

Product Development in an HIV/AIDS Environment

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ABSTRACT

This paper looks at some of the issues faced by actuaries developing products in an environment where HIV/AIDS is a factor. An update to the HIV/AIDS situation in India is given. This is then followed by an overview of medical terms related to HIV/AIDS and an outline of the clinical progression of the disease. Various products and policy conditions that have been implemented in other countries are then considered, as are industry guidelines that have been established.

KEYWORDS: HIV; AIDS; insurance; HIV testing; critical illness; opportunistic infection

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1. Introduction

This paper aims to look at some of the product development issues that insurers face when insuring lives in an environment where HIV/AIDS is material. It therefore examines the insurance industry's response to HIV/AIDS on a number of fronts: product design, terms and conditions, pricing and industry guidelines. While this is done from a global perspective, the emphasis lies on the experience in the South African market. The reasoning behind this is as follows:

- South Africa is the country with the highest number of HIV positive infections in the world.
- The South African insurance market has therefore had to deal with HIV/AIDS related issues since the first case was detected in South Africa in 1982.
- There has been an “evolution” in the approach to dealing with HIV/AIDS. Products have been adapted and new ones developed in order to deal with the HIV/AIDS epidemic.

The paper looks at the development of the South African market and the cycle it has been through. This is important to consider for India as other markets that are significantly affected by HIV/AIDS could follow a similar route. India may be able to learn from other countries' histories and as a result make better decisions in order to deal with HIV/AIDS.

South Africa is a good market to consider as it had the world's largest HIV positive population at the end of 2001 with 5-6 million infected (UNAIDS/WHO, 2002b; ASSA, 2001a), followed by India with 4 million (UNAIDS/WHO, 2002a). While the epidemic in India is by no means as advanced as that in South Africa when looking at prevalence rates, it is worthwhile to consider the approaches adopted as they may be of practical use – some now and some in the future.

The structure of this paper is therefore to firstly look at the HIV/AIDS situation in India at present and how this has developed over the past few years.

Secondly, some of the medical terms one encounters when dealing with HIV/AIDS are examined. A basic knowledge of these are necessary when dealing with the

various products that have been developed and when considering the efficacy of some of the measures that can be put in place.

After a brief look at the South African market, the core section of the paper looks at the following aspects related to products in an environment where HIV/AIDS is a material risk:

- Responses to HIV/AIDS where the emphasis is on removing the majority of the AIDS-related risk through underwriting and product features such as exclusions and waiting periods.
- Products that cover HIV/AIDS where the applicant is HIV negative at outset.
- Products that cover HIV/AIDS on a group basis.
- Products that cover applicants that are HIV positive at application stage.

Most of the products relate to the South African market, but information from other markets is incorporated where appropriate.

Finally, some of the guidelines that have been laid down in South Africa by both the actuarial profession and the insurance association are examined. Here issues such as professional guidance notes through to HIV testing protocols are discussed.

2. AIDS in India: An Update

HIV Prevalence Rates

As at the end of 1999, the prevalence rate amongst the adult (aged 15-49) Indian population was 0.7%. By the end of 2001, this figure had grown to 0.8%. The following table gives a breakdown of the estimated HIV-infections:

	End of 1999	End of 2001
Adults	3.5 million	3.8 million
Women (included in the adult figure above)	1.3 million	1.5 million
Children	160,000	170,000

Source: UNAIDS / WHO, 2001 and 2002a

The national figure may, however, hide a number of sub-epidemics. HIV infections are still concentrated in a number of states with the majority of states showing very low levels of infection. To date 96% of cases have been reported in only 10 of the states. Those with the highest infection rates are Maharashtra, Tamil Nadu, Pondicherry and Manipur, the latter having an adult prevalence rate of 3.9% in the general population (UNAIDS/WHO, 2002a). Infections are concentrated among the intravenous drug using (IDU) community in Manipur but for the other 3 states the transmission is predominantly heterosexual.

