhibitor
PI	Protease Inhibitor
GDP	Gross Domestic Product
MRC	Medical Research Council
NGO	Non Governmental Organisation
DOTS	Directly Observed Treatment Short-course
TB	Tuberculosis
KAP	Knowledge, Practice and Attitude
VCT	Voluntary Counselling and Testing
ARV	Anti-Retroviral Therapy
MAP	Multi-country HIV/ AIDS Program

CHAPTER 1

RESEARCH PROPOSAL

1.1 INTRODUCTION

The magnitude of the HIV epidemic in Sub-Saharan Africa has been cause for significant concern that has echoed through all segments. The economic implications for communities in these areas are painted with a fatalistic streak given the suboptimal performance of the economies thus far. South Africa has always been seen as the potential for a solution in this area given its superior infrastructure and modern economic strengths. The magnitude of the epidemic in South Africa, harbouring the highest incidence of the disease, has left this role in serious doubt. Moreover, the very strength of its own economy has been questioned in the light of the HIV epidemic sweeping the country. Several reports have substantiated the credibility of this response.

1.2 BACKGROUND OF THE RESEARCH

The disease continues to spread in the heterosexual productive population in our country with current infection rates based on maternity clinic studies showing a rise from 0.7% in 1990 to 22.4% in 1999. This indicates an increase of more than 30 times from the beginning of the epidemic.

Disease affects the younger population and is largely sexually transmitted. Other modalities of infection do occur such as occupational risk (needle-stick injuries sustained by health personnel), blood transfusions and exposure to body fluids but this is very uncommon.

There is no cure for the disease but control can be effected by the administration of antiretroviral therapy. However, this therapy is expensive costing about R1 500 per month and requires the patient to ideally consume 6

small meals per day demanding that infected individuals have to earn an appreciable income as this medication is not provided by the government nor is it subsidised. Recent press releases suggest that Government has altered its stance on the provision of retroviral agents but this has yet to be implemented.

Additional problems imparted by the disease are the emergence of secondary infections as a result of the immune compromise that requires expensive therapy and hospitalisation and, the loss of work hours secondary to these infections for the purposes of treatment and recuperation.

Current awareness programs conducted in the country appear not to impact significantly on disease progression largely due to poverty and the failure of these programs to reach the most vulnerable population groups.

1.2.1 Economic Implications and Data

Data is difficult to obtain concerning the disease owing to the social stigma that is attached, the disease is not notifiable and testing is expensive; the expenses include pre- and post-test counselling and antibody tests. Newer tests are available but their efficacy is lower.

Current available data from South African companies include the following:

“An actuarial study has estimated that 15.3% of **Sasol's** 26 000-strong workforce is HIV-positive and infections will rise to 17.5% in 2007 if prevention programmes fail to make a difference.”

BP estimates that 20% of its 3 000 employees in Southern Africa are HIV-positive.

“Multinational BIC employs 250 workers in SA. In voluntary anonymous testing (95% of staff agreed to participate) 27 tested HIV-positive.”

“**BIC** then asked staff to come forward for voluntary but non-anonymous testing. Forty responded, 13 of whom tested HIV-positive.”

Nedcor now has about 26 000 employees. **Nedcor** Foundation head Kevin Dunne says it's impossible to gauge how many might be HIV-positive, though he expects between 5% and 10% to be "vulnerable" and about 200 to be ill.

The Aids-related deaths we are seeing now are the result of infections from six to eight years ago. This means that even if SA were to see a reduction in infection levels as a result of behavioural change, the positive effect in terms of sickness and mortality is five years away.

A recent study of 500 SA companies by finance group **Sanlam** shows that 75% of companies do not know the prevalence of HIV/Aids in their organisations and more than 60% have no strategy to manage the pandemic.

Dr Denis Cronson of **Health InSite** believes that among smaller companies as many as "90% or more are doing terribly little".

Based on anonymous prevalence surveys, antenatal data and estimates based on comparable populations, 25%-30% of AngloGold's 38 800-strong SA workforce is HIV- positive.

The group has released remarkably frank figures on the cost of battling the pandemic. This year the budget for a new HIV/Aids intervention programme is R7,4m. An antiretroviral treatment programme for infected workers was launched at a cost of R2 440/month per worker. Patient intake will be increased to more than 800 by the end of next year.

Actuarial studies estimate that by 2009 HIV/Aids will cost between 8% and 17% of AngloGold's payroll.

In new disclosure requirements from next year, the JSE Securities Exchange will require all listed companies to report on employee HIV prevalence; the effects of HIV/Aids on costs, productivity, revenue and customers; full disclosure of workplace programmes to manage the pandemic; and information on community-based care programmes and wellness clinics.

Prevalence is one thing, but the effect of HIV/Aids on a business is another and includes the deaths, early retirement, loss of skills, financial effects and the effect on productivity.

1.3 OUTLINING THE PROBLEM

From the afore-going information, it is easy to recognise that HIV poses a significant threat to the private sector. Adequate attention needs to be paid to the workforce to ensure the sustenance of operations and ultimately, profits. To this end, this study endeavours to determine the magnitude of the HIV epidemic to the corporate sector and, with its concomitant implications, suggest strategies to curb the impact of this epidemic on individual companies

This appears attractive for several reasons amongst which are

- Sustaining businesses
- Prolongation of the available skills minimising the impact on productivity
- Easier and more complete apprenticeship for staff replacements with the attendant benefits on productivity

- Awareness/ Education programs that, barring its obvious social benefits, may assist in reducing the loss of the skills
- Motivational benefits to the staff

1.4 MOTIVATION FOR THE RESEARCH

In the light of the aforementioned information, it is quite obvious that the corporate sector, irrespective of size, needs to be engaged actively in the battle against HIV/ AIDS and realign strategy to accommodate the impact that this epidemic will pose to them in order to retain profitability.

The larger companies have commenced impressive programmes with mutual benefits i.e. to both company and employees being realised. The sheer cost of these programs may account for the hesitance of the smaller companies to embark on projects for their employees.

An additional factor that imposes stagnation with respect to the HIV/ AIDS dilemma is the lack of statistics that would alert the public to the magnitude of the problem as well as alert companies to the potential impact to them as demographic details are scanty.

1.5 VALUE OF THE PROJECT

This study, by carefully analysing all the available data on HIV/ AIDS that may be pertinent to the corporate sector, provide figures that are more realistically associated with the corporate segment of the population alerting companies to the potential magnitude of the epidemic to the individual businesses and subsequently, it would be simple for them to comprehend the rationale for measures that would address the epidemic.

Additionally, the currently available programs that have been implemented by larger companies will be reviewed with a subsequent framework proposed that will allow other companies to embrace in initiating projects of their own. Furthermore, options for smaller companies will be proposed to circumvent the limitations of funding that is of smaller concern in the larger companies.

1.6 PROBLEM STATEMENT

The current lack of programs to deal with the HIV/ AIDS epidemic has been the perception that HIV/ AIDS is restricted to the lower socio-economic classes where the unemployment rate is significant and is unlikely to pose an economic problem. Substantiation for this belief has been strengthened by the ING Barings study.

These views are controversial and are based on projected figures drawing criticism from other economists.

All of the sentiments expressed remain unsubstantiated as the magnitude of the HIV epidemic in South Africa has not been quantified and thus interventions have been either sluggish or fragmented

This study aims to determine the magnitude of the HIV/ AIDS epidemic in the corporate sector and what can be done to minimise the impact on individual companies.

1.7 OBJECTIVES OF THE STUDY

1. To establish the extent of the HIV epidemic in the corporate sector
2. To determine strategic measures to minimise impact on company function and profitability in the light of the HIV epidemic
3. To evaluate and suggest strategies to deal with the HIV epidemic in the workplace

1.8 RESEARCH METHODOLOGY

1.8.1 HIV/ AIDS STATISTICS

To quantify the impact of the HIV/ AIDS epidemic on the corporate sector, three methods of data collection were opted for

- Collating the results of the various individual corporations that have performed them together with data from the health sector
- Correlate data with projected figures. The ASSA 2000 database will be employed as it takes the most variables into consideration
- The last method was to determine the number of life policies that were repudiated due to HIV status over a 5year period. Various insurance companies were approached for results with respect to
 - Number of policies applied for
 - Numbers repudiated due to HIV status
 - Income group of individual
 - Skill category or profession
 - Age and gender

Insurance companies were selected with a view to obtaining a cross-section of the workforce and furthermore, these policy applications would invariably select the employed.

1.9 LIMITATIONS OF THE STUDY

However, all insurance companies denied access to this information quoting sensitivity and breach of confidentiality although confidentiality was promised. This component of the magnitude has since been excluded from this study.

1.10 STRUCTURE OF THE STUDY

Chapter2: This provides the current theory on HIV/ AIDS and the epidemic as well as looks at the economic models and prediction coupled with the criticisms of these.

Chapter3: Assimilates all of the available relevant statistics on the magnitude of the HIV/ AIDS epidemic, with an analysis and dissection of the figures to provide data on sectoral and demographic involvement in the corporate sector. These figures will be more applicable and illustrates the potential direct impact to the company more readily.

Chapter4: This chapter discusses the possible strategies to maintain company operations in the light of the epidemic with the methods to implement them. This included the GAP analysis.

Chapter5: Outlines the needs for strategies to deal with HIV/ AIDS in the workplace and summarises the goals of implementing the workplace program.

Chapter6: Outlines the options for implementation of the program for employees, and the company requirements and methods to implement them.

Chapter 7: This chapter concludes the thesis with a brief summary of the findings.

1.11 SUMMARY

Enormous concern has been raised about the magnitude of the HIV/ AIDS epidemic in South Africa. Despite this, very little effort has been made by medium and small enterprises to address this epidemic despite these concerns accounting for approximately 70% of employment in this country. This may stem from the misconception that the epidemic has little impact on the corporate sector and will be compensated for the unemployed.

This study aims to determine the validity of the concern of the epidemic expressed by looking at objective statistics that have been published providing prevalence of the HIV epidemic that is relevant to the corporate sector, and stratify these results to make the magnitude of the epidemic to the corporate sector more readily tangible.

In addition, it will look at current strategies that have been proposed and or implemented and recommend strategic measures appropriate to the company to ensure company sustainability and profitability as well as strategies to preserve the workforce and their families.

SUMMARY

The evidence on the magnitude of the HIV epidemic to the corporate sector remains unsubstantiated. Interpretations of the only tangible results concerning the HIV/ AIDS epidemic i.e. antenatal screening data from public sector health services is not directly applicable to the corporate sector given the high rate of unemployment that prevails. Nevertheless, the corporate studies that have emerged suggest that strategic interventions are mandatory to minimise the impact of the HIV/ AIDS epidemic to the individual concerns with a strong bias by the larger companies looking towards programs that will embrace the communities at large. This study will endeavour to evaluate the available results on the HIV/ AIDS epidemic with a view to make the results applicable to the corporate sector substantiating the urgency of the need to incorporate management strategies to address the epidemic.

These studies will also evaluate the current programs that have been implemented in the corporate sector and provide the goals that companies should aspire to and the principles of the implementation of programs.

Chapter 1 deals with the literature on the HI Virus and thereafter looks at the economic implications of the HIV/ AIDS epidemic pertinent to South Africa.

CHAPTER 2

2.1 OVERVIEW OF THE HUMAN IMMUNODEFICIENCY VIRUS EPIDEMIC

2.1.1 INTRODUCTION

The human immunodeficiency virus (HIV) was unknown until the early 1980's but since that time has infected millions of persons resulting in a worldwide pandemic. The result of HIV infection is relentless destruction of the immune system leading to the onset of the acquired immunodeficiency syndrome (AIDS). The AIDS epidemic has already resulted in the deaths of over half its victims. All HIV-infected persons are at risk for illness and death from opportunistic infectious and neoplastic (cancerous) complications as a consequence of the inevitable manifestations of AIDS.

The AIDS pandemic has evolved over time, with four main phases of evolution. In the initial phase, HIV emerged from endemic rural areas to spread among urban populations at an accelerating rate. In the second phase dissemination occurred and involved definable risk groups. Behaviours in these risk groups, including sexual promiscuity and injection drug use, led to the third phase of escalation of the pandemic through the 1990's.

Although the HIV infection rate in the United States peaked in the late 1980's and has declined since, the reservoir of HIV-infected persons developing AIDS and requiring therapy continued to increase through the 1990's and into the 21st century. The scope of the AIDS pandemic has already led to serious consequences, not only for health care systems of countries unable to cope with the many AIDS victims, but also for the national economies of these countries because of the loss of young to middle-aged who are economically most productive. Worldwide, about half the victims of AIDS are women and a

consequence of this is perinatal infection resulting in a significant number of children born with HIV infection.

Costs for detection, diagnosis, and treatment are considerable and increase further with the development of effective therapies for persons with complications of HIV infection and their subsequent longer survival. In the 1990's in the US, the average cost for medical care of an HIV-infected patient was double the average income for half of all such patients. The years of useful life lost by the predominantly younger population infected by HIV has a serious economic impact. Considerable effort has been placed into education of persons potentially at risk for acquiring HIV. A proper understanding of AIDS issues, including the nature of HIV and its means of spread, should precede decisions regarding allocation of health care resources and control measures.

2.1.2 EPIDEMIOLOGY OF AIDS

The spread of AIDS is facilitated by human travel. Modern means of travel by jet aircraft readily available to many people provide an easy route for the spread of AIDS from one location or population to another.

AIDS is distinguished by a long latent period before the development of any signs of visible infection in affected persons. The limitations imposed by this are that affected people are unaware of the condition and may continue to spread the disease.

HIV is primarily a sexually transmitted disease. There are three major variables that explain the sexual transmission of HIV

- Transmission efficiency
- Number of sexual partners

- Seroprevalence (numbers of infected individuals in a community)

Coexistence of other sexually transmitted infections (STI's) may increase the infectivity of HIV.

Another important method of spread is blood or blood products. The primary risk group for HIV transmission via blood is intravenous drug users sharing infected needles. Health care workers are also at risk from needle-stick injuries. Patients requiring transfusions are also at risk although this has been decreased dramatically with more sophisticated screening today.

2.1.3 NATURAL HISTORY OF HIV INFECTION

On average, there is a period of 8 to 10 years from initial infection to clinical AIDS in adults, though AIDS may be manifested in less than 2 years or be delayed in onset beyond 10 years. All patients with HIV infection will develop AIDS.

2.1.4 PREVENTION OF HIV TRANSMISSION

The transmission of HIV in definable risk groups allows for control measures to be taken that prevent the spread of AIDS. Since HIV is primarily spread as a sexually transmissible disease, then educational efforts must be aimed at sexually active persons and must be explicit regarding the behaviours that lead to the spread of HIV. A significant number of both boys and girls become sexually active as teenagers and must be included in prevention strategies. Given that the level of promiscuity will often be difficult to modify within a population, then educational campaigns are best focused upon the use of barrier precautions, particularly condom use. Sexual activity does not appear to increase with condom use. All sexually active persons with more than one sexual partner, or whose partner is a member of a risk group for AIDS, should

use condoms. Persons who know that they are HIV infected should inform their sexual partners.

2.1.5 METHODS TO REDUCE RATES OF HIV TRANSMISSION

- Treat HIV infection as an illness, not as a social stigma
- Reduce levels of poverty in society that lead to increased risks through drug abuse and promiscuity
- Provide HIV testing and counselling to identify infected persons who can reduce their risk to others
- Provide educational programs for children and adults which describe how to avoid sexually transmitted diseases
- Promote sexual barrier precautions among high risk commercial sex workers and clients
- Provide clean needles for injection drug users
- Create health care programs providing antiretroviral therapy to extend life and reduce HIV transmission rates
- Give HIV-infected pregnant women antiretroviral therapy to reduce perinatal HIV transmission
- Confidential HIV testing should be made available along with counselling services to persons in all risk groups to encourage voluntary testing and prevent unknowing transmission of HIV.

In order for programs to be effective, several principles must be applied

- Sustained interventions are more likely to lead to sustained behaviour change
- More intense interventions are more likely to result in greater risk reduction

- Accessibility to devices such as clean needles and condoms that are necessary to safer practices reduces the risk of HIV infection
- Modification of community norms appears to enhance behaviour change

2.1.6 TREATMENT OF AIDS

The use of highly active antiretroviral therapy (HAART) with combinations of antiretroviral agents forms the basis for therapy of HIV infection. This form of therapy for HIV infections bears similarities to cancer therapy. Therapy for persons with HIV infection is based upon CD4 cell count and HIV-1 RNA plasma levels as follows:

Table 2.1

HIV-1 Therapy Based on Viral Load Testing			
Plasma HIV-1 RNA Level (copies/ml)			
	<5000	5000 – 30 000	>30 000
CD4 cells/ml			
<350	Recommend therapy	Recommend therapy	Recommend therapy
350 – 500	Consider therapy	Recommend therapy	Recommend therapy
>500	Defer therapy	Consider therapy	Recommend therapy

The HAART regimens may include combinations of one or more of a nucleoside reverse transcriptase inhibitor (NRTI), non-nucleoside reverse transcriptase inhibitor (NNRTI) and protease inhibitor (PI). Various combinations are possible, with recommended regimens as follows

Table 2.2

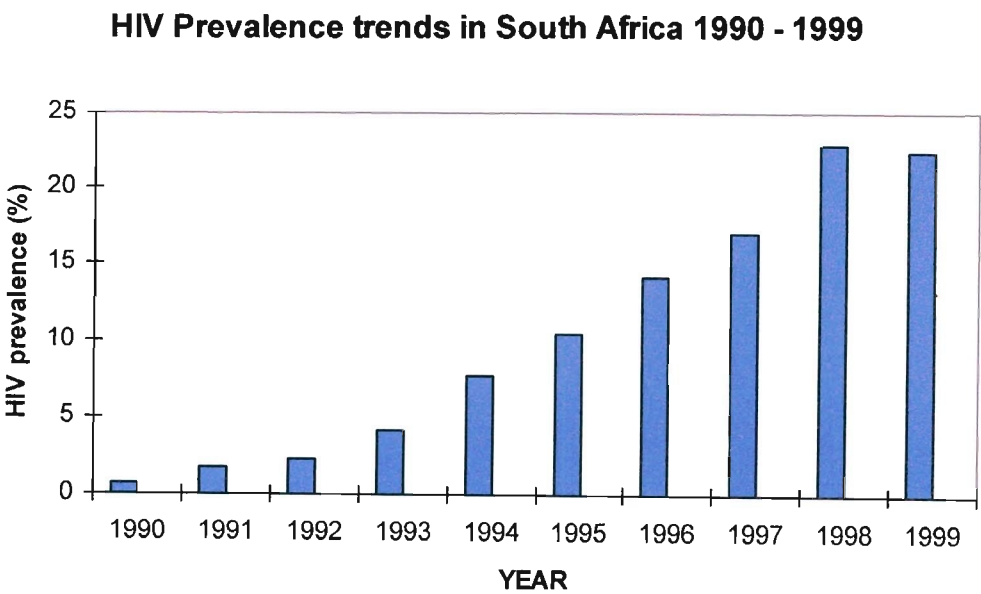
Standard HAART Regimens
• NRTI + NRTI + PI
• NRTI + NRTI + NNRTI
• NRTI + NRTI + PI + PI

Therapy is expensive with the cheapest optimal therapy locally equalling approximately R1 500 per patient per month.

2.1.7 THE HIV EPIDEMIC IN SOUTH AFRICA

Since 1990, the Department of Health has undertaken a series of annual unlinked, anonymous HIV surveys amongst women attending antenatal clinics of the Public Health Services in South Africa. Estimates of the national HIV prevalence for the years 1990 to 1998 show a steady increase from 0.7% in 1990 to 22.8% in 1998. This indicates an increase of more than 30 times from the beginning of the epidemic.

Figure 2.1



2.2 THE ECONOMIC IMPLICATIONS OF HIV OF SPECIFIC CONCERN TO THE CORPORATE SECTOR

2.2.1 INTRODUCTION

Perhaps no disease has fuelled the interests of such a broad group of academics as has HIV. There are several publications and predictions based on limited available data. However, owing to the paucity of information available predictions thus far that have been procured have been largely restricted to the informal sector and the subsequent information is conflicting with respect to the economic impact.

Presently, the impact of HIV in the workforce in developing nations is not well understood, and relatively few attempts have been made to quantify the effects of HIV/AIDS morbidity and mortality on the profitability of private sector firms. Most of the work done in this area was done early in the epidemic, and were based largely on interview or anecdotal data and made very little attempt to quantify the impact of significant increases in mortality in economically active age groups. The importance of such work cannot be underestimated as the private sector is the engine of economic growth and development.