Also hidden by the national average is the fact that with prevalence rates of around 2%-2.5% (1999-2000 figure), urban areas are much more affected than rural areas (UNAIDS/WHO, 2002a). Unofficial estimates for Mumbai and Pune are in the order of 4% (NIC, 2002).

A recent report by the US National Intelligence Council (NIC) has caused some controversy. The NIC published a report looking at 5 “next-wave” countries – those most affected by HIV/AIDS after the sub-Saharan African countries. These countries are Nigeria, Ethiopia, Russia, China and India. In this report, the NIC estimated the current infection levels in India to be around 0.9%-1.4%, the equivalent of 5-8 million

HIV-infected lives (NIC, 2002). The NIC figures were arrived at by including the assessments of academics and NGOs with field experience.

Perhaps the figure causing the most controversy was the NIC’s estimate of HIV-infections of 20-25 million in 2010, a prevalence rate of 3%-4%. While this would not make India the country with the highest prevalence rate, due to India’s large population it would mean that India would have more HIV positive cases than any other country in the world.

On a recent trip to India, Bill Gates along with Robert Blackwill (US ambassador in India) quoted an estimate of 25 million HIV-infected by 2010, a number consistent with that from the NIC report. Health Minister Shatrughan Sinha however did not agree with this estimate. It is interesting to note that the NIC estimates were higher than government estimates for all 5 countries that were considered in the NIC report.

The National AIDS Control Organisation’s (NACO) opinion on the other hand is that the epidemic is seeing a plateau in infection rates, i.e. although more people are becoming infected, this is occurring at a slower rate. NACO states that “existing indicators show that such a phenomena may occur in 3-4 years if a strong and effective programme is implemented in all the States / Union territories.” This opinion is based (in part) on the following data where it appears that the annual increase in HIV infections is declining:

Year	1998	1999	2000	2001
No. of HIV Infections	3.5 million	3.7 million	3.86 million	3.97 million
Increase in HIV infections	-	0.2 million	0.16 million	0.11 million

Source: NACO, 2002c

The NIC report, amongst other sources, states that the disease is spreading outside of the high-risk groups (such as prostitutes, long distance truck drivers and IDUs) through heterosexual transmission. With prevalence rates among commercial sex workers (CSW) in Maharashtra and Goa of slightly over 50% combined with the fact

that only about 50% report consistent condom usage one cannot be surprised. (NACO, 2002b)

AIDS Cases

Looking at reported AIDS cases shows the following situation in India as at 30 November 2002:

No. of AIDS cases	42,411
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Source: NACO, 2002e

NACO however warn that this figure is subject to “gross under-reporting” (NACO, 2002d).

Tuberculosis

Something that should be borne in mind particularly for India is the strong link between HIV/AIDS and Tuberculosis (TB). This can be seen from the following table of HIV prevalence among TB patients in Mumbai:

Year	1993	1994	1995	1996	1997	1998	1999
HIV prevalence	10.6%	11%	10.7%	16.8%	23%	30%	33%

Source: UNAIDS/WHO, 2002a

The high prevalence of TB infection in India means that TB related to HIV infection could be a major problem in India. Furthermore, TB may be indicative of undiagnosed HIV/AIDS (NIC, 2002).

HIV/AIDS Treatment

In India the minimum monthly cost for someone with HIV/AIDS is Rs4,000-5,000 per month (Hindustan Times, 2002). This includes three-drug regimen, regular blood tests (to check the progression of the virus and to determine the appropriate combination of drugs to prescribe), cost of a good diet and adequate nutrition and loss of income (from not being at work due to illness). Other sources estimate this monthly cost to be in the region of Rs8,500 (India Today, 2002). These costs would be prohibitive for the majority of those infected with HIV.

3. Medical terms / progression of the disease

In order to understand the later discussion on some of the products that are on offer, especially those for HIV positive applicants, it is important to look at some of the medical terms in use and to gain an understanding of the clinical progression of the disease.