Two models were developed to assess the AIDS costs to companies among employees. The first is a chronological model designed to demonstrate to business managers how HIV/AIDS is likely to affect a company's expenses and labour productivity. The second model reconfigures the cost data from the first model via the company's human resources and financial databases into discrete categories for the purposes of analysis. The 2nd model account for three kinds of costs: 1) direct or out-of-pocket costs, such as employee

benefits and training; 2) indirect productivity costs, such as absenteeism and the loss of productivity experienced by sick workers; and 3) unmeasurable but potentially important effects on the morale, motivation, experience, and performance of the entire workforce. In order to estimate the future costs of AIDS, three pieces of information are critical to the analysis: 1) HIV/AIDS prevalence, morbidity, and mortality; 2) a detailed demographic projection of the workforce, and 3) identification of critical positions or skills within the firm. This kind of analysis will provide business managers, researchers and policymakers with a better understanding of the impact of AIDS on the different units within a company, and enhance strategic planning capabilities. To date, the response of the private sector to the HIV/AIDS epidemic has been passive and reactive. The model presents an opportunity for firms to analyse, and pre-emptively manage the impacts of AIDS in the workforce – protecting the all-important bottom line.

To date, 2 studies have attained prominence within the body of literature: the ING Barings report on the economic impact of AIDS in South Africa and Bollinger and Stover's report on the economic impact of AIDS.

The economic impacts are listed in terms of the following effects:

- AIDS-related illnesses and deaths of employees affect a firm by both increasing expenditures and reducing revenue;
- expenditures are increased for health care costs, burial fees, and training and recruitment of replacement employees;
- revenues may be decreased because of absenteeism due to illness or attendance at funerals and time spent on training. This is for the

individual with HIV/ AIDS as well as for others who will sacrifice their labour time to care for persons with HIV/ AIDS;

- labour turnover can lead to a smaller and/ or less experienced workforce that is less productive;
- increased labour turnover will lead to loss of skills, loss of tacit knowledge, and declining morale;
- labour replacement and other direct and indirect costs will result in higher production costs;
- an increased demand for benefits would add 15% to remuneration costs of an average manufacturing company by 2005;
- benefit packages will have to include adequate insurance cover, retirement funds, health and safety provisions, medical assistance, testing and counselling, and funeral costs.
- All of these factors will result in the reduction of operating profits for firms
- Enterprises would be likely to invest in more capital-intensive technology/ production.

2.2.2 THE MACROECONOMIC IMPACT

Reviewing research on the economic impact of HIV/ AIDS in the early 1990s, Broomberg (1993) concluded that

'work on the overall economic development impact of HIV/ AIDS in South Africa is scanty, superficial and speculative. It is generally argued the epidemic is likely to have devastating consequences for overall economic development in South Africa, and that these consequences are likely to be felt in the first decade of the next century, as the demographic impact of the

disease begins to have an effect.... These speculative analyses [are not] accompanied by any attempt at quantification. There has thus been no effort to link the disability and mortality impact of the disease to levels of unemployment, or to the skill levels in the economy.'

Ten years later, it would appear that very little has changed. Only 2 serious attempts were made, both in the year 2000 to quantify that serious impact had occurred in the shape of analyses commissioned by ING Barings and by the World Bank.

There appears to be only a single quantitative analysis which supports the cautiously optimistic view – based on a cross-country regression involving 51 countries, it suggests that:

'there is little support for the widespread claim that the AIDS epidemic will slow the growth rate of income per capita...after controlling for standard influences on growth... we find no evidence that the economies [where HIV/AIDS is quite advanced] grew at a significantly slower pace ... than of other countries where changes in the cumulative prevalence of AIDS was lower (Bloom and Mahal, 1995^x).'

The shift in mood away from pessimism is based on a considerable extent on the growth record to date. The fact is that, although South Africa's growth has been sluggish at best, there has not been a steep decline in *macro* performance. Additionally, growth has not declined in other African economies for reasons clearly identifiable with HIV/ AIDS.

Macro analysis is still self-admittedly speculative, in that the authors are forced to make a myriad of assumptions about the demographic impact on the labour force, and about the behavioural response of agents, households, firms

and government. The need for such assumptions is in large measure due to the absence of adequate research at the micro level to underpin macro level analysis. Despite these difficulties, closer examination of existing macro analysis in pointing to future research questions and issues at all levels of analysis.

The starting point for these analyses is the differences between HIV/ AIDS and other high prevalence infectious diseases. These differences are that

- AIDS is inevitably fatal and affects people who are sexually active and therefore also part of the active labour force
 - This is in contrast to diseases like malaria
 - Thus the AIDS epidemic affects the size, growth rate and age and skill composition of the future labour force that in turn feeds into the growth rates of potential output and productivity.
- Unlike other killer diseases like bubonic plague, AIDS is
 - Slow moving both within society and within the body so that the incubation period is extended and morbidity level is high.
 - Society thus has to bear the costs of treatment and palliative care which are high relative to other killer diseases
 - This affects the level and composition of future consumption demand by both public and private agents, and thus also the levels of savings and investment.

The economics HIV/ AIDS is therefore quite distinct from other diseases with similar epidemiological and demographic characteristics (Ainsworth and Over, 1994).

Projections of economic impact in South Africa depend on how these impacts are transformed into quantitative assumptions from economic modelling exercises, as well as the specific economic assumptions underlying the models used. Three different models have been applied and are discussed in turn:

1. **The Human Capital Framework Model** was used in the early 1990s by Broomberg and colleagues and Trotter.
2. **WEFA Macroeconometric Model** (time-series) was used by the ING Barings analysis
3. **The Computable General Equilibrium Model (CGE)** was the contribution from Arndt and Lewis.

2.2.3 Broomberg et al: The Human Capital Approach

This approach makes use of what is essentially a cost-benefit framework in that it focuses on those directly affected by the epidemic and excludes from consideration the rest of society.. The impact of the epidemic is understood to comprise the total annual costs of the disease to society, cumulated over a specific period. Costs are divided into direct and indirect, where direct costs include the costs of health services provided by public and private sectors to people with HIV at all stages of the disease as well as testing, prevention, research and education. Indirect costs include estimates of the morbidity, disability and premature mortality as a result of HIV/ AIDS per annum, by summing lost future earnings over all cases. This total is adjusted downwards to account for replacements of ill and deceased workers by unemployed workers, to give a proxy for lost production as a whole. All the unskilled

workers and half the semi-skilled are assumed to be replaceable once forced to leave the labour force due to illness or death.

In the Broomberg analysis of 1991, the analysis was based on demographic input that prevalence in South Africa would peak at about 30% of the adult population leading to a reduction in population growth rate by 2005. Even with behaviour changes, prevalence would still reach about 18% before levelling off.

The analysis commences with the cost per AIDS case with costs cited between R15 000 to R20 160 per patient per year for 1988-1990. The criticism immediately levelled was that this was a gross overestimation of the costs.

They suggest that total costs of the epidemic incurred in 2000 would be between 2.3% and 4% of GDP in that year, with the direct costs making up the majority of this total, between 1.8% and 3.6% of GDP. In 2005, the equivalent proportions would be 5.1% - 9% for total costs, and 3.8% - 8% for direct costs. It is similarly argued that direct AIDS-related costs would amount to between 19 and 40% of total health care expenditure in 2000. These numbers are very high, too high to be credible and suggest some problems in the underlying assumptions as well as some difficulties in using this model to generate estimates of aggregate economic impact.

This model was extended by Trotter (1993) to look at a range of other issues including lowered returns on educational investment due to HIV/ AIDS, the sensitivity of mortality costs (loss of future earnings) to alternative distributions of age and skill amongst AIDS death, and the impact of higher

recruitment and training costs for replacement workers. This work has since not been carried forward.

The limitations of the human capital approach is that it does not examine how the direct costs of the epidemic are financed in the macroeconomic sense, that is whether they replace other expenditure, either consumption or investment, or add to total expenditure by reducing domestic savings or drawing on foreign savings. All of these may be used but the impact on the GDP and other macroeconomic variables is likely to be quite different depending on the precise financing combination. In addition, the assessment of lost future earnings, by focusing only on those directly affected, does not account for upward wage adjustment within scarce skill categories, especially in the skilled and semi-skilled classes, as well as possible adjustment by firms to more capital-intensive techniques. In other words, the epidemic is likely to result in some redistribution within the surviving labour force, and the economy as a whole, of which the model cannot incorporate.

Cuddington argued that this approach is better suited to estimating the marginal benefit of preventing a single case of HIV infection than assessing the aggregate income and growth impact. Its usefulness lies in its emphasis on accurate estimation of the costs of health care, an issue where confusion prevails but remains an essential input for stricter macroeconomic methodologies.

2.2.4 ING Barings: Macroeconometric Model

This uses the WEFA time-series based macroeconomic model, which is a widely used commercial forecasting model. Demographic input data is based

on the ASSA600 model. The key results are that the growth rate of GDP declines by 0.2% - 0.3% up to 2005, and thereafter by 0.3% - 0.4%. Since population growth declines by more than this -1.33% up to 2005, per capita income will actually be higher until 2005, as compared to a 'no AIDS' situation, if the model's predictions are accurate. After 2005, the decline in population growth averages 0.12% per annum, which is less than the decline in the growth rate of the GDP, so per capita income will be lower than without the epidemic. This study gives some support to the cautiously optimistic view alluded to earlier.

Criticisms of this approach are that:

- Labour force mortality estimates are translated into 'efficiency units' using average wages as weights, a common procedure but one that is apt to underestimating the productivity contribution of experienced workers to in lower skill categories and the impact of replacing such workers with younger employees.
- Although there is an attempt to take account of differential cost impacts across sectors of labour losses, it is not clear that this takes account of varying skill compositions in different sectors, with consequent labour cost implications.
- A questionable assumption is the fixing of morbidity losses due to the onset of full-blown AIDS in HIV+ workers at 0.33 years per worker, with surprisingly no differentiation on the basis of skill class. This is motivated on the basis that South Africa's health care system is more sophisticated than elsewhere in Africa where figures of closer to 2 are used. While a parameter value of 2 might be high, 0.33 seems

extremely low, even for skilled workers. Semi-skilled and unskilled workers are expected to comprise the majority of AIDS deaths in South Africa and, for them, more expensive medical treatment and hospitalisation is unlikely. On the other hand, if a high proportion of unskilled and semi-skilled AIDS patients come from the unemployed, then a morbidity loss factor of 0.33 years per worker might be justified. This is not explicit in this study.

- The burden of rising private medical costs is arbitrarily distributed equally between firms, employees and consumers, with no apparent regard for differential bargaining power amongst these groups in different sectors. It would be interesting to have more detailed data on by sector and skill category on this issue.
- With respect to household demand, higher demands for health services due to the epidemic is taken account of, but there seems to be no other behavioural adjustments to AIDS. Household savings drop less than demand for durables. This contrasts with other studies that suggest that households cut back on durable consumption to maintain food intake, and under some circumstances, will raise the level of precautionary savings to fund investments such as housing, on the expectation of AIDS-related deaths, to support surviving family members (Ainsworth and Over, 1994:217). In addition, the study ignores the possibility of transfers across households, which is common in rural areas, and between urban and rural areas. It also ignores access to credit, which is widely used by all classes in South Africa to maintain consumption levels under pressure

- With respect to government spending, the study concedes the lack of reliable data on the question of government spending levels at the individual and the aggregate level.
- Acott (2000) criticisms of this study include
 - It ignores provincial data
 - It assumes that the race, age and gender profile stays constant over time.

His results, after taking cognisance of these factors depart from the ING Baring study by

- His HIV+ prevalence is distributed more evenly across skill classes, with the rate for highly skilled workers significantly higher and that for unskilled workers significantly lower
- The prevalence within the public sector is significantly lower
- The time profile is different

Accot believes that the epidemic is more advanced (peaks in 2000). In consequence, AIDS-related deaths in the years 2010 are projected to be higher than the ING Barings suggest and the differences are particularly stark in the high-skilled group. Both of these factors can be expected to contribute to a substantially more negative macroeconomic outcome.

This difference in views underlines the sensitivity of the macroeconomic impact to the link between the population and labour force projections.

The ING Barings study also makes a number of strictly economic assumptions that are important to the outcome;

- It is noted that public expenditure switching is difficult to handle at the model's aggregate level, so that all AIDS- related public spending is deficit financed. This is undoubtedly a shortcoming in this study.
- Investment in this study appears to respond to a fairly mechanistic manner to capacity utilisation. In the AIDS scenario, utilisation rises not to higher economic activity but due to lower productive capacity and potential output, which drop as a result of the population and labour force decline. It does seem strange that lower potential output should boost investment, despite the epidemic leading to lower levels of demand, and probably also a confidence decline.
- Government deficit increases by more than the rise in health spending, due to a downward shift on the revenue side linked to lower activity levels in the economy as a whole. Together with lowered private savings, the higher deficit results, in the model, in higher interest rates. As with the effect on investment of utilisation rates, this outcome does not seem to take account of the probable reduced demand for capital from the private sector, so that overall capital market pressure may not be as severe as the higher deficit suggests.

Thus the model suggests that while both investment and domestic savings will decline, the investment drop will be more moderate, resulting in a larger savings gap, which will have to be filled by foreign capital inflows.

The model used is highly aggregated, and ill-suited to model expenditure switching programmes, which are probably the key to management of health care costs in the face of AIDS.

2.2.5 The World Bank: General Equilibrium (CGE) Model

CGE models are based on a snapshot picture of an economy contained in a social accounting matrix, which is in turn an elaboration of an input-output matrix. These models are rich in sectoral and income distributional data as compared with the time-series based and aggregated econometric models, and are widely used to evaluate trade and fiscal policies affecting taxation and expenditure, since these commonly have differential impacts on productive sectors and income classes within the economy. These models are well suited to evaluate the economy-wide impact of the HIV/ Aids epidemic.

The key aspect to this model is that it is supply-constrained as opposed to the demand-driven WEFA model, so that declining production and incomes tend to be magnified in their depressive effect on the economy.

Arndt and Lewis conclude that the reduction in GDP growth as a result of HIV/ AIDS will be extremely large; the difference in GDP growth between the 'no AIDS' and 'AIDS' scenario is 0.5% in the second year of their projection and then continues to widen until it reaches a maximum of 2.6% by year 11. The average difference over their 13-year horizon is 1.6%, more than five times as large as ING Barings. The per capita income projections are equally devastating.

Lewis and Arndt have a far simpler and more reasonable approach than ING Barings; they suggest that AIDS-affected households do not save at all, and raise their share of health spending significantly, at the expense of non-food items. They do not indicate the net impact of these adjustments on household

savings rates and levels and, the possibility of debt financing by households is not addressed here either.

They assume that the public sector health expenditure will increase its share of total current spending by nearly 75% through 2010, with the increase going to HIV/ AIDS costs. The source of this rate of increase is unclear; in particular whether it is linked to some estimate of AIDS case cost levels and incidence. The assumed rate of increase in real public health expenditure – 6.9% per annum from 1997 to 2010 – is compared with the average annual increase of 5.7% from 1992 to 1997. Arndt and Lewis's projections of health spending are much higher than is planned by the South African government with severe consequences for the negative impact of HIV/ AIDS on the economy. Again, the need for consistent and consensus estimates of AIDS treatment costs is underlined.

Of note in this analysis is that additional government spending on HIV/ AIDS involves deficit financing rather than expenditure switching, and thus represents additional demand for goods and services by government.

The result is the large differences between GDP growth rates in the 'no AIDS' and 'AIDS' scenarios and even larger disparities between per capita income growth rates.

This serves to emphasise the importance of the underlying economic growth rate in shaping the epidemic's macroeconomic impact. In putting the conclusions of this analysis into perspective, it is worth noting that this analysis suggest that the impact is half of that proposed by Over (1992) which is more sensitive, and takes cognisance of the fact the impact is greatest when skilled workers are more severely affected and expenditure is

entirely financed by savings leading to a reduction in the growth rate of just over 1% per annum.

Considerable work is required to improve the demographic projections as well as to link the economic analysis by making use of census skill and population categories.

2.2.6 THE DEMOGRAPHIC IMPACT OF HIV/ AIDS

The larger part of demographic research in South Africa is based on a limited bedrock of data – the HIV prevalence rate amongst pregnant women attending public sector antenatal clinics. This is partly due to the absence of reliable, systematic data regarding death from AIDS, and a lack of sero-prevalence data which is population-based, geographically-based, or sector-based.

Observations of AIDS-related mortality rates reveal that a sustained decline in mortality rates was reversed in the early 1990s. From then, mortality rates increase for both infants and adults. While the increase is almost certainly due to AIDS, attributing these trends solely to the disease has problems. On the assumption that the increase in mortality rate is solely attributable to AIDS, the Medical Research Council (MRC) concluded that half of deaths of people in the age groups 15 to 49 are attributable to AIDS-related conditions. The MRC deduced that over the next ten years between 5 and 7 million people will die from AIDS. The extent to which the increase can be attributed to AIDS bears further investigation possibly through examinations of other causal aspects of death such as crime and accident-related deaths.

The most recent literature suggests that 1999 was the defining moment for the AIDS epidemic. In that year there was the first appearance, from the data available, of indications that HIV has reached its maximum prevalence. This levelling off of prevalence is now incorporated into a number of demographic models. These models indicate that should no significant alterations in the factors responsible for HIV infection occurs, the condition will maintain this level of prevalence. However, there is no data that either plots, or analyses incidence; this aspect requires further analysis.

The currently prevailing model is that of the Actuarial Society of South Africa (ASSA). In this model, estimates of median term to death of those infected with and estimates of sexual activity (and thus of infection) are used to project the demographic trends.

Despite the apparent success of the models in meeting the needs of the life insurance industry, their utility in informing activists and policy makers is less clear. A contrast between local and foreign demographic literature can be seen in the emphasis placed on predicting prevalence trends versus identifying risk groups. The international literature focuses on the need to identify groups at risk and measure the impact of intervention strategies. Groups so identified can be effectively targeted for intervention. It is here that the local demographic model is questionable, as assumed risks remain an important input into their models. The identification of groups most at risk has to be derived from other sources. The models thus offer little in the way of informing programme managers how successful interventions are, what groups they should emphasise, or where they should take place.

The most articulate model for predicting prevalence rates is the ASSA600 model, which takes into account the vulnerability of four populations, distinguished by their level of risk. All the projections rely ultimately on estimates of the prevalence of the disease among women attending public sector clinics and it is this source that provides the most widely cited estimates of prevalence (22.4%). Not only does the literature tend to treat this figure as the prevalence rate, but also those who use it fail to indicate what it applies to.

The limitations of the antenatal clinic prevalence data centre on the representivity of the tests and the ability to extrapolate them to the wider population. These problems can be placed into 2 main groups;

- 1) Representivity of the test results and
- 2) The representivity of the population tested.

The test results are based on anonymous unlinked testing of a sample of women at selected public sector antenatal clinics. This means that the results cannot be traced back to the patient and only the most rudimentary personal information can be linked to the data. This typically only includes the date of testing, age of the patient, and the clinic from which the sample was taken.

The antenatal clinic data collection method results in possible reliability problems arising from sampling error in clinic and patient selection. In the literature, few prevalence estimates reflect uncertainty arising from sampling and almost none of the literature emphasises confidence intervals that are necessary to take into consideration given the methodology. Additionally, it is simply assumed that the clinics selected were randomly chosen, this cannot be unequivocally substantiated.

Despite the use of anonymous unlinked testing, women are required to give their permission for the test. The literature does not reveal the extent and the nature of the refusals. If there are a significant number of refusals and these are concentrated in either the HIV positive or negative groups, then the results will be further biased.

The other problems with using these results are that it excludes

- Men,
- women who are not sexually active,
- women who are using contraception, infertile or, not of child-bearing age,
- those who use private health care facilities
- the lowered fertility in HIV positive women.

2.2.7 Economic Aspects of Demographic Distribution

ING Barings indicate that numerically the burden of the disease will be borne by unskilled labour. However, they indicate that much of the economic cost will stem from the premature death of more highly skilled labour. However, the literature is sparse with respect to data on how vulnerable the South African elite is to AIDS and how this vulnerability will impact on governance and the economy. It appears that in South Africa the elite are less vulnerable. There is insufficient knowledge of the relative risks in various labour categories and sectoral contexts, which makes broader demographic and macroeconomic impact analysis difficult, and restricts appropriate intervention and strategy development.

2.3 THE ECONOMIC IMPACT ON SECTORS

The literature on sectoral impact can be divided into two. The first group comprises action-oriented pieces directed at stakeholders and practitioners within specific sectors, intended to inform them about the issues and encourage them to make interventions to mitigate firm and sectoral impact.

The second set of work is research-based material concerned with measuring and evaluating the impact of the HIV/ AIDS epidemic on individual sectors or across sectors. This is small and deals mainly with the mining sector and the trucking sub-sector within transport. Owing to migrant labour and separation from families for prolonged periods, these workers were especially vulnerable to disease contraction. These sectors have a higher rate of infection than the workers in the hospitality industry.

In all of these industries, it is generally the semi-skilled and unskilled workers who are at risk. In some service sectors, such as finance and information technology, the risk is not that the prevalence rate will rise, but that the costs of replacing highly skilled workers will be prohibitive. Risks seem to be lowest in the manufacturing sectors.

There is very little focussed sector analysis and the need for further research in this area cannot be overemphasised if companies are to meet the potential challenges imposed by HIV/ AIDS.

2.3.1 THE RESPONSE OF SECTORS, FIRMS AND WORKPLACES

Conspicuous by its absence in the South African literature is the response from corporate business, and from business sectors with the exception of the mining industry that has been a focus of sociological, epidemiological and

demographic researchers. With the exception of the insurance group Metropolitan, no other significant contribution from the insurance groups has been forthcoming; the information has been largely company-owned and has remained beyond the scrutiny of the public domain. The lack of results undermines the efficacy of programs to the public and, additionally, is that it limits a critical or comparative analysis of the findings resulting in planning premised on narrow viewpoints.