Glossary

Human immunodeficiency virus (HIV): This is a virus that attacks the immune system, making the body unable to fight infection and is believed to be the sole or primary cause of AIDS. It is the result of contact with blood or body fluids of an infected person. Methods of transmission and chance of transmission are shown in the following table:

Method of Transmission	Probability of transmission
Blood transfusion	Almost 100%
Mother to child	<40%
Sexual contact	1%-3%
Reusing infected needles	<1%

Source: NIC, 2002

Factors increasing the chance of transmission:

- STDs and reproductive tract infections
- Uncircumcised men are more likely to transmit HIV and STDs to their partners.

Acquired Immune Deficiency Syndrome (AIDS): The late stage of HIV disease. AIDS involves the loss of function of the immune system as CD4 cells are infected and destroyed, allowing the body to succumb to opportunistic infections (e.g. Pneumocystis carinii pneumonia, toxoplasmosis) that are generally not pathogenic in people with intact immune systems. Common symptoms of AIDS include malignancies and wasting syndrome. The CDC (Centres for Disease Control and Prevention) defines AIDS as the presence of at least one of several opportunistic

infections or the presence of fewer than 200 CD4 cells/mm³ in an HIV positive individual.

Opportunistic Infection: An illness caused by a micro-organism that usually does not cause disease in persons with healthy immune systems, but which may cause serious illness when the immune system is suppressed.

Tuberculosis (TB): A type of opportunistic infection that typically affects the lungs, but may also occur in other organs. Transmission is usually through inhalation of aerosolized sputum droplets.

CD4 Cell (T-helper Cell): This is an infection-fighting white blood cell. It decreases as the disease progresses, leading to loss of the immune function. This period is marked by many illnesses and opportunistic infections that the immune system cannot fight.

CD4 Cell Count: The absolute number of CD4 lymphocytes present in one cubic millimetre (mm³) of blood. The CD4 count is one indicator of the progression of HIV disease. In healthy adults CD4 cell counts range from 400-1800 cells/mm³ and vary over the course of the day; counts are considerably higher in healthy children. Moderate immunosuppression in adults is associated with CD4 counts between 200-500 cells/mm³; severe immune suppression is associated with counts below 200 cells/mm³ (SFAF, 2002).

CD4 Cell Percentage (CD4%): The number of CD4 cells compared to the number of all lymphocytes. Cell percentage is a more consistent and reliable measure than absolute cell count. Normal CD4 cell percentages are usually 30-40% of all lymphocytes (SFAF, 2002).

Window Period: The time between primary infection and the appearance of antibodies against an organism (seroconversion).

Seroconversion: The development of antibodies against the HIV; the change in a person's antibody status from negative to positive.

ELISA Test: Enzyme-linked immunosorbent assays. This is a laboratory test used to detect the presence of antibodies in the serum.

Antibody: Antibodies are present throughout the blood and tissues. They are produced in response to stimulation by foreign antigens as part of the body's defense against disease.

PCR Test: This is a polymerase chain reaction test. It tests for the presence of the HIV virus itself rather than for the anti-bodies to the virus.

p24 Antigen: A protein fragment of HIV. The p24 antigen test measures the amount of p24 antigen in the blood or tissues; a positive result indicates that HIV is actively replicating and predicts disease progression (SFAF, 2002).

Antiretroviral drugs: These inhibit the replication of HIV in the infected person. There are currently 8 of these types of drugs available in India. They promote a longer, healthier, disease-free life. They are expensive but have recently reduced in price significantly due to more pharmaceutical companies supplying them. For example, a 3-drug regimen that used to cost Rs12,000 now costs Rs 2,500 per month (Hindustan Times, 2002).

Drug resistance: Some strains of HIV become resistant to anti-retroviral medication. This can be due to natural viral mutation or improper use of the drugs (such as missing doses). Some countries have recorded treatment failure rates (due to improper administration of medication) of as high as 60% (NIC, 2002).

HIV Vaccine: Trials are underway in numerous countries to develop a preventative vaccine for HIV. The vaccine causes anti-bodies to the HIV to be produced. Therefore tests that detect the presence of anti-bodies will return a positive result even though the person may not be HIV positive.

Prophylaxis: A treatment that helps to prevent a disease or condition before it occurs.

Progression of the Disease

HIV progression can be divided into four distinct stages (AVERT, 2002):

1. Primary infection
2. Clinically asymptomatic stage
3. Symptomatic HIV infection
4. Progression from HIV to AIDS

Stage 1:

This is the period following infection with HIV. The infected person often experiences flu-like symptoms with around 20% of cases being serious enough for the person to consult a doctor.

During this stage there is a large amount of HIV in the blood and the body begins to produce HIV anti-bodies. However, an HIV antibody test (e.g. ELISA test) done at this time may be negative if the person is in the window period.

There is also an abrupt decrease in CD4+ T cells.

This period lasts for a few weeks.

Stage 2:

The level of HIV falls to a low level during this stage and the infected person is free from any symptoms, although there may be swollen glands. Although HIV levels are low, the person is still infectious and HIV antibodies are present in the blood. These are detectable via an ELISA test.

Although the person is asymptomatic, HIV is not dormant during this stage, but is very active in the lymph nodes. The HIV infects large amounts of T helper cells that die and a large amount of virus is produced.

This stage lasts for an average of ten years.

Stage 3:

Eventually the immune system cannot fight the HIV any longer. This is for three main reasons:

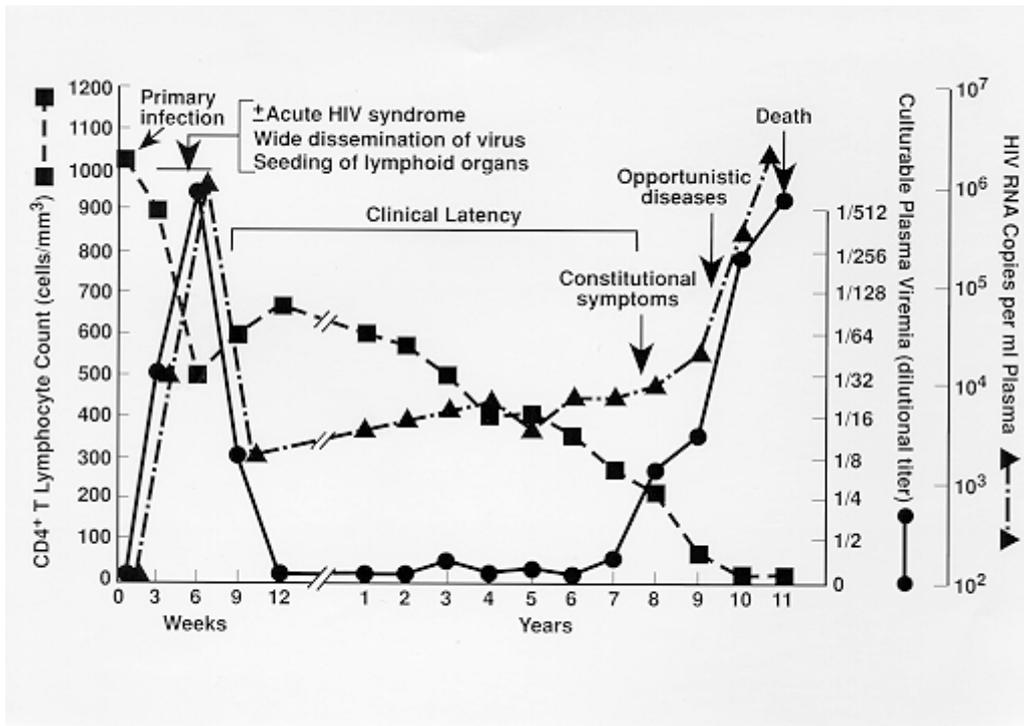
- The lymph nodes and tissues become damaged because of the years of activity;
- HIV mutates and becomes stronger and more varied leading to more T helper cell destruction;
- The body cannot replace the T helper cells that are lost. As the immune system fails, so symptoms develop. Initially many of the symptoms are mild, but as the immune system deteriorates the symptoms worsen.