Companies need to include HIV/ AIDS projections into their planning and reporting, calculations on productivity, cost of benefits, unit labour costs and into management strategies. As constitutional and legal provisions become actionable, they have to devise business plans, policy and protocol in response to HIV/ AIDS. Contributions to, and schedules of benefit schemes, group life and disability premiums, and medical aid schemes are likely to be revisited and revised in line with modelled projections.

2.3.1.2 Sectoral Responses

One of the sectors that have been identified as highly vulnerable is transport. Recognising the infrastructural development, while bringing economic and social benefits, can act to facilitate the spread of communicable diseases, the transport sector has been targeted as an urgent site for intervention. The aim is to reduce mobile groups' and individuals' exposures to risk environments through education, condom distribution, STI treatment, provision of controlled rest areas, reduction of time spent waiting at border posts; and through the provision of frequent leave, family accompaniment and employment of local labour.

2.3.1.2 Industry and Business Response

The following measures, provided by UNAIDS could become part of strategic planning

- establishment of non-discriminatory practices
- provision of counselling services
- education and condom distribution
- company provision of HIV/ AIDS programmes, with access to retroviral drugs, regular tests, treatment of opportunistic infections, referral to specialists and treatment centres or hospitals
- partnership with government organisations and NGO's
- incorporation of health, social and economic issues for a more strategic and responsive approach
- assessment of factors at the workplace that could influence HIV transmission; analysis of workplace demographics and workplace demands
- monitoring of programmes and medical data

Whilst company activities in response to HIV/ AIDS would have to be encouraged, they would have to be critically assessed and monitored.

Anglo Coal has launched multi-pronged education, prevention and care programmes, providing for treatment of opportunistic infections, counselling for employees and their partners, distribution of condoms, education and life skills development as well as small business initiatives.

Other companies that have been involved include Mondi Kraft, Harmony Gold Mine and other gold mines have also initiated programs.

The rationale for these programmes relies upon, among others, a simple cost-benefit analysis. Early investments in education, prevention campaigns and health care provision, while initially costly, have long-term benefits that have been predicted to be 3.5 to 7.5 times more beneficial than the cost of the intervention.

2.3.2 WHY SHOULD THE PRIVATE SECTOR BE INVOLVED

In addition to the enormous impact of HIV/ AIDS on the private sector in terms of human, financial and social costs, companies and professional business associations can be very effective in implementing prevention programmes that can be scaled up.

The ability of small and medium-sized companies to provide sufficient financial technical resources has been far less than for large companies and for local branches of international companies. This is worrying as, taken collectively, they account for the most number of employees in the country. Resources to implement programs affect the company's bottom line too significantly to consider this approach.

In summary, whilst the corporate sector has recognised that they have a role to play; action has been restricted to large companies whilst the majority of the workforce has yet to be subjected to these programs.

SUMMARY

The HI Virus is transmitted mainly through sexual intercourse. Other modes of blood and fluid transmission are possible but very uncommon. Whilst the infection was initially thought to be restricted to the homosexual community, the epidemic has risen as a result of heterosexual spread with women appearing to be more vulnerable to the disease. There is no cure or vaccine

available despite the intensity of ongoing research efforts. Research has culminated in the development of antiretroviral drugs that have been demonstrated to be effective in curbing the onset of AIDS where infected individuals succumb to secondary infections or cancers as a result of the ensuing immunosuppression. These agents are expensive and current recommendations favour the use of a combination of drugs that appear to be more effective and decrease the emergence of resistance.

The impact of this epidemic on the corporate sector has been speculated to be devastating with the economic views that have been expressed in the literature. South Africa is in the midst of this epidemic but the vast majority of employed people have no access to programs, as the medium to small business sector has not responded to the epidemic. Several models have been developed but the limitations of all of them are that they are designed on available statistics that do not reflect the true prevalence with the ING Brings model actually suggesting that the impact may be exaggerated. Despite all of the limitations, the models and the literature quite clearly demonstrate that the HIV/ AIDS impact will have a negative impact on the corporate sector if the epidemic proceeds unabated. Certainly, sectors are differentially involved and the aggression with which intervention needs to be performed is more urgent e.g. the transport sector. With more realistic statistics, the magnitude of the problem can be better quantified but this is unlikely with current legislation that precludes testing without informed consent. There is a dire need for better prevalence levels to determine the extent of the disease with a more realistic projection of the epidemic that will encourage the corporate sector to become proactive in dealing with it.

CHAPTER 3

3.1 Determining the Magnitude of the AIDS epidemic in South Africa

The prevalence of the HIV/ AIDS epidemic in South Africa is steeped in controversy. There are several flaws with respect to data collection e.g. data that has been collated has been retrieved from anonymous testing from antenatal clinics in the public sector. The bias of this is obvious when looked at in the context of the population samples as these tests reflect the poorest segment of the economic sector as well as being biased towards the population that are more likely to represent the unemployed sector of the country make no tangible impact to the economic sector. Compulsory testing in the private sector is illegal without informed consent and through fear of job losses as well as the social implications with the potential for marginalisation and the attendant social stigma of the HIV infection, precise data remains elusive. Nevertheless, the overall studies conducted to date by larger corporations together with the appropriate correlation with the ASSA study, a more realistic perspective of the magnitude of the disease in the private sector can be obtained. This study initially intended to obtain results from the insurance sector as most life policies are dependant on the performance of a HIV test and the value of these results is that the bias is towards the employed sector particularly the middle and upper income groups where the economic impact is likely to be most stringent if there is significant involvement in this sector. Owing to the sensitivity of the infection, insurance companies are reluctant to release this information despite anonymity and thus the only plausible approach was to document results from the private sector with the appropriate shortcomings that will be discussed, correlate this

with the ASSA results and thus provide a more realistic picture of the magnitude of the epidemic to the private sector.

3.2 ASSA RESULTS

Figure 3.1

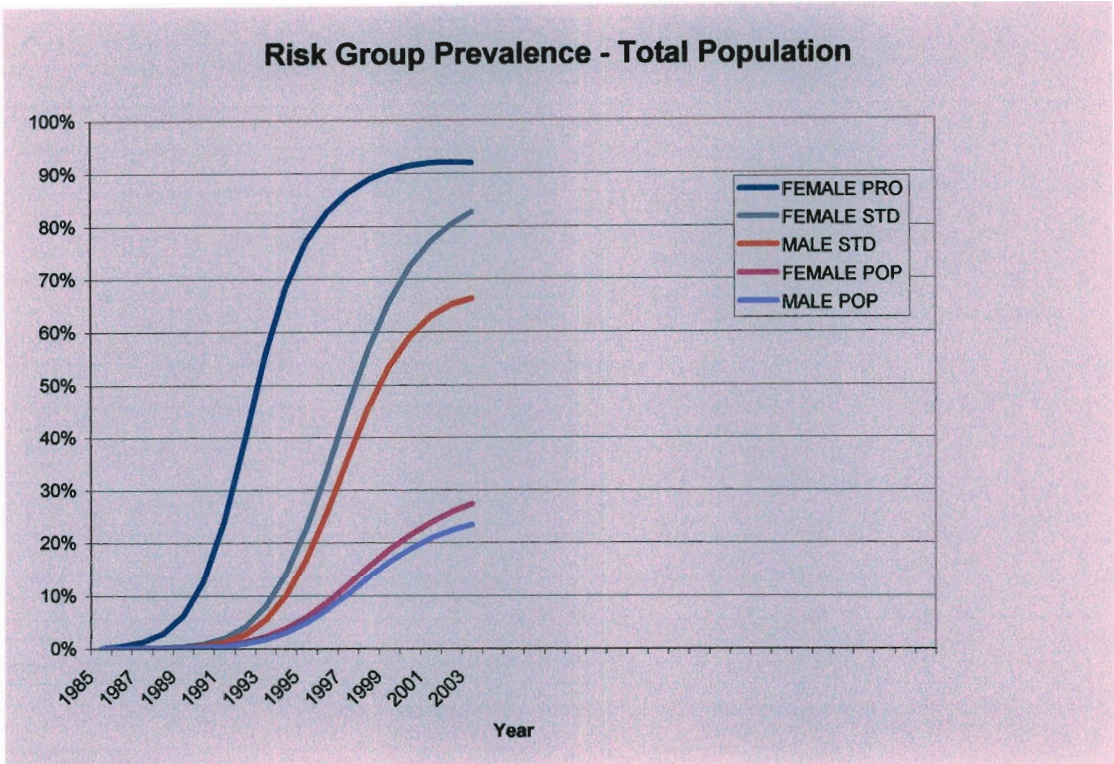


Figure 3.2

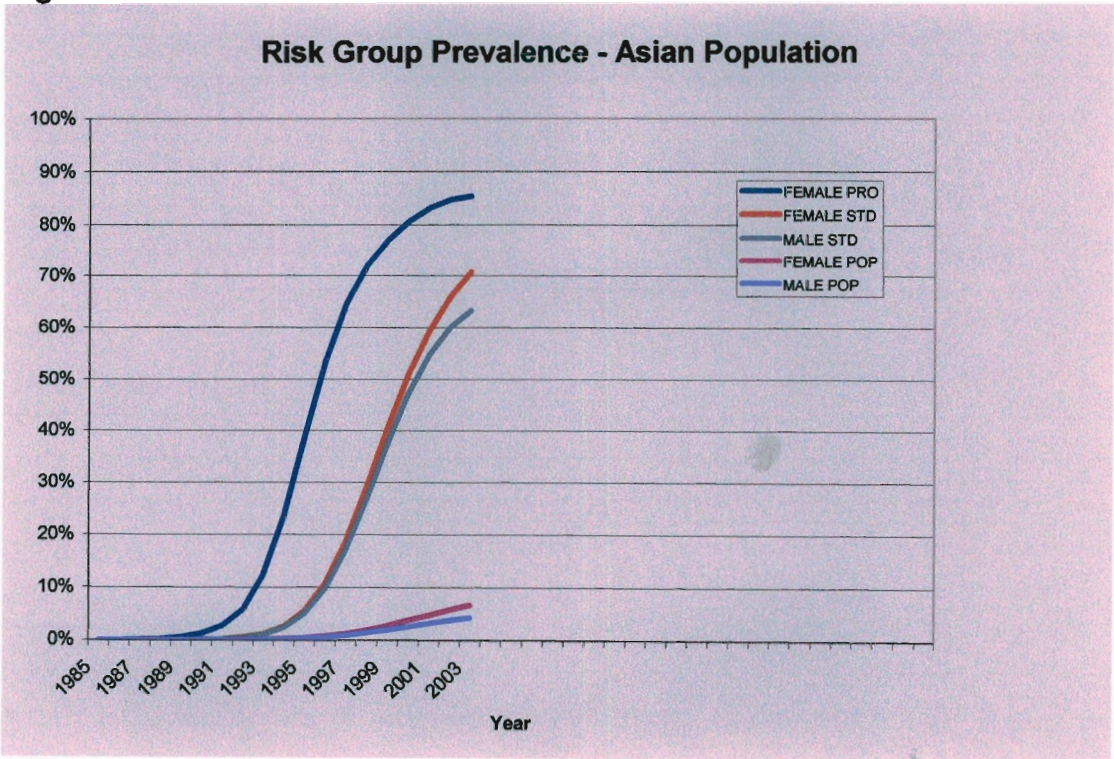


Figure3.3

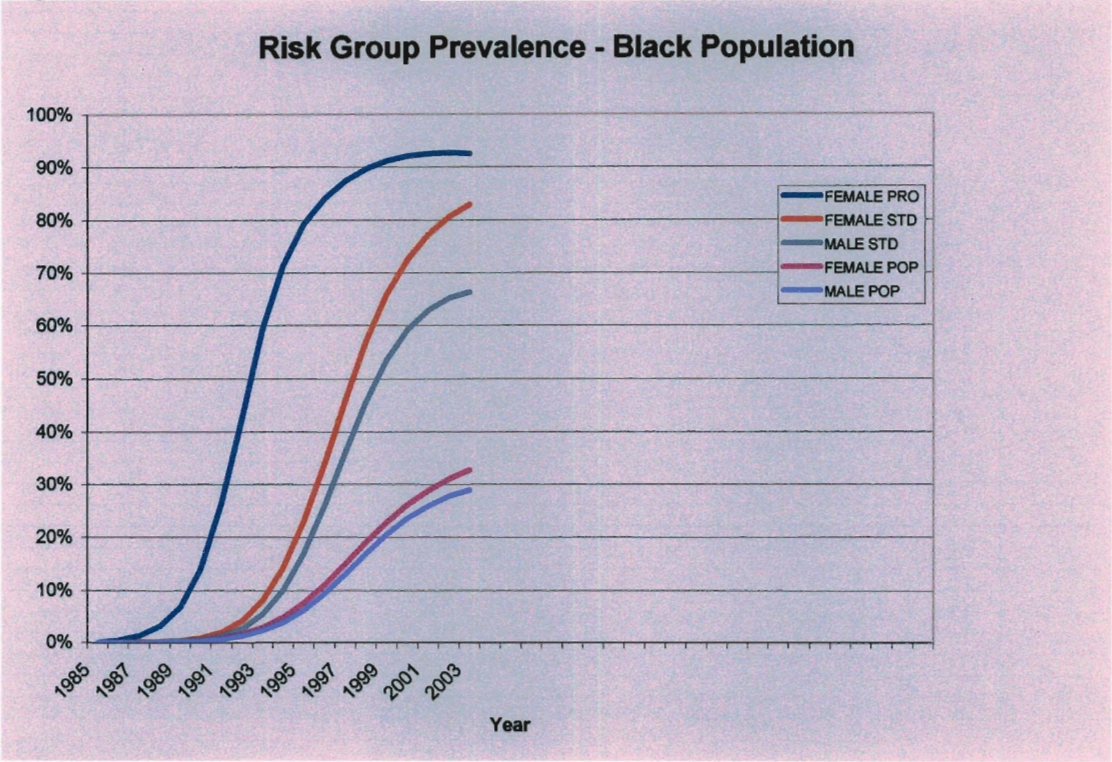


Figure 3.4

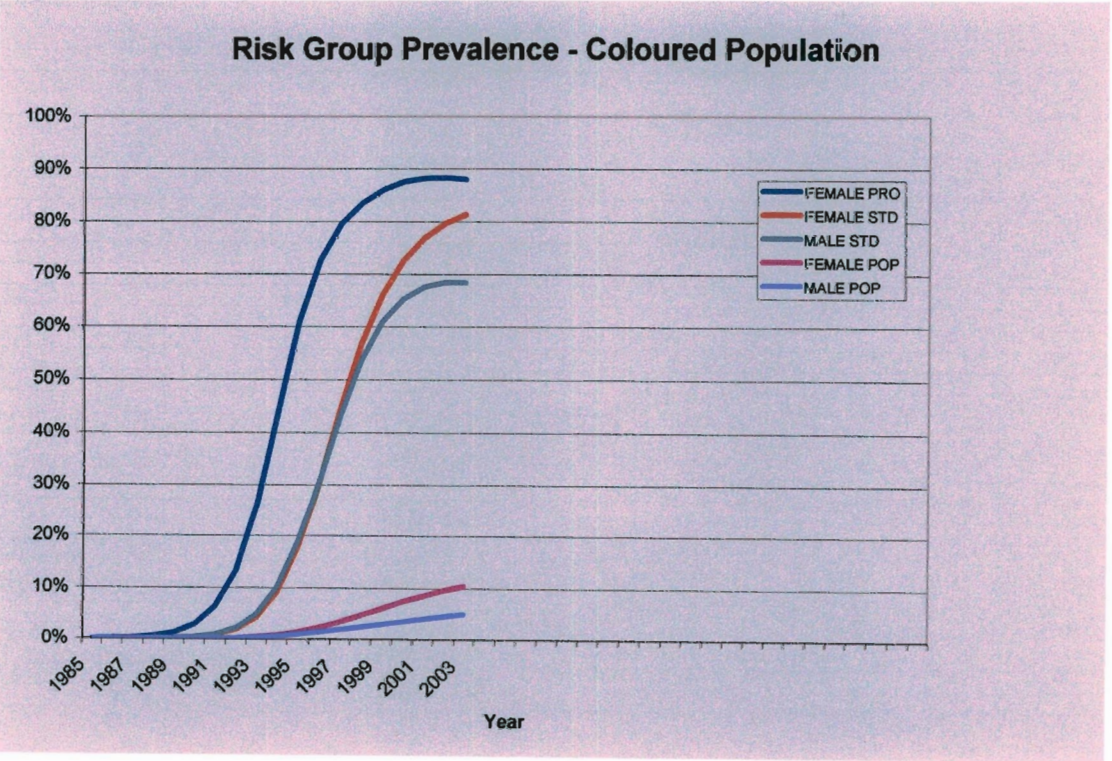


Figure3.5

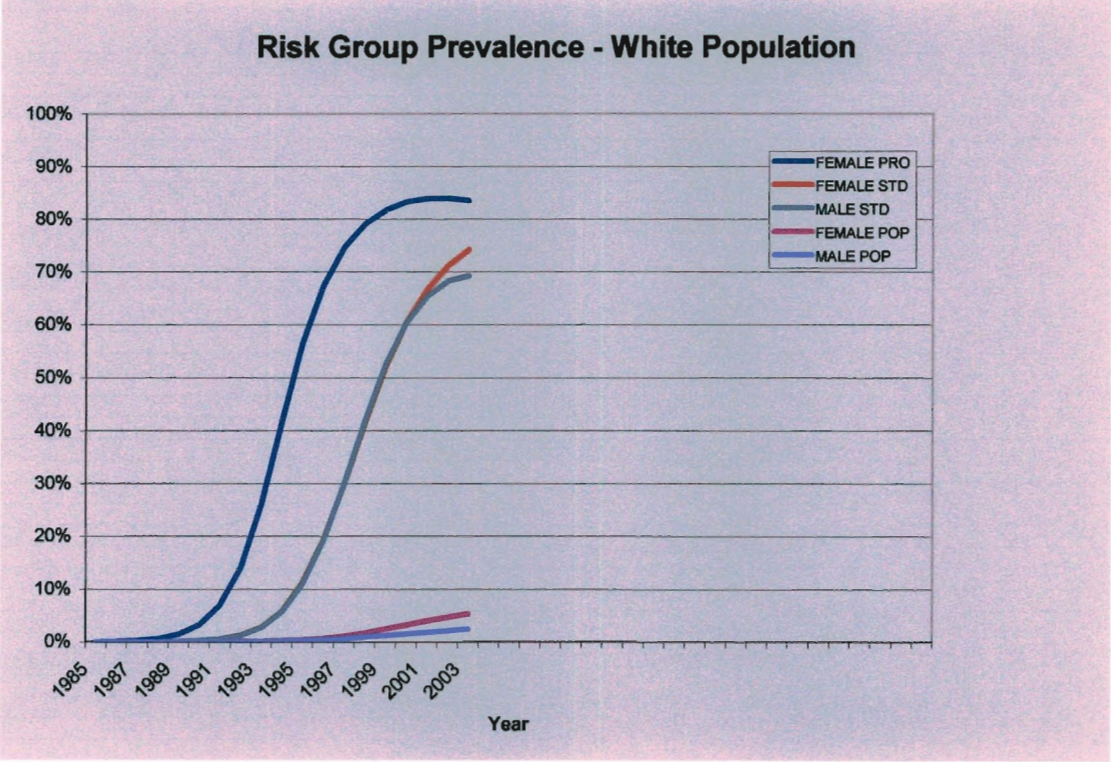


Figure 3.6

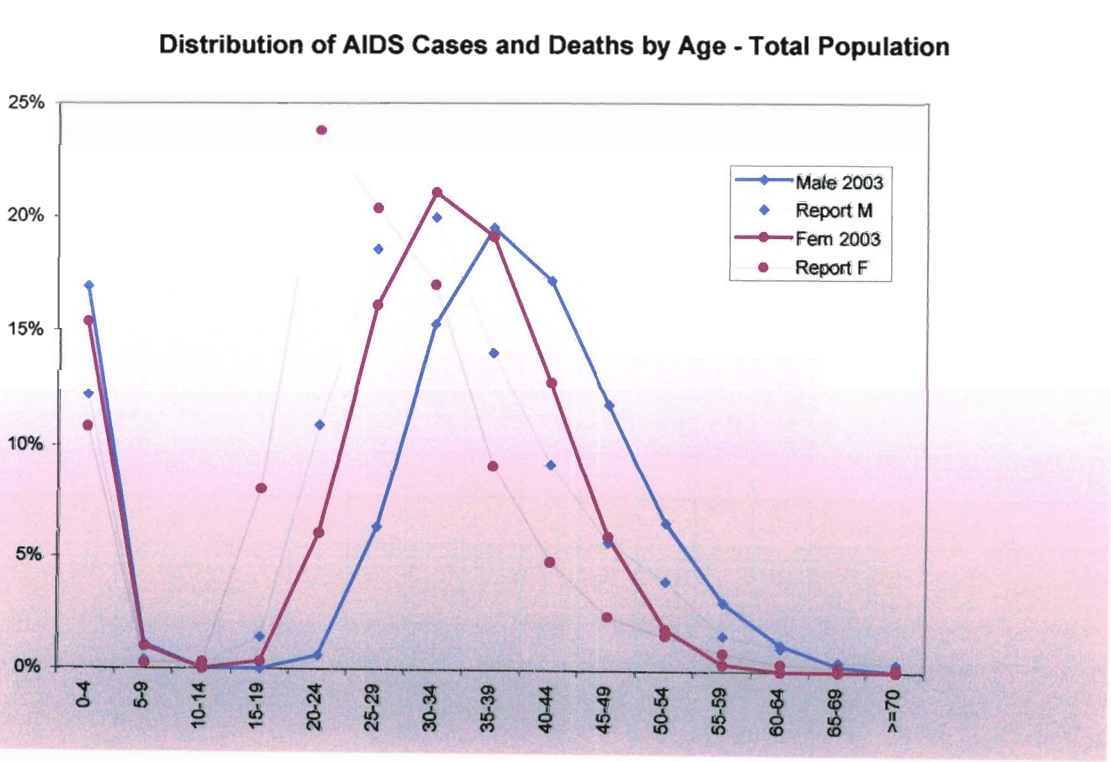


Figure 3.7

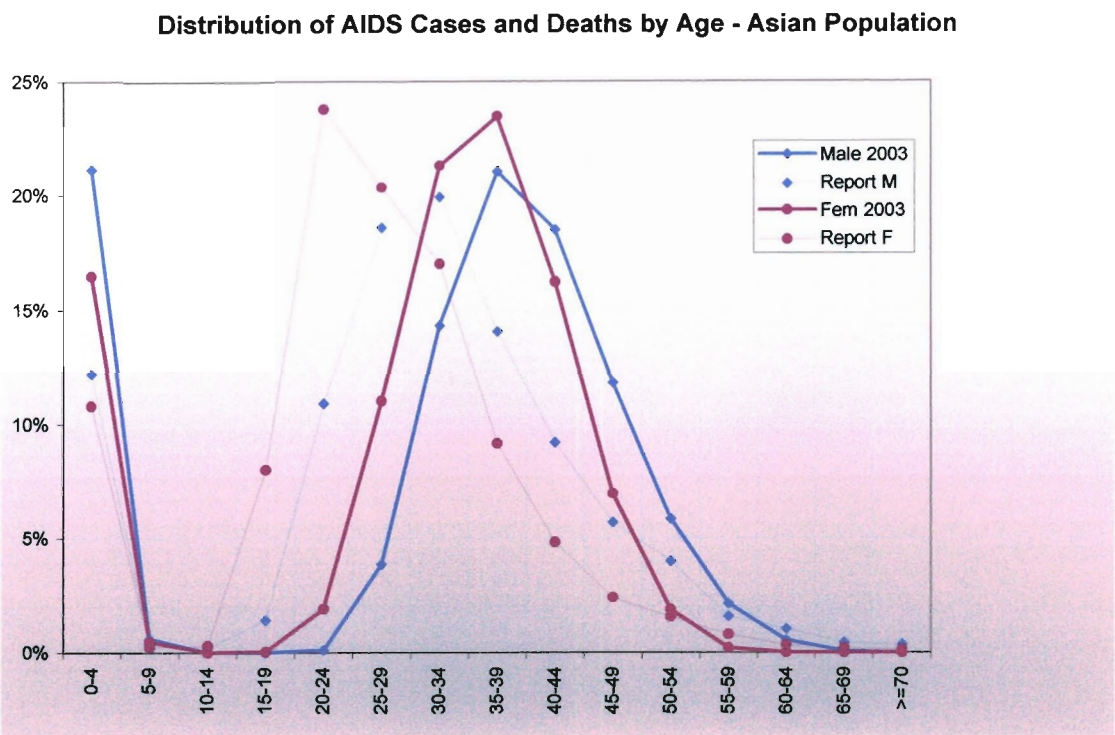


Figure 3.8

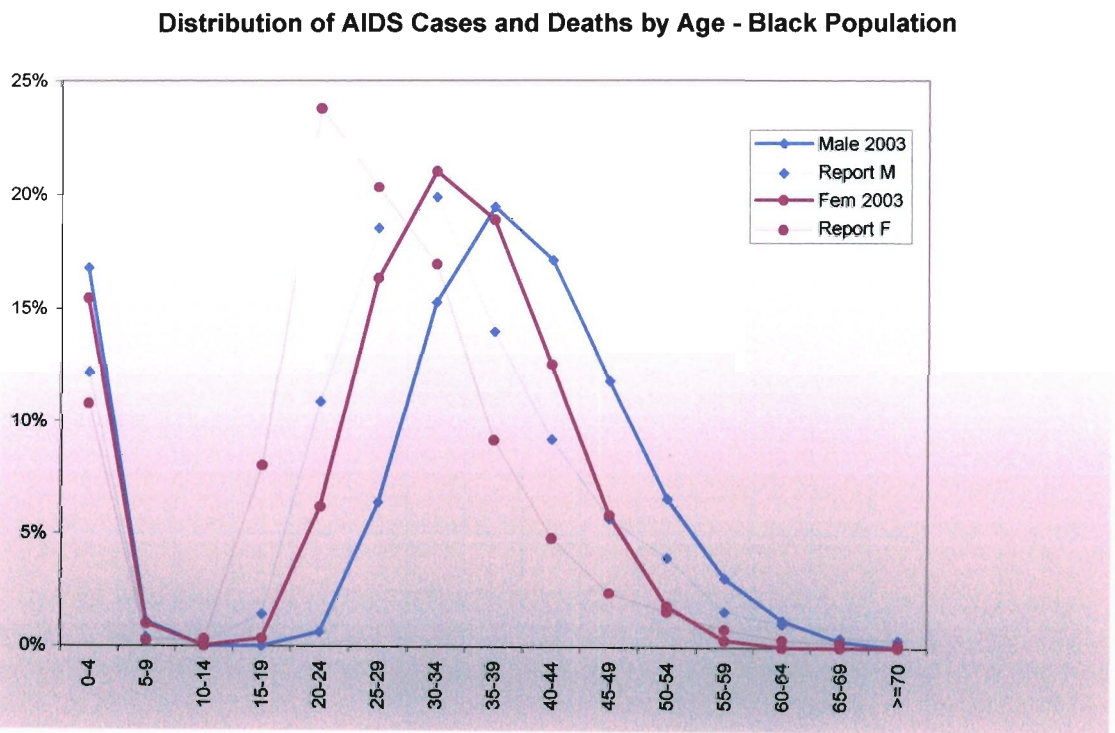


Figure 3.9

Distribution of AIDS Cases and Deaths by Age - Coloured Population

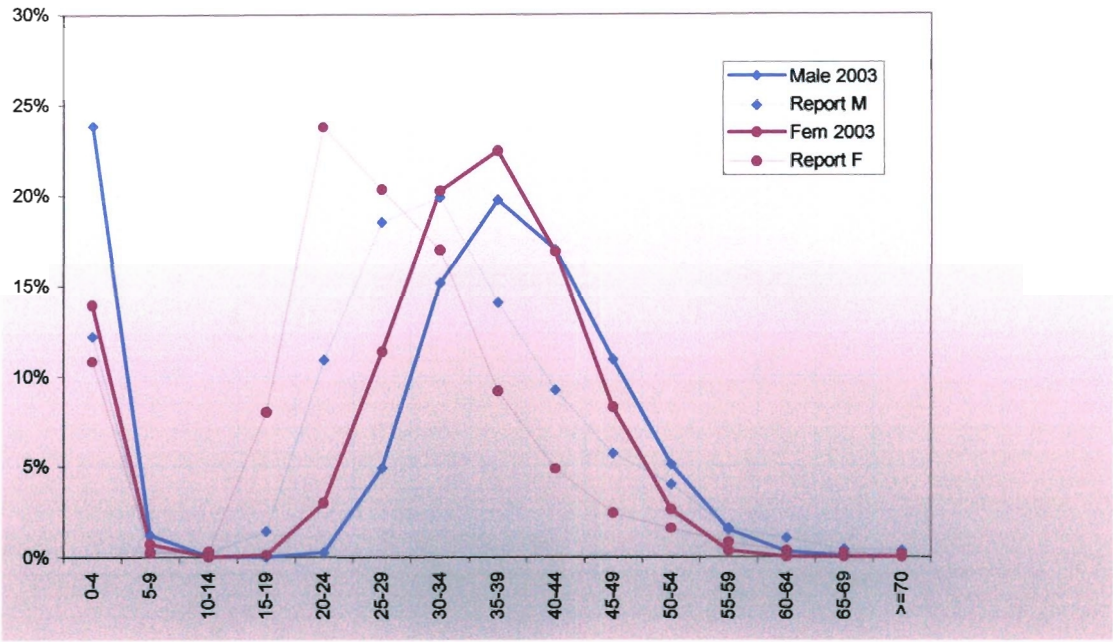


Figure 3.10

Distribution of AIDS Cases and Deaths by Age - White Population

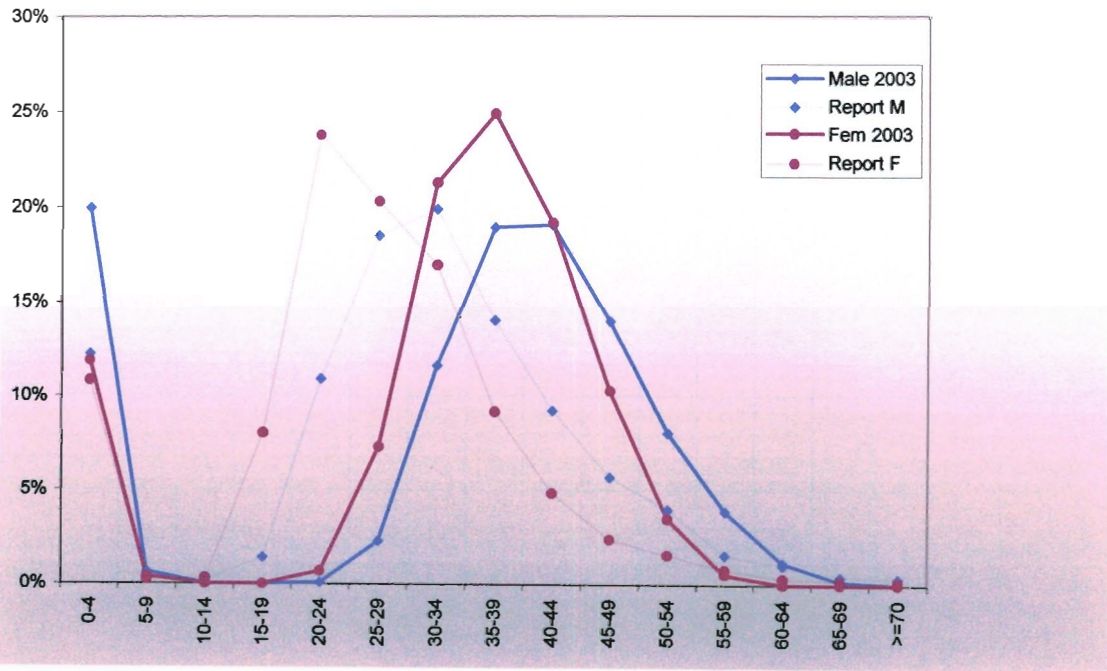


Figure 3.11

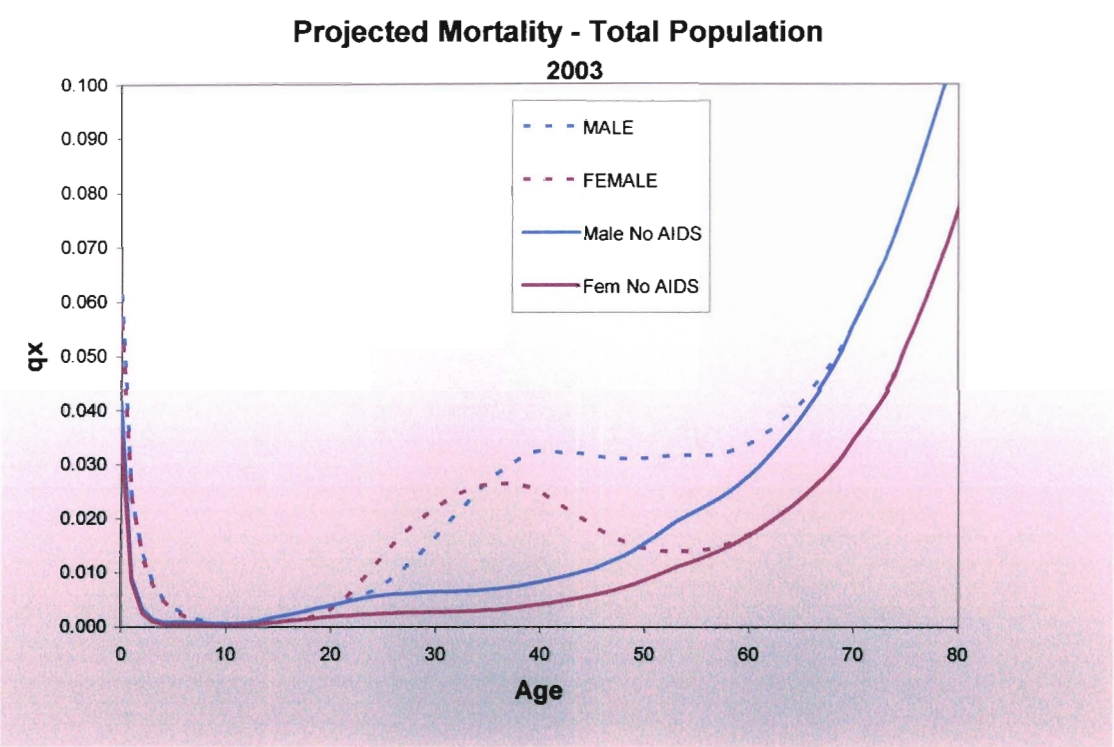


Figure 3.12

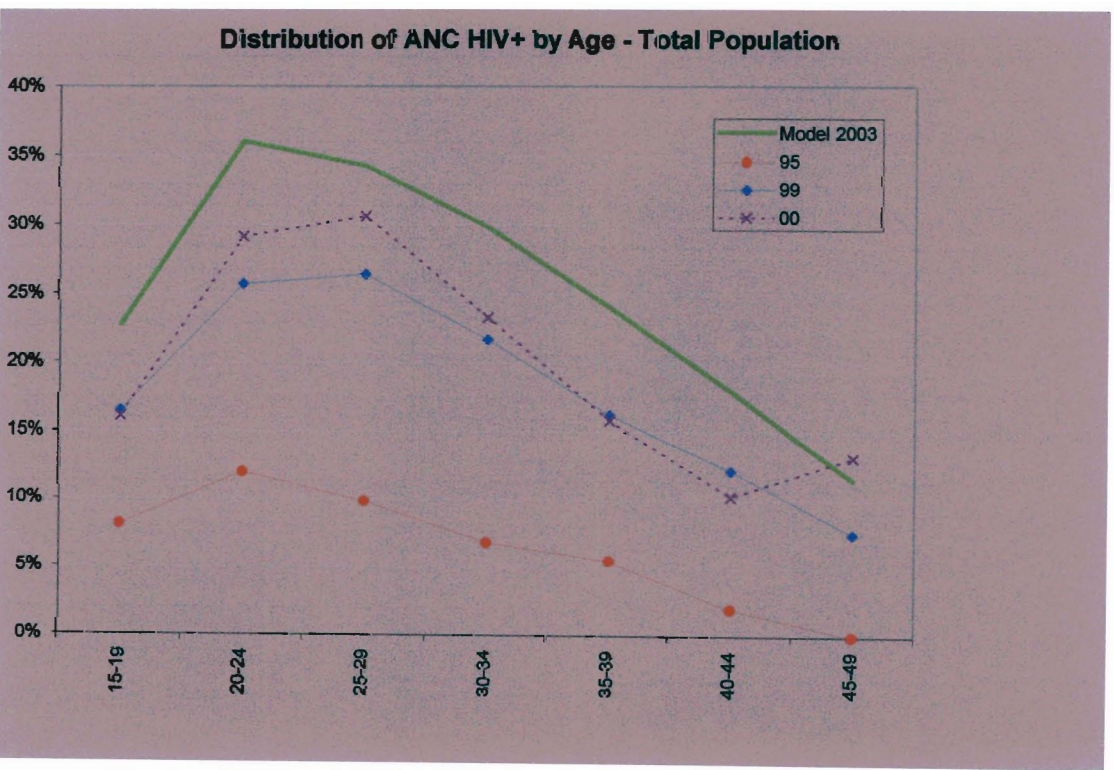


Figure 3.13

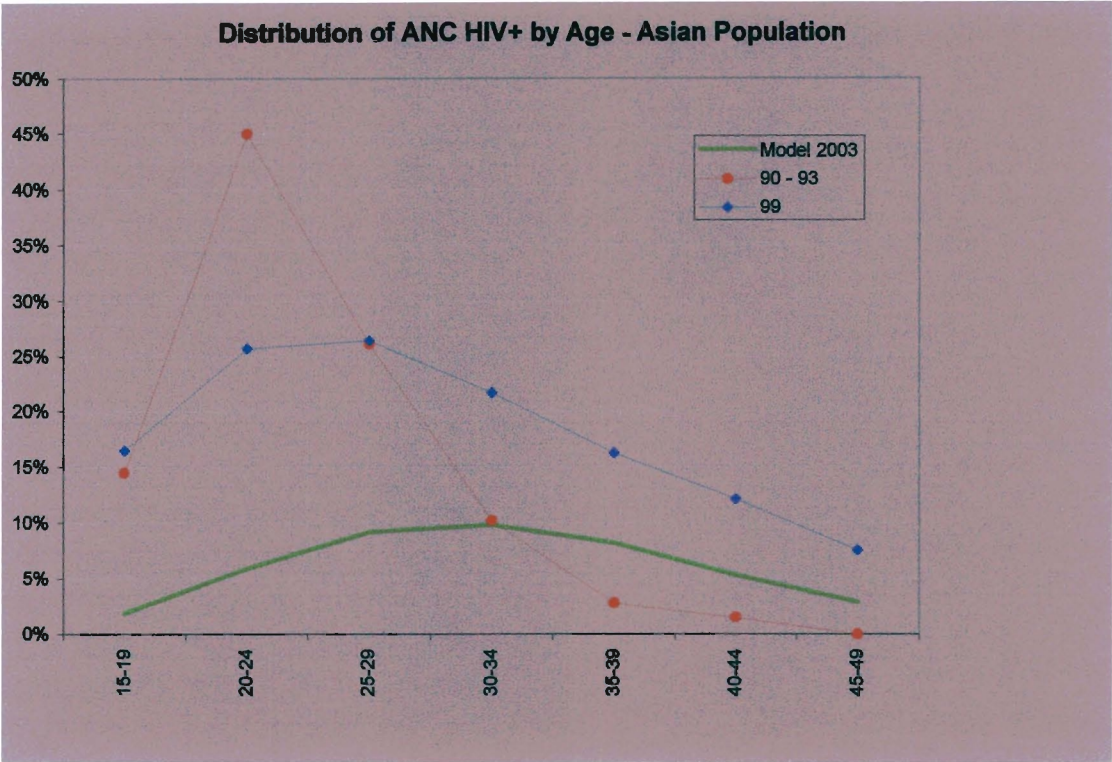


Figure 3.14

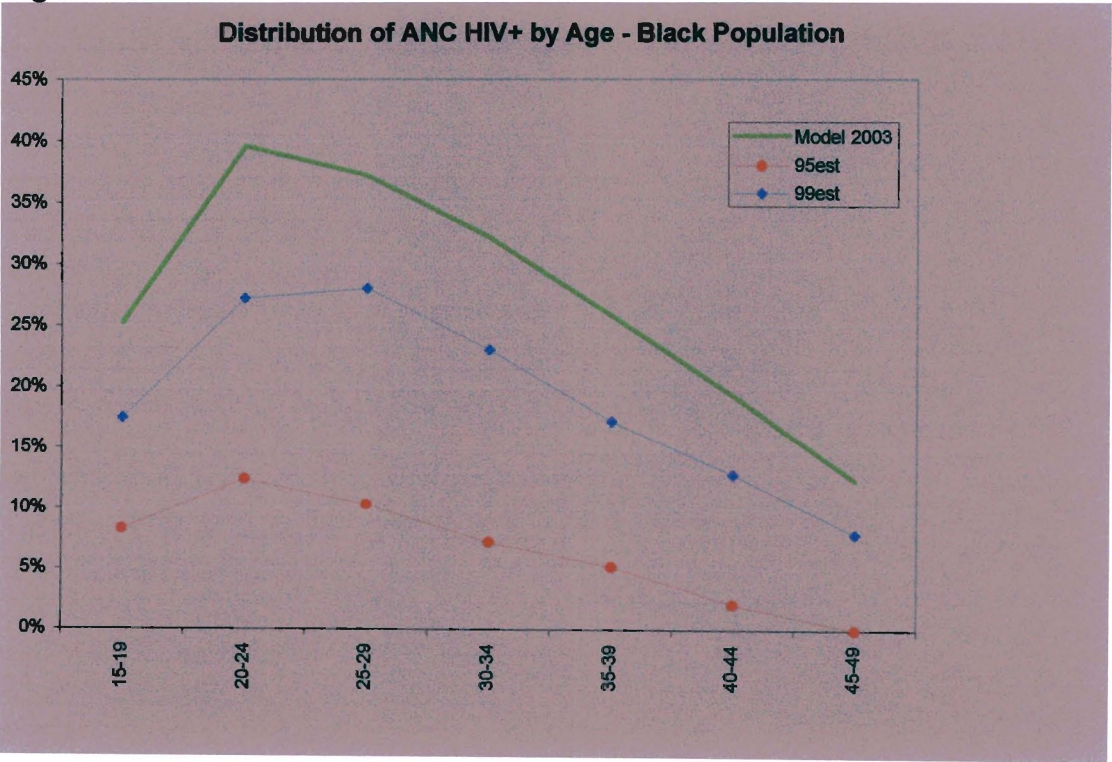


Figure3.15

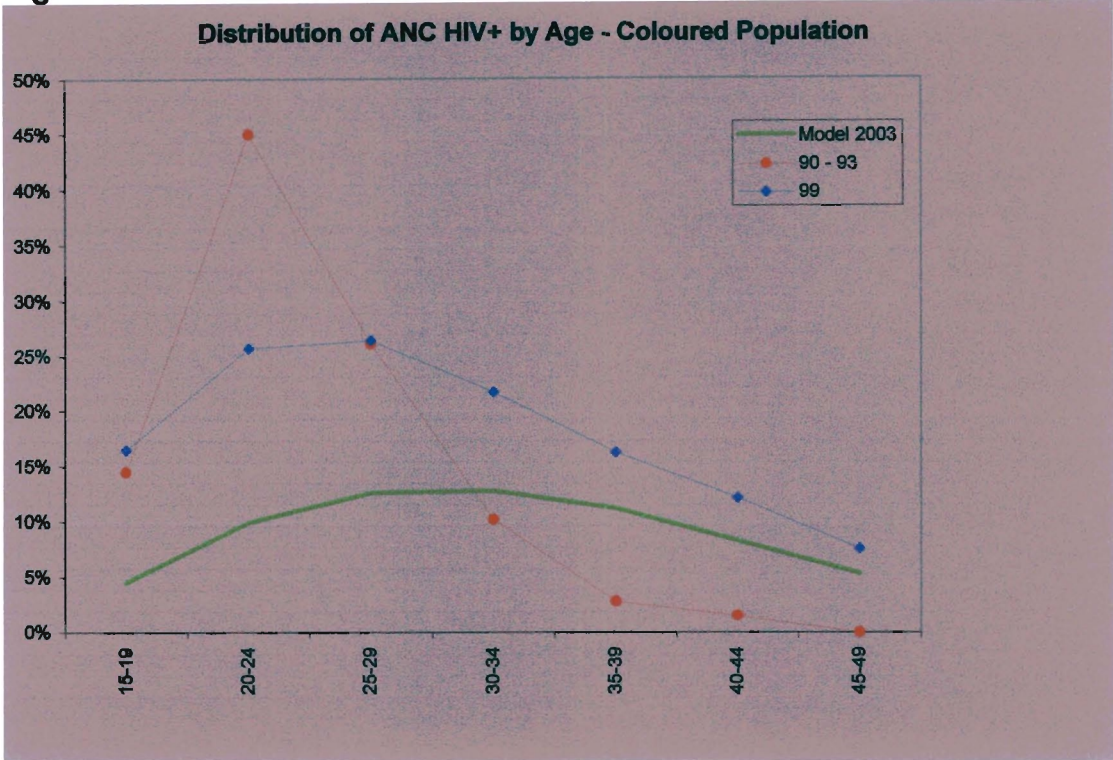


Figure 3.16

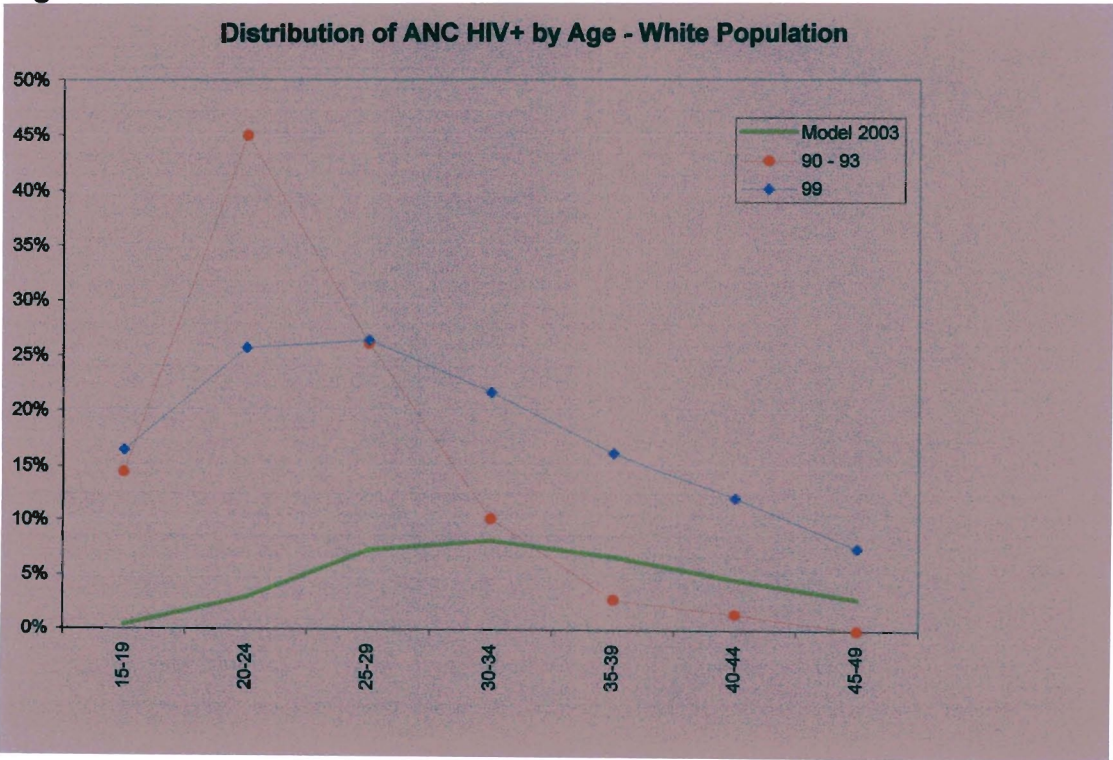


Figure 3.17

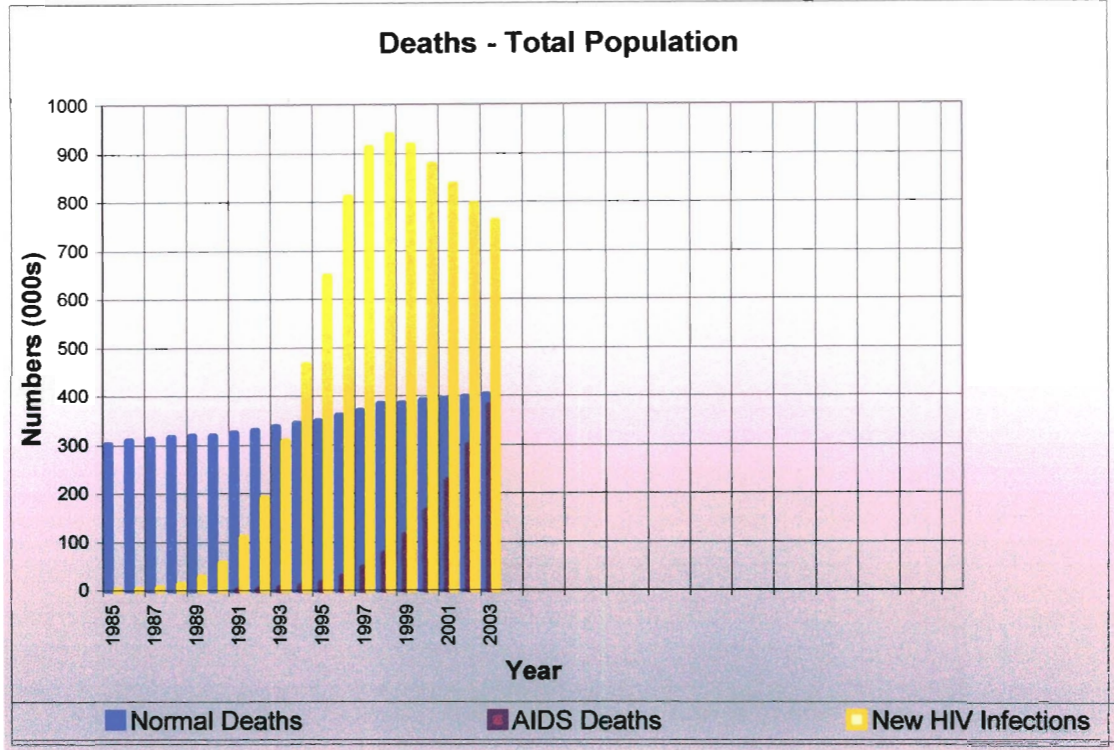


Figure 3.18

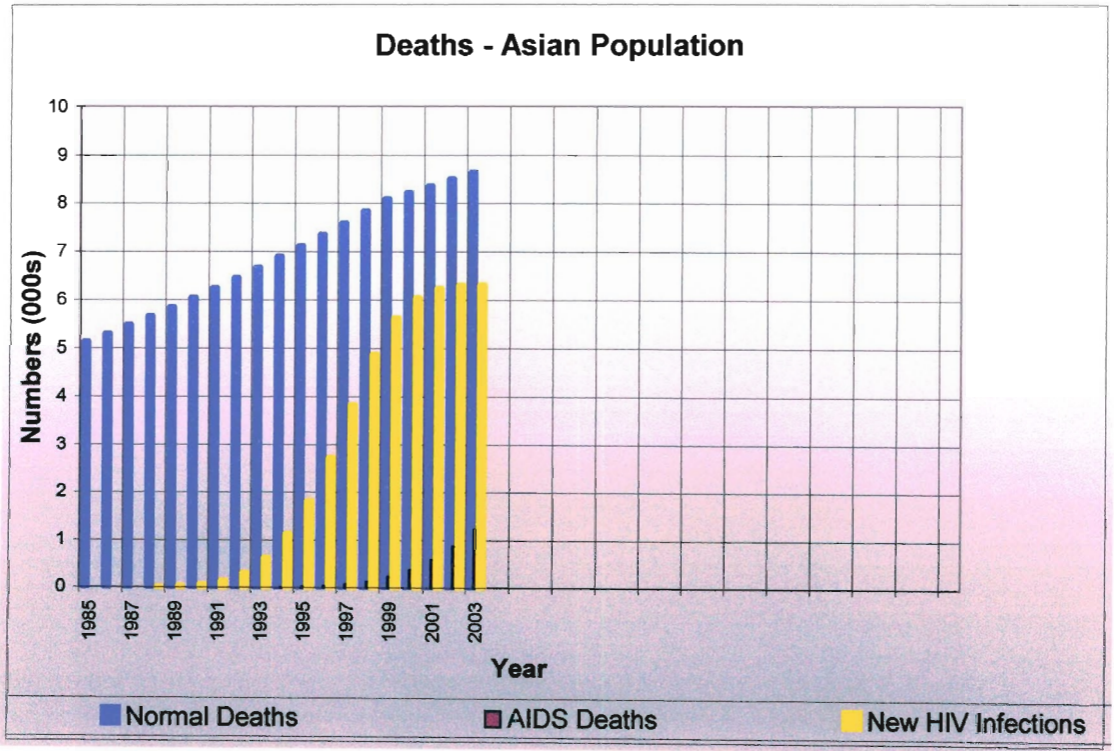


Figure 3.19

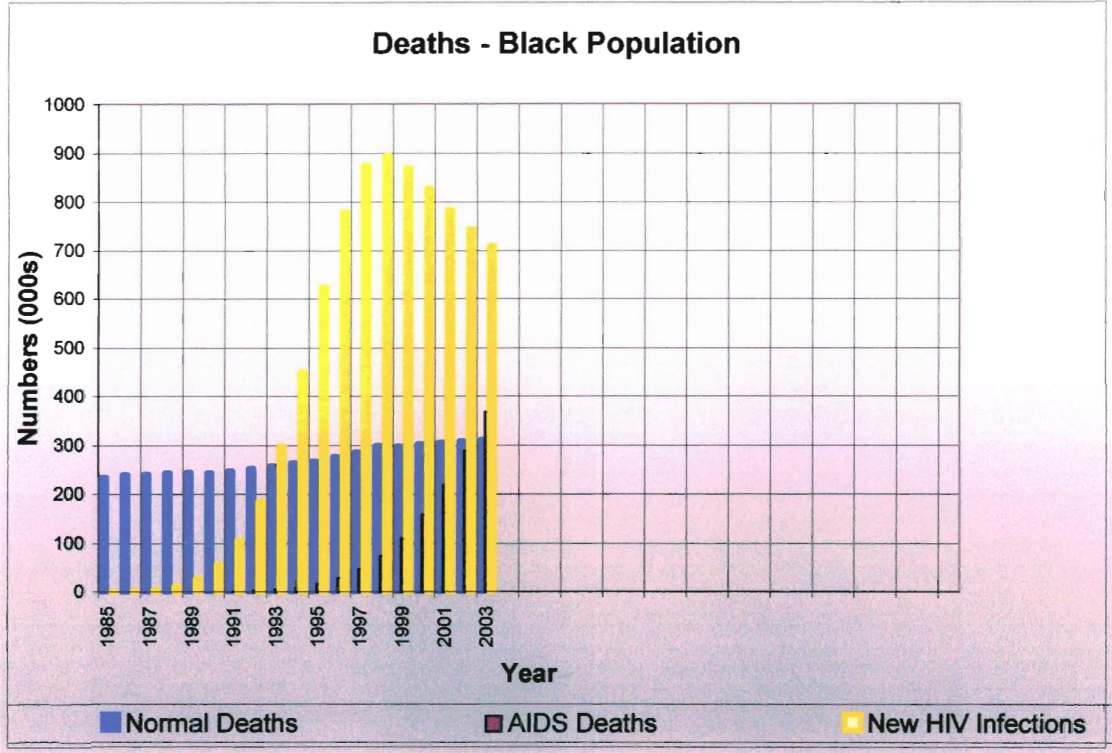


Figure 3.20

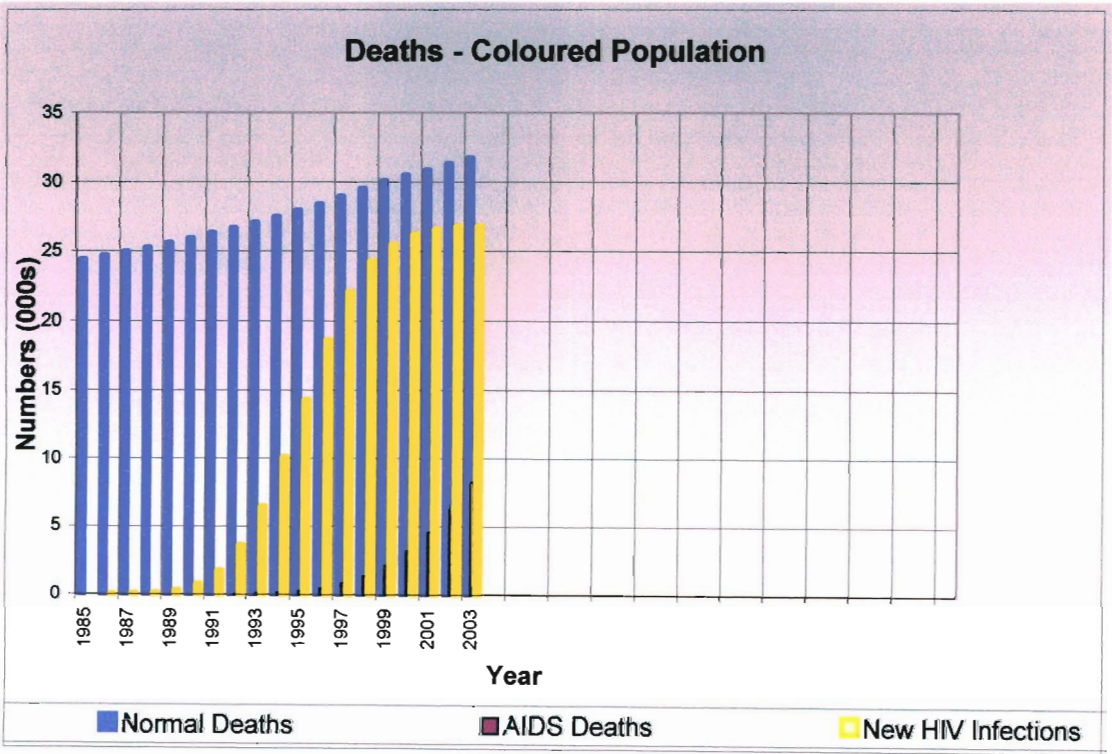
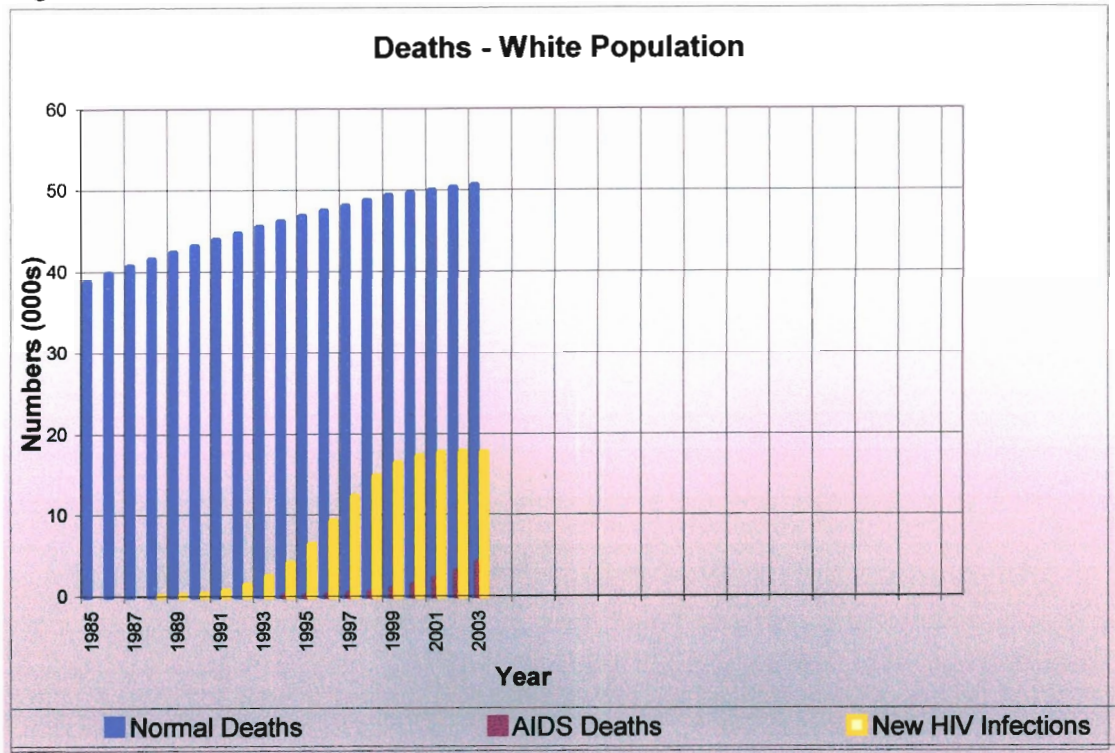


Figure 3.21



These projected statistics coupled with the actual data that is emerging attests to the magnitude of the epidemic. Notwithstanding the actual figures, these results alert to certain cardinal points that are relevant to the corporate sector

- The age group that is involved is, as anticipated, the 18 to 45 year age group that is generally regarded as the most productive component of the economic sector. The subsequent projected deaths is equally alarming going up to 30% in the respective age groups with a projected death of over 30% by age 40, the group that would be considered senior personnel who are usually integral to the smooth functioning of operations.
- The second alarming aspect of the projected statistics is the significant incidence in the older age groups i.e. those

greater than 35 years and up to 50 years. This age group usually occupies positions of seniority that can often be described as critical positions. Furthermore, the accumulated experience in this age group poses a further burden with respect to finding suitable, appropriately trained replacement personnel.

- Given the background of the country, HIV is often perceived as a disease that is restricted to the black population group with the other race groups only being involved sporadically. These projections refute that. The relevance of this information to the corporate sector that the other race groups have a lower rate of unemployment and more often occupy skilled positions. The implication is that whilst the incidences in the standard and low risk segments of these population groups remain low, the costs of replacement of these individuals are exorbitantly high. When one considers this in the light of the ING Barings predictions, it is easy to comprehend that the study was more than likely to underestimate the magnitude of the economic impact as they focussed on the antenatal results that are skewed as alluded to earlier.