Symptomatic HIV infection is often characterised by multi-system disease. Treatment for the specific infection or cancer is often carried out, but the underlying cause is the action of HIV as it erodes the immune system. Unless the HIV itself can be slowed down the symptoms of immune suppression will continue to worsen.

Stage 4:

As the immune system becomes more damaged the illnesses become more severe leading eventually to an AIDS diagnosis. An AIDS diagnosis is confirmed if a person with HIV develops one or more of a specific number of severe opportunistic infections or cancers.

The following graph shows the CD4+ T cell count and the level of HIV at the various stages:



Source: AEGIS, 1995

4. The South African Market

In most countries, the response to HIV/AIDS from the insurance sector has been limited to finding ways of dealing with it rather than developing products to cover HIV or AIDS. Some markets have made minor adjustments to products, such as Critical Illness, to include HIV infection in specific cases. South Africa, on the other hand, is one of the few markets where significant development has occurred to deal with and to cover HIV/AIDS risks.

Before looking at the product development that has occurred in South Africa, it is important to look at some of the reasons for the way the market has developed as it has. The following are considered below:

1. High prevalence rate
2. Highly developed and innovative insurance market
3. Human rights activism

South Africa's prevalence rate

South Africa has a prevalence rate amongst the adult population of 20% (UNAIDS/WHO, 2002B). With such a high proportion of the potential market being affected by HIV/AIDS it is important that measures are taken to ensure that not too much business is lost through the exclusion of all these lives from the risk pool. It should be noted that of those who undergo HIV pre-testing 2%-3% test positive (ASSA, 2001b).

Also South Africa has a very high insurance penetration with premiums as a percentage of GDP being 14%, compared to a world average of 5% (the percentage for developing countries is even lower). It is therefore even more important that the actuaries get the pricing and product design right.

South African insurance market

The insurance market in South Africa is well developed and sophisticated. In the early 1980's, South Africa was the first country to write Critical Illness benefits.

The development of a product to cover HIV positive lives was also a world first in 1996. There are now 3 South African companies that provide cover to HIV positive lives.

Human rights

Since South Africa became a democracy and drew up a new constitution there has been a strong focus on human rights and equality. It has therefore become more and more difficult to discriminate or exclude certain groups from receiving cover. Companies have therefore sought ways to provide life cover to those affected by HIV/AIDS while at the same time minimising the impact on rates for existing products.

In response, the Life Offices' Association (LOA) have run consumer education campaigns, part of which focussed on the importance of underwriting. The need for HIV testing was also highlighted.

5. Responses to HIV/AIDS

With the above background, it is easy to see that the South African insurance market has had to dedicate lots of time to dealing with HIV/AIDS. The section that follows looks at the approaches that have been taken over time to dealing with the epidemic.

In summary the South African market has gone through the following cycle:

1. Exclusion clauses introduced for life and rider covers.
2. Over time premium rate guarantees are reduced and depending on the product type, removed entirely.
3. Exclusions removed on life cover and price for the additional risk at the lower levels of cover and underwrite out the majority of the risk at the higher levels of cover. For some products like credit life, the exclusions were kept for life cover. For all other benefits the exclusions were kept.
4. Repeat testing products developed.
5. Products covering HIV positive lives developed.
6. Premium guarantees are slowly being reintroduced on certain products.
7. Remove all exclusions. This is what the LOA is now recommending, though most companies still apply exclusions on rider benefits.

It is important to note that the above cycle is general to the industry. Not all insurers will follow the same approach at the same time though there is a tendency for the market to move in the same direction. Exactly what the various companies do will depend on their target market and method of distribution. Likewise, the approach that is adopted will be determined, at least to some extent, by the type of product being offered.

Note that pricing is an issue that is relevant throughout all of these stages. However as it is very country specific, pricing will only be discussed in generalised terms.