However, these results remain shrouded in disbelief as they are not actual results performed by testing but rather projected values based on much smaller non-representative samples. Credibility for the magnitude of the epidemic comes from the few corporate studies that have been performed

with anonymous testing that substantiates the magnitude of the epidemic, the broader population involvement, the more extensive age involvement and all the studies acknowledge that owing to testing being voluntary, it is more than likely that the results under-estimate the disease.

3.3 RESULTS FROM THE CORPORATE SECTOR

These results will be segmented so that companies can draw inferences with respect to the skill demographics of the involvement as well as establishing that the epidemic is of a proportion to warrant strategic intervention.

3.3.1 MINING INDUSTRY

The mining industry has been proactive in their evaluation and intervention programs as they have large labour forces that are crucial to the sustenance of these industries. Furthermore, the profile of the employees, often-migrant labourers that are separated from their families, places them at the best in the standard risk category that harbours a high proportion of HIV/ AIDS individuals. The results from the mining industry substantiates 2 inferences

1. The prevalence of HIV amongst the employed labour force is high
2. Consolidates the projections proffered by ASSA.

3.3.1.1 *AngloGold*

The estimated prevalence based on voluntary testing is 25 to 30%.

3.3.1.2 *Debswana*

Whilst these results are from Botswana, the results are applicable owing to the similar prevalence rates and further, the workforce overlaps in these regions.

Debswana, not surprisingly, found an incidence of 28.8% with a much higher percentage of staff participation lending credibility to using this value.

3.3.1.3 Goldfields

The current prevalence rates at this mining institution are 33%. These rates are similar to those reported by the similar mining institutions and the higher rates probably reflect the testing bias towards the labour sector.

3.3.1.4 South Deep Gold Mine

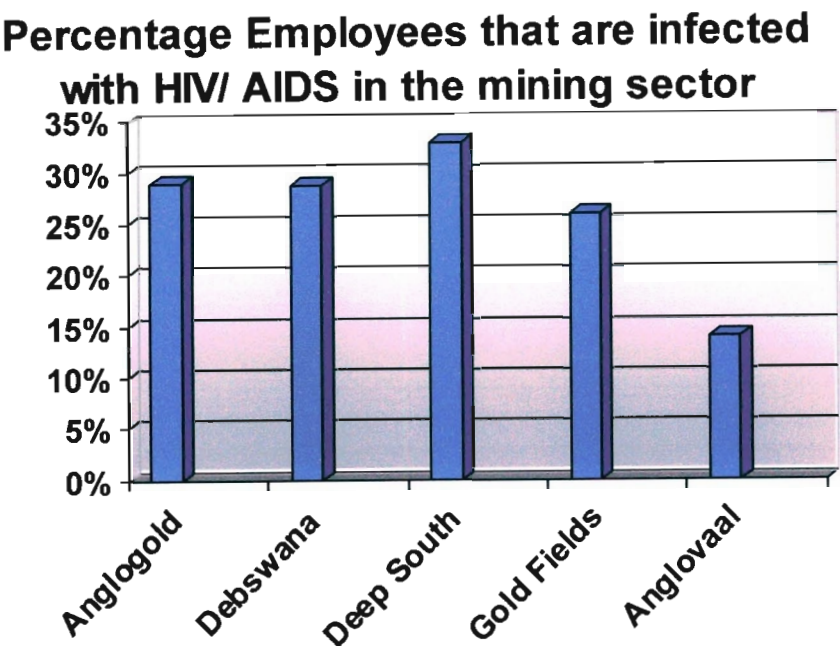
Until 2002, this company utilised the reported official prevalence rates. A risk assessment was performed at the end of 2002 that revealed the actual workforce involvement was 30%.

3.3.1.5 Anglovaal

This is a steel mine. The number of employees is lower and a smaller percentage of the miners are migrant labourers when compared to the goldmines. This reflects the lower incidence of HIV infected employees, which are reported as 14%. Of note is that the evaluation was reported on labourers and supervisors rather than the skilled segments of the workforce.

From the reported results, the impact of the HIV epidemic on the mining sector is quite apparent and this is reflected by the industries response with aggressive intervention policies and placement for continuous evaluation, Since this sector is heavily dependant on the labour force and constitutes a significant component of the national economy, the implications for the economic sector is also evident.

Figure 3.22



3.3.2 AUTOMOTIVE INDUSTRY

The profile in the automotive industry alters with respect to the prevalence rates. These values may reflect the lower percentage of migrant workers in the industry, the marginally increased sophistication of workers, and a greater racial heterogeneity with respect to the labour force.

3.3.2.1 BMW South Africa

The company has not conducted a sero-prevalence study but depended on their VCT program for results. The acknowledged the bias imparted by this. Of significance, they identified a 5.6 to 6% HIV positive workforce population with testing of only 47% of the staff. This has the potential for under-estimation as those who are familiar with their status are less likely to subject themselves to retesting as well as those at higher risk also subscribe to this rule.

3.3.2.2 Daimler-Chrysler South Africa

The company conducted a study in 2001 with the Medical Research Council (MRC) in 2001 with an average response rate of 79% (77% – 88%). This study revealed that 9% of the workforce was infected with HIV/ AIDS. This figure was projected to increase to 15% by 2003.

3.3.2.3 Ford Motor Company

The company has instituted a workplace HIV program that is still fledgling but acknowledges that a significant proportion of the workforce may be vulnerable and or infected with HIV. However, retroviral agents are not available to the workers and they have opted to encourage testing but do not perform this function under the auspices of the company.

3.3.3 Transport Industry

The highest numbers of employees that have been identified thus far have been in the transport sector affecting mainly truck drivers that spend a longer than a week on the road away from their families. Additional studies in this group have also attested to the poor information that prevails about HIV/ AIDS as less than 30% of truck drivers from South Africa were educated about the infection. Nevertheless, the results that have been gleaned thus far intimate and infection rate of 56% that has prompted the establishing of roadside clinics to curb the epidemic in this sector.

3.3.4 Agriculture

The information on the infection rate in the agricultural sector remains threadbare. In contradiction, one of the most detailed evaluations has been performed by Illovo Sugar Mills that has identified that 26% of their employees were infected with the HI Virus. Over the ensuing 6 years this culminated in a loss of 5.7% of their workforce.

3.3.5 Education Sector

At least 12% of educators are infected with the HI Virus. The implications for school governance and education are not within the scope of this evaluation but will impact on the corporate sector in the intermediate to long-term if the epidemic continues unabated.

3.3.6 Health Sector

Although the members of the health profession may subscribe to a lifestyle that places them in a low-risk category, their exposure to the increasing burden of HIV/ AIDS increases their risk considerably. At present, 30% of student nurses are thought to be infected, 15% of staff nurses have HIV/ AIDS and the rate of infection amongst doctors borders on 10%. The implications of these findings will be discussed critically later in the chapter.

3.3.7 Energy Sector

Once again, results on the prevalence of HIV/ AIDS in this sector are not readily available. The refineries have yet to publish studies that may have been undertaken although some of the companies are proactive in their attempts to curb the epidemic. Eskom commenced intervention at an early stage of the introduction of HIV/ AIDS and report an incidence of just below 11%. The validity of this figure will be discussed later in the chapter.

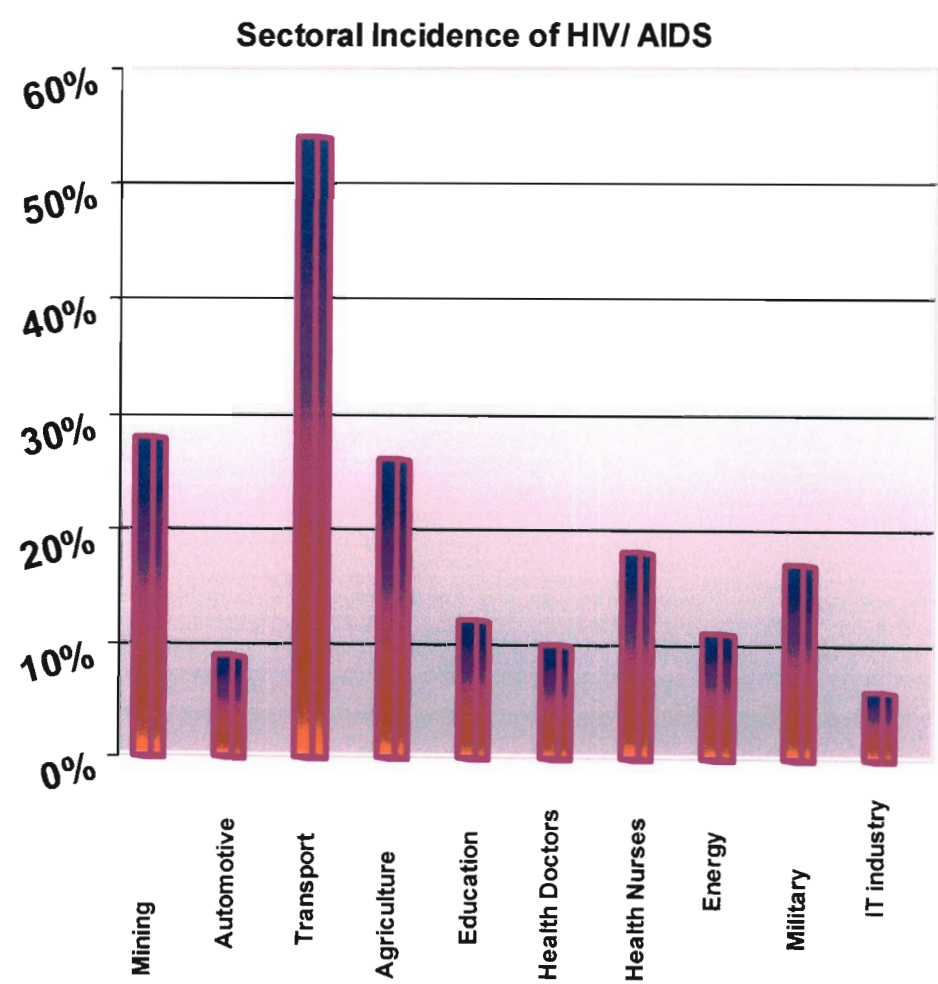
3.3.8 Military Sector

The overall incidence of HIV/ AIDS is 17%. Of concern is that over 50% of those in the 23 to 29 year age group are HIV positive and some units have an incidence as high as 90%.

3.3.9 Information Technology

This is interesting sector in the context of South Africa as the predominant race groups employed in this sector are white seconded by Asians. Results from 2 companies are available in this sector and they include IBM that has a reported incidence of 5% and St Technologies, that has mainly white employees in the highly skilled category, report an incidence of 7.2%.

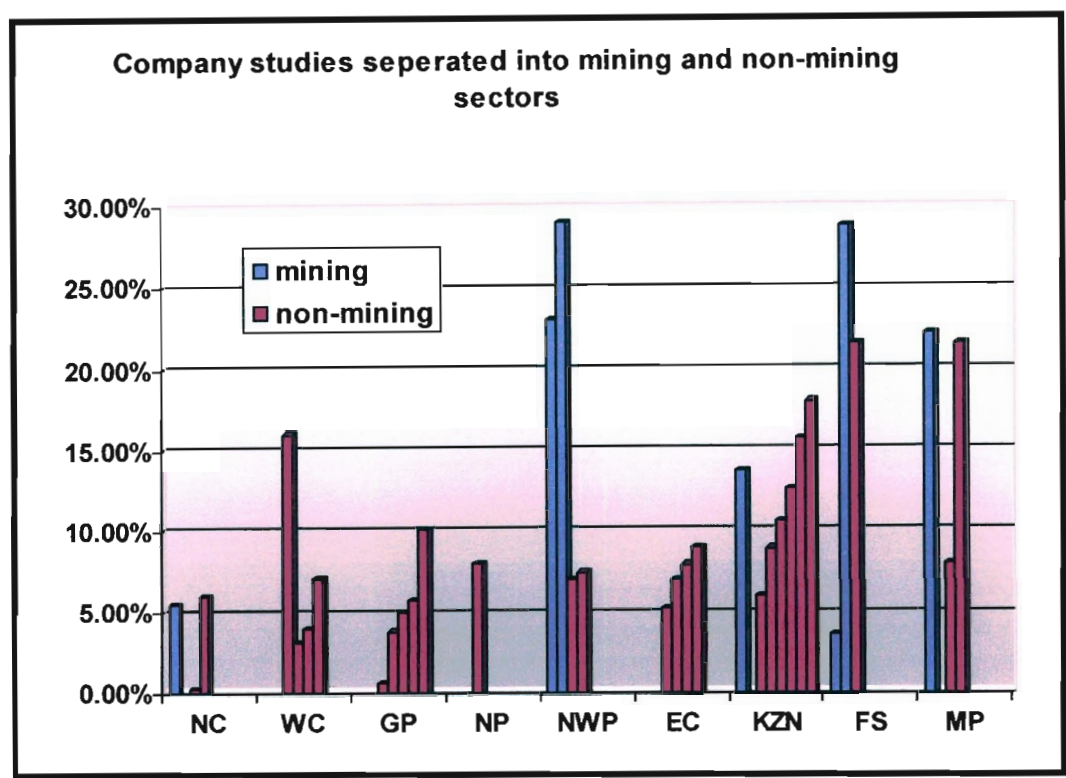
Figure 3.23



A few studies have been performed in the various provinces in sectors that remain anonymous at present. However, they remain useful as they alert to

the extent of involvement in the private sector. At present these results are separated into the mining sector and non-mining sectors. The results are illustrated in the graph below.

Figure 3.24



These company statistics bring to startling reality of the magnitude of the HIV/ AIDS epidemic to the corporate sector. The mining sector is generally the worst hit and of these, the gold mining industry appears to have the largest proportion of HIV labourers. This is closely followed by the manufacturing industry with reported results suggesting that at least 20% of employees are affected in the worst-hit provinces.

3.4 MAKING SENSE OF THE AVAILABLE STATISTICS

The statistics that have been obtained from the available literature establish that the significance of the epidemic extends into the corporate sector. However, for the corporate sector to comprehend these results and convert them into strategic decisions to ensure sustainability, it is imperative that they recognise the potential impact to their operations.

From the fragmented results, the following trends are evident:

3.4.1 Involvement by Corporate Skill Level

3.4.1.1 Unskilled Sector

It is not difficult to understand why this sector of the market is most severely affected; nevertheless, to recap, the following factors have been implicated

- Lack of awareness owing to education
- Programs do not reach these communities
- Misconceptions about the disease
- Social and cultural issues that preclude safe sex
- Migrant labour population without families

The percentage involvement approaches that reported by antenatal clinic studies conducted in the public sector and goes up to 33%. This is especially evident in the gold mining industry and with a lower percentage reported in the manufacturing sector going marginally lower to about 22%. A study in KZN has shown that supervisors and shop floor personnel have an incidence of 18.2% and 20.4% respectively.

3.4.1.2 Semi-skilled and skilled artisans

Barring truck drivers that have a frighteningly high incidence of HIV reported to be at 54%, the incidence here approaches 10% to 11%. This has been

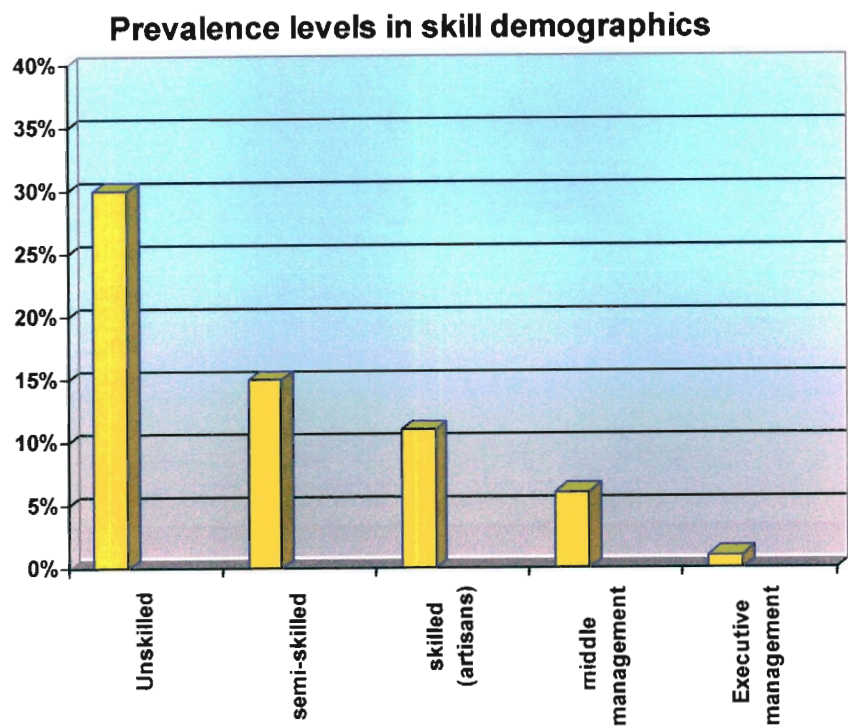
extrapolated from the results of the automotive industry and Eskom. Furthermore, the results from the KZN study also showed that 9% of technicians were HIV positive.

Skilled Management

The results here are more difficult to interpret with the involvement in this segment being diluted in the labour results and often the perception that this segment has remained immune to the epidemic. The results from IBM and ST technologies refute this as well as the results from the KZN study that shows that 4.3% of management were HIV positive. Overall, the reported prevalence ranges from 0.23% to 7.2%. The significance of this will be discussed later in the chapter.

Equally important is the significant involvement of skilled medical personnel and teachers that have indirect implications to the corporate sector that are bound to be significant in the intermediate term.

Figure 3.25



3.5 IMPLICATIONS OF FINDINGS TO CORPORATE SECTOR

The perception amongst smaller enterprises is that the disease is largely restricted to the unskilled and semi-skilled sectors and this coupled with unemployment implies that it will be unlikely to provoke the catastrophic predictions that have been published. The ING Barings study further fuelled this perception but based on data that was skewed.

Labour intensive companies are likely to experience the impact of the epidemic if it is not already apparent. Absenteeism and worker loss will be the initial factors in these industries. From the reported corporate studies coupled with the projected and antenatal clinic assessments, companies can

companies with a proportionately higher migrant population in their labour force can anticipate a higher proportion than 20% going up to as high as 30%. Whilst the unemployment rates remain high, projected to be at 26.4% suggesting that these workers can be replaced, other economic factors come into operation that are relevant to the company such as the diminution of the market. There is the option of automation to minimise the impact of the labour segment but this is coupled with increased costs as well as the need for skilled staff for maintenance. Skills shortage remains a problem in the country and this sector of the workforce also has a significant percentage of HIV infected individuals.

The proportion of semi-skilled and skilled workers such as artisans that can be anticipated to be involved will be at least 10%, varying with the provinces that the company may be located in. However, the hub of the economy is located in Gauteng where the prevalence is high and the largest population resides in KZN where the prevalence rates are also high. Coupling these 2 implies that the core business sectors should utilise these values in their calculations in order to assess the impact of HIV/ AIDS on their business. The factors that is pertinent to this sector are

- The critical positions that these employees hold in the operations divisions
- The cost and ease of replacement
- Coping with the loss of experienced technically-skilled employees even when replacement occurs

All of these imply that companies dependant on artisans need to reassess their operations and commence implementing strategic decisions to ensure company sustainability.

The management sectors appear to have the lowest level of HIV infected individuals in their ranks. However, the available results suggest that whilst these figures may be low, this is still a significant level of involvement that requires incorporation into the strategic decisions of the company to minimise the impact on the company. The reasons for this are

- These individuals are invariably highly qualified and replacement comes at considerable costs
- It is difficult to “shadow” these employees due to cost constraints
- These employees are invariably in critical positions often without the ability of other personnel to compensate for absence of these employees
- A loss in this segment of the market implies that the salaries that they command will become much higher as the availability of these skills decline.

The value of human resources cannot be underestimated and the impact of HIV has made all segments vulnerable. Corporate strategies are mandatory to ensure sustainability in the light of the size of the epidemic that already prevails in the corporate sector.

This is coupled with the potential high losses in the transport sector that are bound to impact on goods producing companies and all companies are going to feel the secondary impact with the implications in the education sector where up to 12% of teachers are infected that will compromise education and subsequent skilled employees in the future.

SUMMARY

The magnitude of the HIV/ AIDS epidemic has yet to be quantified. Nevertheless, the available data has been incorporated into a worksheet from

which projections can be made about the HIV/ AIDS epidemic devised by the Actuarial Society of South Africa (ASSA) that demonstrate that the epidemic affects all race groups but will impact on low-risk individuals as well (the projections separate the race groups into the respective risk categories based essentially on sexual practice). This will see an increase in new infections as well as an increase in deaths especially in the younger age group. This is clearly illustrated in the graphs.

Results from studies performed in the corporate sector cast aspersion on the ING Barings study conclusions and mirror closely the projections that have been predicted by the ASSA model. The available data demonstrates that the epidemic is most prevalent in the unskilled and semi-skilled labour sector where at least 20% of the workforce is affected with figures going to as high as 30% if migrant labour forms a significant component. High risk activity may be more prevalent in employees that spend considerable periods away from home in isolation such as truck drivers where the prevalence has been recorded to be as high as 56%. The anticipated involvement in the skilled sector borders on a prevalence of 10% (artisan predominant) with other skill categories such as Information Technology decreasing to 7%. The senior management sector has the lowest levels of involvement but pose the most serious economic risk when costs are taken into consideration. Involvement in this sector averages 2%.

Given these disconcerting prevalence rates in the corporate sector, it is mandatory for the impact of the HIV/ AIDS epidemic to be incorporated into the business strategies. The next chapter outlines the shape of this involvement.

CHAPTER 4

Managing the company with incorporation of the HIV/ AIDS epidemic into operation functions

The appreciation that the impact of AIDS in the corporate sector has the potential to undermine the efficiency of operations makes it imperative that adequate measures are implemented to circumvent or minimise these impacts in order to sustain profitability. This is critical for a company to perform prior to the implementation of strategic measures that will address the HIV/ AIDS epidemic directly. It has the benefits that the programs that are subsequently introduced will be sustainable.

To place this in the context of corporate language, a **GAP** has been identified in the corporate response to HIV/ AIDS. The inertia with which the smaller companies have responded stems from the varying interpretations of available results. There is an element of unconcern, as the epidemic is perceived to be largely restricted to the lower social economic classes that contain the largest proportion of unemployed individuals.

The preceding chapter quite strongly demonstrates that this is a myth; the involvement of the workforce in the corporate sector is significantly afflicted by the epidemic at all strata of the corporate hierarchy.

To this end, the most plausible response would be to initiate a **GAP ANALYSIS** that would allow businesses to streamline activities in the light of the HIV/ AIDS epidemic.

4.1 GAP ANALYSIS

This would entail

RECOGNISING THERE IS A GAP

This has been established by the statistics outlined in the previous chapter with the appropriate streamlining to make the information comprehensible to the corporate sector

DEVELOP STRATEGIES TO CLOSE THE GAP

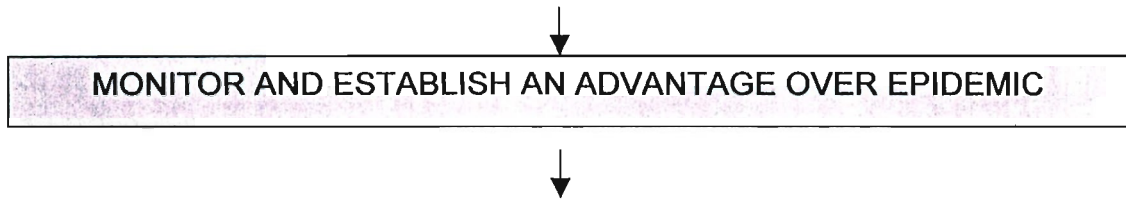
The strategies required to close the gap entail determining the extent of involvement of the human resources and taking decisions to minimise the effects of the epidemic on business activities.

The second step would be to assess the impact the epidemic would have on the market to streamline and implement changes in the business practice as well as consider the effects on business partnerships such as raw materials and transport factors that would also affect business activities

MANAGE THE PROCESS OF CHANGE

This would entail the strategic decisions taken to realign the various operations to deal with potential implications of the epidemic and the

implementation of programs to arrest and then reduce the impact of the epidemic on the company.



This entails the maintenance of the HIV negative staff, improving longevity of the HIV positive segment, streamline business operations, continuous assessment of staff with the potential long-term option of community projects to ensure continuous human resources and minimise HIV infection for market maintenance and economic growth.

4.1.2 Information requirements

In order to implement decisions with respect to the predicted impact of the HIV/ AIDS epidemic on a business, the information that will be required is the

- The breakdown into skill categories of the employees
- The percentage employees that are infected with virus
- The percentage employees that are entering the AIDS phase of the infection (will be elaborated on later)
- The impact that this will have on production
- The critical skills areas and operation functions where a single employee or workforce unit can impact significantly on company efficiency
- Measures required to minimise these potential risks

4.2 INSTITUTIONAL AUDIT

In the light of available data, it is imperative that companies undertake the following institutional audit that was implemented by Debswana Mining Company. This comprised the following components that form a series of linked steps in the process:

- **Personnel Profiling**
- **Critical post analysis**
- **Assessment of organisational characteristics**
- **Estimate of organisational liabilities**
- **Productivity**
- **Organisational context**

4.2.1 Personnel Profiling

This exercise aims to identify susceptible groups of employees in the company as well as determine the differing skill levels in the company and their strategic importance to the company.

4.2.1.1 Susceptible groups

- Identify the groups among employees who may be particularly exposed to infection
- Identify the reasons for susceptibility
- Determine the organisations response to this exposure and the benefits of such an exercise

- Determine whether the policy is to be applied selectively or for all employees

4.2.1.2 Skill levels

- What skill levels are there in the organisation
- How many people are there at each level
- What are the costs of training or replacing these people

4.2.1.3 Ease of training and replacement

- How easy will it be to train or recruit personnel at each skill level, taking cognisance of cost and time for training as well as taking cognisance of the regional and labour market

4.2.2 Critical post analysis

- Are there key personnel who will be difficult to replace and on whom an administrative or production process depends
- How easy will it be to cross-train available personnel to assume minimal responsibilities to maintain continuation

4.2.3 Organisational characteristics

- How easy will it be to replace or retrain within the organisation
- Are there sufficient people to allow for internal training
- Should the organisation introduce shadowing of key personnel
- Does the company have sufficient resources to be able to undertake replacement and/ or training of personnel
- What is the lead time for training or recruiting a replacement for different skill levels

4.2.4 Liabilities

Some or all of the following factors will determine the potential or actual liability of an organisation

- **Level and type of employee benefits.** This relates to contracts of employment and considers the benefit packages
- **Level of labour value added.** For a production or a commercial organisation, this measures the part of gross profit attributable to the work done by the labourers. Variables to be considered here are
 - ◆ Quantity of labour/ quality of labour (seen in levels of pay)
 - ◆ Labour as a proportion of all inputs to products

4.2.5 Productivity

There may be a reduction in the quality or quantity of labour supplied by employees who are sick or are caring for sick dependants. Absenteeism may result in a slow and barely detectable decline in output in any organisation

4.2.5.1 Labour capital substitution

- Can capital be used to replace people who are sick or who have died
- Could large numbers of unskilled workers replace the lost skilled workers

4.2.5.2 Out-sourcing and 'multi-skilling'

- Can non-core functions be out-sourced

- Can staff be trained to have multiple skills enabling them to do their own and other's jobs, should the situation demand it.

4.2.6 Organisational context

- What is the legislative and industrial relations framework
- What must an organisation do for its workers with respect to invalidity benefit; keeping them at work while they are HIV-positive but are not ill; or when they have AIDS but are not too sick to work?

4.2.7 Principles of Organisational Response

In the light of current statistics and the impetus for the response from Debswana, it is mandatory for companies to adopt a proactive approach to the epidemic in order to ensure sustainability.

4.3 MANAGEMENT STRATEGIES

4.3.1 Undertaking audit

The afore-mentioned undertaking demands that management be responsible for performing a thorough evaluation of the staff in their respective departments as a primary measure. Thereafter, the relative flexibility of the individual department has to be determined i.e. local managers have to determine what flexibility they have in maintaining production with unanticipated reduction in employees.

At this stage it would be equally important to identify critical or 'bottle-neck' areas that could culminate in a decreased productivity even when staffing of the department is capable of achieving production targets.

4.3.2 Potential solutions

4.3.2.1 Semi and unskilled labour component

The most plausible options here is to implement horizontal integration of production units especially with respect to dependant units i.e. departments that are further down the production line should ideally become familiarised with the production process higher up. Methods of institution would be to rotate a proportion of the staff without compromising production (gleaned from the minimal staff estimates to sustain production goals) through the departments that are above and below.

Additionally, smaller departments that are particularly vulnerable should be expanded to ensure continued functioning. This may entail the reduction of other departments to facilitate this and maintain operations costs.

4.3.2.2 Critical posts

Even with respect to what is arbitrarily ascribed unskilled or semi-skilled there are critical employees present in these units e.g. the person that is responsible for turning on the machinery or having access to keys for equipment. These positions have to be identified and in these circumstances, shadowing of the employees with co-employees would be the most plausible option in anticipation of non-attendance.

With respect to skilled positions, it is invariably these positions that pose the greatest threat to the organisation. In addition, increasing the workforce in these sectors invariably impact on operations costs.

The possible solutions would entail

- Training personnel in the same departments to ensure that operations are not compromised. This may be attended with increased costs but will invariably be less than the cost of additional employees.
- Horizontal integration and segmentation of administrative departments. This entails the careful analysis of the impact that a department has on other departments e.g. the Information Technology department with the accounts and internet sales sectors. Whilst outsourcing should be entertained in this area when a crisis occurs, the operations of the dependant departments must not be compromised as they should ideally be adequately trained to be functional in the interim.

4.3.3 Organisational Characteristics

It is incumbent upon management to identify and recommend suitable personnel for training to facilitate the shifts that may be required to accommodate either staff losses or absenteeism.

Management should also recognise the profile that is required of potential new employees to allow them to step in at a lower critical level with a gradual upward shift rather than allow for production to be compromised as the new employee familiarises with the environment.

4.3.4 Productivity

Maintaining optimum production should first be determined by the capacity the department aspires to. The minimal staffing should be determined that will effect productivity taking cognisance of the critical posts in the particular department. Once these working figures are attained, then it would be incumbent upon the direct managers and supervisors to maintain a close track record of each employee with respect to absenteeism and the nature of these absences.

This will allow management to ensure that these posts are adequately covered by means of pre-emptive training of in-house staff or recruitment of appropriate apprentices that will allow for a smooth transition of departmental activities.

At present, there appears to be no concern with being able to replace semi-skilled and unskilled workers in the South African environment owing to the high unemployment rates that prevail. In addition, capital replacement of staff does have its own shortcomings. It introduces sophisticated equipment that is energy dependant, with the introduction of new functional characteristics for a department to function under, and thirdly, it invariably

requires skilled employees increasing the burden of critical posts to the company with its attendant costs as well as difficulty to replace these staff members if the need arises.

SUMMARY

This chapter dealt with the alteration in the business strategies to ensure that businesses maintain sustainability and minimise the deleterious effects of the HIV/ AIDS epidemic on business functions. It commences by outlining the problem, proceeding to the performance of a GAP Analysis and then detailing the requirements at each level emphasising the need for management retraining and evaluation at the various levels with involvement of the senior management.

The next chapter goes on to deal with the benefits of dealing with the HIV/ AIDS epidemic in the workplace and outlines the strategic options available to individual companies.

CHAPTER 5

5.1 IMPLEMENTING STRATEGIES TO COPE WITH THE HIV/ AIDS EPIDEMIC

5.1.1 Introduction

Given the fragmented intervention strategies that have been undertaken and the lack of co-ordination with respect to dealing with the epidemic, companies are obliged to accept that human resources will become less accessible until the efforts to curb the epidemic begin to demonstrate tangible results beyond the confines of a few programs. To this end, to maintain sustainability, it is imperative that companies implement HIV intervention programs with the basic goals well-established; these are

- To preserve the non-infected workforce
- To minimise the impact of the disease on infected individuals and,
- To consider prolongation of the lifespan of individuals with HIV

These three factors can be categorised and introduced in the order described above pending the availability of funds and falls under the ambit of

- **Workforce education and counselling programs including intervention for sexually transmitted diseases**
- **Counselling and supportive services such as appropriate intervention for treatment of opportunistic infections and adoption of the DOTS program for tuberculosis management**
- **Introduction of voluntary testing and counselling but only with the option of therapy for the disease being available either provided by the company or subsidised by the company**

The second aspect pertinent to the company is to perform continuous analysis of the impact of the disease to rationalise operations in terms of

- Determining the efficacy of programs on staff and the Seroprevalence rates amongst staff
- Determining the cost factors amongst the various departments to alter strategy such as opting for automation
- Alterations in market characteristics that influences production in terms of
 - Sales
 - Product preferences
- Impact of ancillary services on business functions and strategies to minimize the effects on business efficiency such as
 - Transportation
 - Raw material procurement
 - Extent of services with appropriate rationalization

5.1.2 Workforce education and counselling programs

5.1.2.1 Management Education

To date, these issues have been restricted to the Human Resources division of most companies. The futility of this approach can be easily comprehended when one sees the ramifications of the epidemic as outlined above. Subsequently, it is imperative that all management become familiar with the implications of HIV to their divisions so that decisions are taken within units as opposed to relying on the Human Resources division. The validity of this strategy is that the efficacy of the programs can be determined continuously with trends being recognised and appropriate interventions being instituted to circumvent catastrophe.

5.1.2.2 What does management education entail?

Management education would entail the following basic requirements

- Medical facts and basic epidemiological and data sources
- HIV epidemic determinants
- Impact of HIV/ AIDS on the individual, the company and society
- HIV/ AIDS workplace issues and
- Company policies and practices on HIV/ AIDS and the rationale behind them

5.1.2.3 Medical Facts and Basic Epidemiological data sources

Identifying people from the management sector that can be trained externally best facilitates this. This is not difficult in the current environment as there are excellent programs now available to achieve this. Ideally, this should be coupled with ability or even purchase of an online program that will make dissipation of the information to the rest of the management staff easier as well as ensure consistency of the program with appropriate regular updates.

Management should be able to commence a database to determine the impact of the epidemic on the individual departments that should be collated into a more central database that where inferences and projections can be made to facilitate alterations in strategic decisions. The information that will be required will generally entail

- Sero-prevalence of the current workforce
- Percentage of employees at risk
- Costs to production due to absenteeism and deaths
- Costs to company as a result of payouts due to disability and death

5.1.3 HIV epidemic determinants

This information is invaluable as it would allow managers to more easily recognise their vulnerable staff and ensure that they are exposed to the appropriate education and counselling at intervals pertinent to the extent of their risks.

This would include factors such as the migrant labour component of the workforce.

5.1.4 Impact of HIV/ AIDS on the individual, company and society

These issues are important because the individual is now vulnerable to both opportunistic infections and emotional pathology. To this end, it would be important to ensure the mental well-being of the individual and the services that are available for this, counselling with respect to lifestyle modification to minimise the onset of AIDS and the risk the individual poses to society with respect to new infections and means to minimise this.

With respect to the company, the value of the individual must not be underestimated and thus all measures to facilitate the above should be offered at the maximum measures feasible to the company to minimise the impact on production. In addition the risks these individuals pose to the co-workers must first be demystified and then true risk potentials such as injury on duty must be dealt with without compromising those assisting such as the availability of gloves and other essential equipment. Of importance at this step is that this equipment must be easily accessible.

Identification of critical and essential posts and the possible strategies that is necessary to maintain these functions continuously.

5.1.5 HIV/ AIDS workplace

The identification of appropriate staff such as supervisors and shop stewards in the various departments is mandatory to ensure that these individuals need to be trained to dispense appropriate information to the workforce at large. Identify suitable times to provide staff training. Ensuring that more sophisticated skilled staff appropriate is readily accessible.

5.1.6 Policies and practices

The goals the company wishes to achieve as well as their long-term vision must be known to this sector. With respect to this, the aspirations of the different companies will be influenced by the anticipated magnitude of the epidemic on the company and the availability of resources for the programs. To this end management must ensure that introductory programs are being adequately conducted and they must also be able to estimate the impact of these programs and then provide information that will assist in appropriate modifications. Furthermore, they need to be able to assist with the growth of the programs as well as provide data that may see an earlier introduction of secondary phases of the programs owing to the needs of employees.

Regular company updates should alert managers to what is available for employees and dissipation of this information expeditiously.

5.1.7 Counselling and supportive services

HIV/ AIDS education on the disease as well as the essential preventative measures is the minimum requirements in this category. To this end, members of the peer workforce group to facilitate communication in terms of

both language as well as practical analogies to transmit information ideally facilitate these.

The workplace should have appropriate messages accessible to employees in the form of posters and pamphlets.

Counsellors should be accessible to employees and during the early introduction of the programs, anonymity will play a significant role and thus these counsellors should be located such that employees maintain their confidentiality with appointments arranged with their management.

Condoms should be easily available but located in places that circumvent the potential for stigmatisation such as facilities that are visited individually (e.g. locker rooms).

5.1.8 Intervention for treatment of STI's, opportunistic infections and, adoption of the DOTS program for tuberculosis.

There is ample evidence to show that a reduction in the incidence of STI's results in a decreased incidence of HIV. This can be effected by the company by either

- providing treatment for their staff or
- Having medical personnel present that can aid with diagnosis and the worker can then be referred to the appropriate institution for therapy or
- Providing information in the form of posters or pamphlets that alert employees on how to recognise that they have contracted an STI and with the appropriate institutions they can attend for treatment.

This should be coupled with information on how to prevent these infections and the education on the need for partner therapy as well. It is easy to comprehend that having treatment facilities at the workplace or at least medical personnel will allow for the identification of those at risk for HIV and ensure that these employees are provided with the necessary support and counselling to coerce them into a low risk category.

5.1.9 Opportunistic Infections and Tuberculosis

Depending on the sophistication of the facilities available, opportunistic infections that are contracted by HIV infected employees have to be recognised and treated as soon as possible to ensure continuation of operations functions and wellness of the employee. This can be done by having access to medical facilities, access to medical personnel or, recognition that the employee is unwell with timely referral to the relevant health care facility.

By far, tuberculosis remains the commonest infection and no staff member is immune. Medication for the condition is provided by the state. The single most important reason for the persistence of the disease, which is endemic to this country, is that treatment defaulting is common. The implementation of the DOTS program worldwide has seen a sharp reduction in the incidence of the disease as well as a decrease in the incidence of resistant tuberculosis. To this end, it would be sensible for all companies to ensure that those affected do not default therapy by administering the drugs to the workers and this can be achieved by the adoption of the DOTS program. The value of this cannot be over-emphasised and the benefits are obvious.

5.1.10 Administrative decisions

This would entail the use creating departmental and central databases where the information can be evaluated and computed into either strategic decisions such as opting for either complete or partial automation of certain operations as well as determine additional research that will be necessary with respect to the market needs and direction and streamlining of the workforce. This will have to be performed in the context of the company's operations.

SUMMARY

This chapter deals with the potential methods that companies can implement measures to directly address and, hopefully, alter the course of the epidemic and the potential benefits of adopting this strategy with respect to the company's primary aspirations and their community impact that has a long-term benefit.

CHAPTER 6

STRATEGIC OPTIONS AND AIMS FOR THE IMPLEMENTATION OF A HIV/ AIDS PROGRAM FOR EMPLOYEES

6.1 Introduction

The statistics that have been reported and organised in chapter 3 makes it quite clear that HIV/ AIDS is a significant corporate challenge that warrants active intervention by management. The nature of the implemented program will be influenced by the characteristics of the organisation and their aspirations in terms of the goals they hope to achieve.

Notwithstanding this, the extent of company involvement will be dictated by the following factors

- Magnitude of the epidemic to the company either using actual figures, projected figures or industry guidelines
- Resources available to implement the programs
- Strategies to expand the programs

6.2 HIV/ AIDS PROGRAMME ELEMENTS

6.2.1 Governance and Strategy

6.2.1.1 Policy guidelines

This will incorporate the factors required to manage HIV/ AIDS in the workplace including prevention, voluntary counselling and testing, confidentiality and disclosure, performance management and termination, stakeholder consultation, and education and awareness.

6.2.1.2 Strategic plan

This entails the processes to assess internal and external situations from which key issues can be focussed on. This has to be coordinated right down

to management level where statistics can be collated within the department with respect to absenteeism, productivity, movement of products i.e. market demand, ancillary services such as supplier influence and transportation or, to categorise it into outsourced activities that influence business performance. The management locally to decide on possible interventions to facilitate sustainability can initially assess this data and then decisions can be taken at higher management to implement more radical changes to the infrastructure. The efficacy of program implementation has to be continuously evaluated to ensure exposure of all staff and assessment of the programs to determine whether changes are required with respect to content, duration, intervals and times performed (shift workers and other variables must be considered).

6.2.1.3 Governance committee

This should entail a structure that commences with strategy and policy development that has both human resource experts and the finance managers that send down the information to the operations managers where the execution is co-ordinated with the shop stewards and supervisors and databases are altered to incorporate the changes.

6.2.1.4 Management education

This has to entail skills that facilitate managing employees with HIV/ AIDS as well as the incorporation of this variable into the relevant operations functions both primary and secondary. This program must be dynamic with either regular training or with online programs ideally with incorporated tests that ensure the adequacy of knowledge. A time frame for assimilation of the relevant skills should also be appended to these programs to encourage to management to harness the changes and implement them.

6.2.2 Economic impact and audit analysis

6.2.2.1 KAP (Knowledge, Attitude and Practice) survey

This has to be performed regularly on employees, management and clinical/ counselling staff to guide strategy and change. The managers should ideally do this informally at the smaller operations divisions and then larger formal research can be undertaken to validate findings when solutions require a paradigm shift from the prevailing policy.

6.3 PREVENTION

6.3.1 Education and Awareness Programmes

The principle requirements in this category are to demystify HIV/ AIDS to the employees. This entails the provision of information and ensuring that the employees comprehend this information.