Exclusion Clauses

HIV/AIDS exclusion clauses were first introduced in South African policies in 1988. These clauses typically exclude death, disability or critical illness where it is a direct result of HIV/AIDS or where it is accelerated by HIV/AIDS.

The efficiency of these clauses has been extensively debated and it is now widely accepted that they are not effective measures for controlling HIV/AIDS-related risks.

The main concern with exclusion clauses is that at claims stage it is difficult to determine whether a death has been related to HIV/AIDS. The HIV attacks the immune system allowing opportunistic infections such as Tuberculosis and Kaposi Sarcoma to take hold. These conditions are often registered as the cause of death. In fact, in India, hospitals have been instructed not to mention HIV/AIDS on a patient's discharge or death certificate. The only place where it should be recorded is the case sheet. Also, as there is still a high degree of stigma attached to HIV and AIDS, the doctor may not record the death as due to AIDS. It may also be that the doctor is unaware of the HIV status of the deceased.

The point is that while exclusions may sound workable in theory, enforcing them is very difficult. In addition, from a public relations perspective these clauses are not very attractive.

Use of Exclusion Clauses Globally

Most countries do allow HIV exclusions clauses but there are some that do not, e.g. Canada. Within those countries that do use exclusion clauses, a wide variation in their application exists:

- Full exclusion (Spain)
- Allowed but not imposed on the death benefit (UK)
- Only applies for first 2/5 years (Mexico/Italy)
- Only applied if a requested HIV test is refused (Australia/New Zealand)

Waiting periods

For certain products such as credit life and funeral cover where low levels of cover are given, there may be a waiting period before cover will be payable on death due to natural causes, including HIV/AIDS. This is a fairly limiting measure when used on its own as it would only protect against those that are blatantly anti-selecting against the insurer, e.g. those that are very ill when they take out the policy.

HIV Tests

HIV tests have been an element of underwriting in South Africa since 1989. The aim of these tests is to exclude all HIV positive applicants at the time of underwriting. This affects pricing in the following way:

- As those that are HIV positive are removed from the insured pool at outset, the expected mortality rate is reduced.
- There is also greater certainty regarding the mortality as the AIDS-related mortality is that part of the mortality that is most uncertain and this element has been reduced.
- Those that undergo HIV tests are, by virtue of the fact that they are willing to undergo an HIV test, thought to have a lower risk of future HIV infection.

HIV tests were initially done at a fairly high sum assured due to the costs of the tests involved. The increased demand for them has however led to a reduction in their cost. This combined with the increased HIV prevalence rate has led to South African insurers now testing for HIV at a much lower sum assured. As the major life insurers impose a minimum sum assured that is higher than the level at which it becomes cost effective to test, most insurers effectively have mandatory HIV-testing on all policies with life cover.

Those that offer cover at lower levels of cover vary their testing requirements by one or more of the following factors:

- Sum assured
- Age: lives in the age-band 15-49 are more at risk of infection
- Province: ante-natal clinic studies have shown a significant variation in HIV prevalence by province.

For sums assured below the limit where HIV testing is required, an HIV/AIDS exclusion may be imposed. This may take the form of permanent or temporary exclusion. Cover may be phased in over the term of any temporary exclusion.

It is important to note that there is currently work being done on an HIV vaccine. Clinical trials of 2 commercial vaccines are underway. Phase III human testing is being done in US, Canada, Netherlands and Thailand. Testing in South Africa is due to start in the first quarter of 2003. An India-specific vaccine is also being developed at the National AIDS Research Institute in Pune, though clinical trials on humans are yet to begin (India Today, 2002). The vaccine provides immunity to the HI Virus by introducing a harmless portion of the HIV protein into the body. It should be noted that the antibodies that are produced could show up in any test that tests for antibodies to the HIV, such as an ELISA test, even though the person is not infected with HIV.

In fact, up to 50% of patients receiving a HIV vaccine will develop sufficient antibodies to produce a positive Elisa test result (LOA, 2002a). In such cases, it is necessary to test for the presence of the virus antigen itself with a PCR test. Only those who test positive with the PCR test are in fact infected with HIV.