The key concepts are

- What is HIV/ AIDS in language appropriate to the population
- How is the infection contracted
- Eliminating misconceptions of disease contraction such as mosquito bites, saliva, touching people with AIDS, sharing facilities.
- Lifestyle modifications that minimise risk
- Healthy eating habits with nutritional advice that is based on the basic diets of the employees i.e. avoid being prescriptive and rather adopt a modification strategy to facilitate compliance
- Maintenance of a healthy work and home environment

6.3.2 Peer Education and Counselling

The personnel chosen to impart education programmes to employees should ideally be selected from the employees to facilitate communication. Those employees chosen as educators must be continuously trained and evaluated to ensure consistency of the programs.

These programs must also be objectively assessed in the form of formal studies that measure the efficacy of the programs so that areas of deficiencies can be identified and the necessary modifications made.

Employees that require counselling should ideally be primed for the exercise by the educators so that communication with counsellors is facilitated as the counsellors are more than likely to come from either a different race or economic group. Counselling services should be easily accessible and preserve the anonymity of the employee seeking counselling.

6.3.3 Free condoms

This is a pre-requisite to encourage employees to have safe sex. It is important that access to condoms is easy but located where they can be retrieved without breaching anonymity.

The above constitutes the essential core programs that are required of all responsible businesses. Those businesses with greater access to resources should include

6.3.4 Syndromic management of STI's

This entails the treatment and education of how the disease is contracted and it should be emphasised to the employees that these diseases make them more vulnerable to contracting HIV. Consideration should be given to the treatment of the infected partners especially where migrant labour is a significant component of the labour force.

6.3.5 Provision of antiretrovirals

This has remained contentious especially to the smaller companies when expense is considered. At present, this is restricted to the larger companies; with the reduction in drug prices and Government agreeing to provide these agents, more companies can include this component into their AIDS strategy. The value of this to the company is that it facilitates the introduction of the Voluntary Counselling and Testing program that has several benefits to the company including

- A healthier workforce allowing for more predictable changes in the future
- Better quality statistics to streamline decision-making and implementation

6.3.6 Testing and Tracking

- **Prevalence testing** - done at regular intervals to regularly update global HIV status
- **Risk Analyses** -Performed to predict HIV status
- **Database** -Tracking key indicators and trends

6.3.7 ASPIRATIONS

6.3.7.1 Employee level

Prevent new infections i.e. preserve the uninfected workforce

Maintain well-being of those infected with HIV

Provide benefits to employees that are HIV positive and are no longer capable of working

6.3.7.2 Company level

Strategy and Management – ensures that the global picture is addressed and that the issues to be managed are understood and communicated to all of the stakeholders with checks in place that confirm this by feedback from the relevant levels.

Continued Employment – to maintain operations functions with minimal disruptions

Testing and Tracking – remains the cornerstone of the measuring and monitoring process

6.3 ELEMENTS OF SUCCESSFUL PROGRAMS

The business sector can address HIV/ AIDS in a variety of ways, from partnering with governments and communities to help improve prevention and care programmes, to high-level advocacy and leadership. However, the greatest immediate responsibility and opportunity for individual companies is to protect their workforces and their families against the spread of this epidemic, and to support employees infected with HIV in remaining healthy and able to contribute to the business for as long as possible.

Over the last decade, businesses have begun to establish policies and programs to combat HIV/ AIDS. Given that programs need to be tailored to an individual company's size, location and type of business, the experience of other companies is invaluable in helping individual businesses face up to the challenge of HIV/ AIDS.

6.3.1 RISK ASSESSMENT

Initial risk assessments to evaluate the scale of the HIV problem in the workforces, societies and markets have been crucial in helping companies devise targeted programs.

In particular, risks have been assessed in terms of

- Existing levels of HIV/ AIDS in the workforce and surrounding communities
- Costs to the company of HIV/ AIDS related employee absence and death (absenteeism, recruitment, training, reduced productivity, etc.)
- Costs to the company resulting from hospitalisation, home care and any existing prevention facilities.

6.3.2 NON-DISCRIMINATORY POLICIES

Companies have updated their policies to ensure employee confidentiality and to support employees living with HIV/ AIDS to remain productive members of the workforce for as long as possible. Many such company policies have first been developed by subsidiaries in heavily affected regions before being rolled out company-wide. While having the general aim of tackling HIV/ AIDS related discrimination, they need to be adapted to comply with relevant national legislation. To be effective, HIV non-discriminatory policies need the active endorsement of senior management centrally, regionally and nationally. Pre-employment screening for HIV should be recognised as discriminatory and counter-productive. As well as fostering a more supportive workplace environment, the adoption of non-discriminatory policies is a clear public commitment that helps to counter the fear and stigma that still typifies many communities' responses to the epidemic. The involvement of trade unions and

employee representatives in the formulation of policies has been important in ensuring employee support.

6.3.3 AWARENESS AND PREVENTION

Businesses have a unique opportunity to help employees protect themselves against HIV infection by providing accurate and easily understandable information on how HIV is - and is not – transmitted. For employees in many countries of high HIV prevalence, the program may be the only source of reliable information on HIV/ AIDS. Companies should incorporate strategies into their HIV/ AIDS programs and policies that are sensitive to the specific needs of female and male workers. Gender-specific approaches have proven to be effective in curtailing the spread of HIV/ AIDS and STI's. Companies have learnt that preventing new HIV infections requires more than awareness. Successful company-based HIV prevention has also included condom distribution and diagnosis and treatment of STI's. Some companies have strengthened their own programs through collaboration with local community-based organisations or public-sector health services.

6.3.4 VOLUNTARY COUNSELLING AND TESTING (VCT)

Companies can offer their employees voluntary counselling and testing (VCT) in on site clinics or in partnership with local health care services. It is vital that confidentiality about individual test results is guaranteed, although anonymous screening information about HIV rates in the workforce can assist future planning. Many companies have found that employees are reluctant to access VCT in circumstances where knowledge of the HIV positive status may accrue little benefit (e.g. poor access to care, support and treatment). However, companies that offer VCT services as part of comprehensive programs

combining prevention and care see the effectiveness of the overall program enhanced. Employees that test negative can take advantage of company prevention education to reduce their risk of infection. Employees that test positive can access services that improve their health, quality of life and life expectancy. VCT forms an integral part of some prevention interventions, such as the reduction of mother to child transmission of HIV.

VCT can have a key role in implementing an effective, measurable program. Companies can assess the impact of their HIV programs and adapt them accordingly.

6.3.5 CARE, SUPPORT AND TREATMENT

Businesses can help their employees living with HIV/ AIDS continue to contribute to the business for as long as possible, through a range of care and support services, through company clinics or in partnership with other health care providers. For some this is an extension or expansion of existing provision, whether in-house or through health insurance, to employees and their immediate families.

Some of the most common and fatal opportunistic infections like *pneumocystis carinii pneumonia (PCP)* and **TB** can be treated and prevented with inexpensive drugs. By providing basic treatments like these, companies can improve the health of their HIV positive employees and immediate families for significant periods.

Many companies collaborate with local AIDS service organisations to provide home-based care to help alleviate the onset of serious illness, and to provide palliative care, medical advice, and support to families and caregivers.

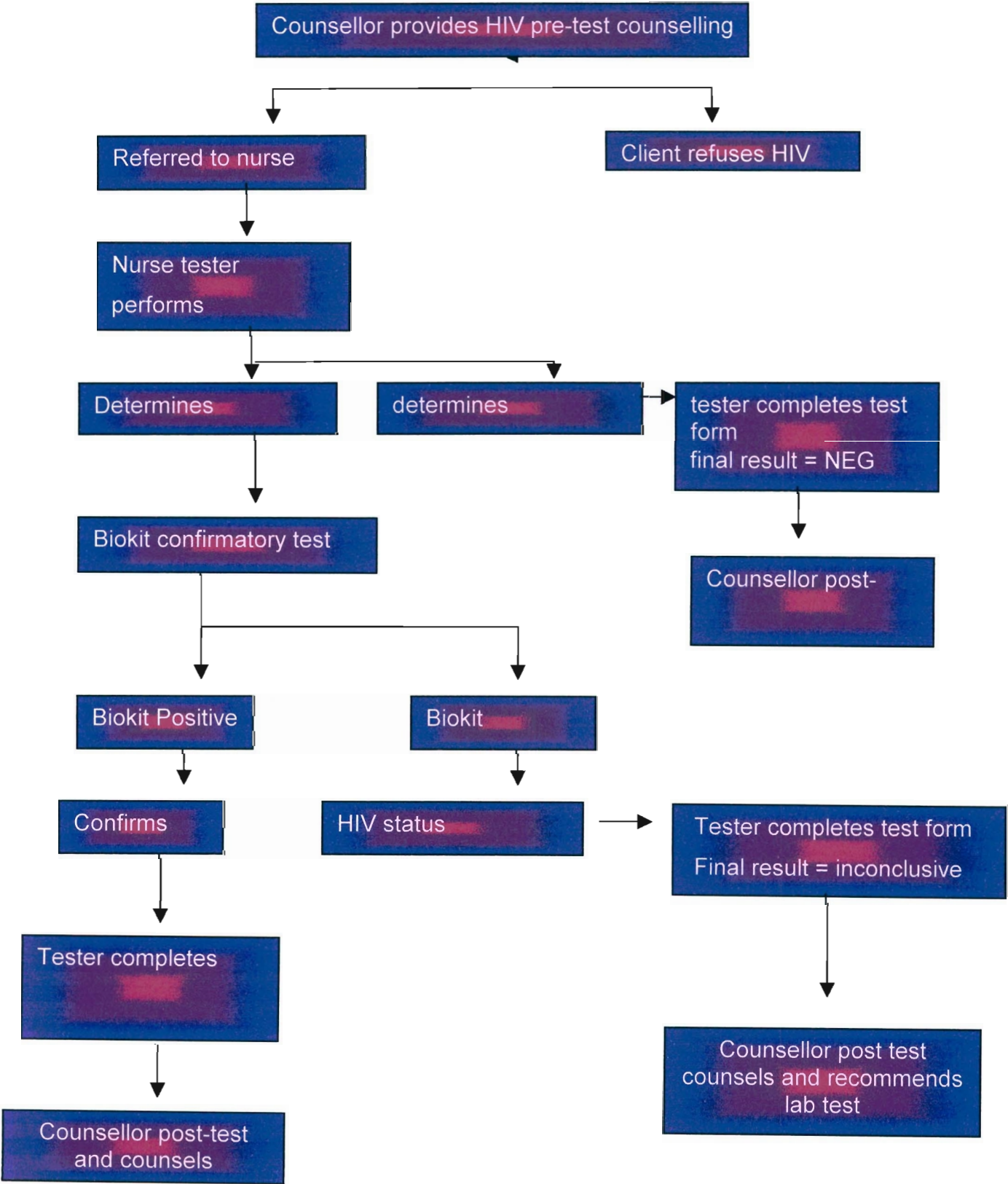
Most companies are now offering antiretroviral therapy (ARV's) for infected employees and their families. The companies highlighted in this document provide the classic "cocktail" of the triple therapy that has been so successful in improving the lives of people with HIV/AIDS in the industrialized world. A range of manufacturers has recently reduced the prices of these medicines significantly. The Council strongly advocates that access to these lower priced medications should extend to the business sector, particularly those companies operating in heavily affected regions.

However, the cost of drugs is not the only consideration. ARVs require ongoing monitoring and supervision by trained medical personnel with access to the necessary clinical tests. ARVs are a long-term commitment. Their considerable benefits continue for as long as they are taken. Adherence to treatment is crucial to reduce the risk of developing resistance to the medication.

Many companies have calculated that ARVs have long-term cost benefits by reducing absenteeism, hospitalisation and maintenance of company production. Below is an algorithm that should be subscribed to by companies embarking on VCT.

Figure 6.1

HIV Rapid Testing Algorithm



6.3.6 CORE PROGRAMMES

6.3.6.1 The rationale for management training

Whilst management is unlikely to perform training at the operations division, it is crucial that they are familiar that they remain familiar with all of the programs and aspirations of the company in order to provide feedback to top management with respect to program efficiency, workforce impacts and production changes both in the internal environment and changes that emanate from the external environment that impacts on company functions both in terms of suppliers and consumers.

SUMMARY

This chapter deals with actual implementation of the workplace HIV/ AIDS programs commencing with basic awareness and counselling, treatment of tuberculosis and sexually transmitted infections (STI's) that is considered the core and essential program. As company resources increases or alternate strategies are developed, then the provision of voluntary counselling and testing can be introduced ideally with the provision of antiretroviral agents. The management training program for this aspect of activities is also emphasised. This chapter does overlap with chapter 5 but the emphasis is placed on program implementation rather than program rationale.

CHAPTER 7

CONCLUSIONS

The statistical analysis of the HIV/ AIDS epidemic on the corporate sector quite clearly demonstrates that the epidemic is certainly a critical component of the private sector and its magnitude may have been under-estimated and, equally dismaying, may continue to be under-estimated by smaller corporate entities. Equally relevant, the available results quite categorically demonstrate that the epidemic is neither restricted to race group or skill group and while the respective incidences vary in both these categories, the extent of involvement is significant enough to be of concern.

Companies can anticipate losing significant proportions of their labour components to the epidemic as well as losing skilled staff in smaller proportions but at an equal cost when ease of replacement and training is computed into these figures.

These figures mandate that companies take an aggressive stance to incorporate the implications of the epidemic into their businesses.

The value of becoming dynamically involved may mean a short-term investment but the long-term benefits in maintenance of staff, profits, sustainability and the positive ramifications to society are invaluable from both the cold face of evaluating profit margins to the philanthropic measures that places the company beyond the image of a production line.

Notwithstanding the cost constraints, introductory programs require minimal resources that can be easily obtained and executed but the goal should be to offer the comprehensive program. This is not unattainable when one considers the additional avenues of

- MAP funding
- State health care and collaboration
- Coalition with other smaller companies to pool resources
- Larger company resources where an association is formed to whose resources can be utilised at subsidised costs

With all that has been discussed it is imperative that all South African businesses endeavour to commence and optimise their business involvement with HIV/ AIDS in order to ensure sustainability.

REFERENCES

1. Ainsworth M, Waranya T (2000) 'Breaking the silence: Setting realistic priorities for AIDS control in less developed countries.' *The Lancet* 356
2. Arndt C (2000) 'The macro implications of HIV/AIDS in South Africa: A preliminary assessment.' *South African Journal of Economics*
3. Abt Associates Inc (2001) *Impending catastrophe revisited: an update on the HIV/AIDS epidemic in South Africa*. Henry J Kaiser Family Foundation, Johannesburg?
4. Bureau for Economic Research (2001) 'The macroeconomic impact of HIV/AIDS in South Africa.' University of Stellenbosch
5. AngloGold (2002) *Facing the challenge of HIV/AIDS 2001/2002*
6. Deloitte & Touche Human Capital Corporation (2002) 'Evaluation of workplace responses to HIV/AIDS in South Africa – A rapid situation analysis'
7. Deutsche Securities (2000a) 'ABI Limited – Living with HIV/AIDS: Positioned for growth'
8. Deutsche Securities (2000b) 'AngloGold Limited – A South African HIV/AIDS pioneer'
9. Deutsche Securities (2000c) 'Can we cope with another "Lost Generation"? – A risk perspective on HIV/AIDS in South Africa'
10. Meeson A (2000a) 'Not so sweet – HIV/AIDS and South Africa's canefields.' *SA Labour Bulletin* 24 (5): 43-49
11. Naidu V (2001) 'The implications of HIV/AIDS for strategic market planning.' *AIDS Analysis Africa* 12 (3):8-9

12. NMG-Levy Annual Report (2002)
13. Rosen S, Vincent JR, Simon JL, Singh G & Thea DM (2000) 'A model for assessing the costs of workforce HIV/AIDS.' Harvard Institute for International Development, Harvard University, MA, USA
14. The Global Business Council on HIV/AIDS (2002) 'Employees & HIV/AIDS - Action for business leaders: Company programs'
15. The Second King Report on Corporate Governance (2001)
16. UNAIDS (2000) 'Report on Global HIV/AIDS Epidemic'
17. UNAIDS, The Global Business Council on HIV & AIDS, The Prince of Wales Business Leaders Forum (2000) *The business response to HIV/AIDS: Impact and lessons learned*
18. UNAIDS, The Prince of Wales Business Leaders Forum (2000) *The business response to HIV/AIDS: Innovation & Partnership*
19. Vlok E (2001) 'The route of the problem: Part 1' *SA Labour Bulletin* 25 (1)
20. Wilkins N (1999) 'HIV/AIDS in the informal sector.' *Everybody's business: The enlightening truth about AIDS*: 220-226
21. Williams BG, Campbell CM & MacPhail C (1999). 'Managing HIV/AIDS in South Africa: Lessons from industrial settings.' Council for Scientific and Industrial Research
22. Whiteside A & Sunter C (2000) *AIDS: The challenge for South Africa*. Human & Rousseau Tafelberg
23. World Bank (1995) *The Economic Impact of AIDS*. PHNFlash.
24. UNDP and UNAIDS. *HIV/AIDS and human development in South Africa*. 1998. South Africa, UNDP/UNAIDS.

25. AIDS toll on regional economies. *Southern African Economist*. 4-15-1997. Cited in Stover, J. et al. *The Economic Impact of AIDS in Africa*. 1999. Washington DC: The Policy Project, Futures Group International
26. Coombe C. *HIV/AIDS and the education sector: The foundations of a control and management strategy in South Africa*. First draft. 2000. South Africa, United Nations Commission for Africa.
27. Broomberg J (1993) 'Current research on the economic impact of HIV/AIDS: A review of the international and South African literature.' In: Whiteside & Cross (eds), *Facing up to AIDS*, New York, St Martin's Press
28. Bureau For Economic Research (2000) *HIV/AIDS and the South African economy*. University of Stellenbosch, BER
29. Bureau For Economic Research (2001) *The macro-economic impact of HIV/AIDS in South Africa*. University of Stellenbosch, BER
30. Calitz E (2002) 'Structural economic reform in South Africa: Some international comparisons.' *The South African Journal of Economics* 70 (2)
31. Cohen D (2000) 'HIV and development programme: The economic impact of the HIV epidemic.' UNDP Issues Paper No. 2
32. Cross S & Whiteside A. (1993) *Facing Up To AIDS: The socio-economic impact in Southern Africa*. London, MacMillan Press Ltd
33. Cuddington TJ (1993) 'Modelling the macroeconomic effects of AIDS, with an application to Tanzania.' *The World Bank Economic Review* 7 (2): 173-189

34. Cuddington TJ (1993) 'Further results on the macroeconomic effects of AIDS: The dualistic, labour-surplus economy.' *The World Bank Economic Review* 7 (3): 403-417
35. De Wet W (2002) 'Coping with inflation and exchange rates shocks in the South African economy.' *The South African Journal of Economics* 70 (1)
36. ING Barings (2000) *Economic impact of AIDS in South Africa: A dark cloud on the horizon*. Johannesburg, ING Barings
37. Sachs JD, Warner AM (1997) 'Sources of slow growth in African economies.' *Journal of African Economies* 6 (3)
38. Squire L (1998) *Confronting AIDS*. Washington DC, The World Bank
39. Stover J & Bollinger L (1999) *The impact of AIDS*. The Futures Group International
40. Stover J & Bollinger L (1999) *The economic impact of AIDS in South Africa*. The Futures Group International
41. The World Bank, UNAIDS, European Commission (1997) *Confronting AIDS: Public priorities in a global epidemic*. Washington DC, The World Bank
42. The World Bank. *Intensifying action against HIV/AIDS in Africa: Responding to a development crisis*. Africa Region, Washington DC, The World Bank
43. Bollinger L & Stover J (1999) 'The economic impact of AIDS in South Africa'. The POLICY Project. Research Triangle Institute (RTI). The Centre for Development and Population Activities (CEDPA)

- 44.** Broomberg J, Steinberg M, Masobe P & Behr G (1991) *AIDS in South Africa: The demographic and economic implications. Part II: The economic impact of AIDS in South Africa*. Johannesburg: University of the Witwatersrand
- 45.** Doyle PR (1991) *AIDS in South Africa: The demographic and economic implications. Part I: The impact of AIDS on the South African population*. Johannesburg: University of the Witwatersrand
- 46.** Over M (1999) 'The public interest in a private disease: An economic perspective on the government role in STD and HIV control'
- 47.** UNAIDS (1998) 'Cost-effectiveness analysis and HIV/AIDS'. UNAIDS Technical Update. Geneva: UNAIDS Information
- 48.** UNAIDS (2000) 'Guidelines for studies of the social and economic impact of HIV/AIDS'. Geneva: UNAIDS
- 49.** UNAIDS (2001) 'AIDS epidemic update'. Geneva: UNAIDS
- 50.** UN-HABITAT (2002) 'Management of the HIV/AIDS pandemic at local level. A pre-session document for the World Urban Forum. Agenda item 4. Cities and Sustainable Development'. Final Draft
- 51.** USAID/AusAID (nd) 'The social and economic impact of HIV/AIDS in South Africa. A review and lessons learned from seven studies'