Conversion and guaranteed insurability options

It should be noted that HIV testing does not only occur at the application stage of the policy. Where conversion options are offered on group life schemes for converting to an individual policy at time of withdrawal from the group, an HIV test is typically called for. Also under guaranteed insurability options, an HIV test may be called for when the insured looks to increase their cover.

Repeat testing products

In the early to mid 1990's, repeat testing was first introduced in the South African marketplace. The way that this product operates is that the applicant undergoes an HIV test at the application stage as part of the underwriting process. Then on a regular basis, every 5 years, the policyholder is obliged to present the insurer with a negative HIV test result.

If a negative HIV test result is not provided for any reason whatsoever, then the sum assured is reduced to 0 or a low percentage of the original sum assured (5% to 10%), this percentage having been selected at the outset of the policy.

Also, there is no HIV/AIDS exclusion clause on these policies. However, one should bear in mind that the period from HIV infection to death as a result of AIDS is typically 8 years or more. Therefore by performing regular testing on a 5-yearly basis, very few AIDS related deaths (on the full sum assured) would result from that particular pool of lives.

From a purely actuarial point of view, the following differences exist between the repeat testing product and a product that is underwritten only at application stage:

- Expenses: for the repeat testing product, the cost of the repeat underwriting needs to be taken into account. This is typically done through explicit charges to the fund (as the products follow a universal life policy design) on an annual basis or 5-yearly basis depending on the preference of the life office.
- Mortality: no loading for AIDS deaths is required where cover reduces to 0 on HIV-infection. Therefore mortality deductions are lower and the required mortality reserves are lower. A charge would have to be made for applicants that select to maintain some level of cover on becoming HIV positive.

It should also be noted that in South Africa the minimum sum insured and / or minimum premium were also increased in order to reduce the rate per mille and thus make the product more competitive. This approach was feasible as the product was targeted at the upper end of the market where higher levels of cover are required and higher premiums are more affordable.

There are, however, other factors that one needs to consider:

- Practicality: in order to encourage a high response rate when the HIV retest is required every 5 years, the insurer usually writes to the policyholder reminding them of the retest requirement. However, policyholders will often have a change of address without informing the insurer. As a result the chances are high that the policyholder will not undergo the required retest.

- Eligibility for cover: in the event of the policyholder testing HIV positive at the time of retesting, the life insured's cover is dramatically reduced or even totally removed. This occurs at a time when the insured needs the cover most. One could argue that the insured knew of this risk when selecting this policy. However, the purchase of this product may have been more the result of the lower premium that was offered and the insured may not have contemplated the possibility of infection from a source such as a blood transfusion with infected blood.
- Public opinion: while the product has been accepted by the general public in South Africa there are sensitivities to which one has to be aware. For example, the marketing campaign for the first retesting product to be launched in South Africa received bad press as it insinuated that those at risk to HIV infection led irresponsible high-risk lifestyles.

Despite the above factors, HIV retesting products are still a feature of the South African market. However, for reasons external to the retesting product itself, such as the availability of pure risk cover, this product is unlikely to sell significant volumes in future.

This product was also considered in the UK at the height of the AIDS scare (early 1990's) but was never introduced.

It is important to note that some countries' legislative framework would not allow such a product. For example, in Spain the insurance company only has the right to review the health status of the insured once during the entire duration of the policy.

6. Products covering HIV/AIDS: HIV negative at inception

This section looks at the various benefits and products that have been developed to cover HIV and AIDS where the insured is HIV negative at application stage.

HIV/AIDS as a Critical Illness

HIV/AIDS can be included in the list of conditions that is covered under a Critical Illness policy. This is being done in a number of countries such as Australia, New Zealand, Hong Kong, United States and South Africa. It is usually restricted to medically or occupationally acquired HIV. Medically acquired HIV refers to infection as a result of a blood transfusion. Occupationally acquired HIV would often be restricted to medical professions such as doctors, nurses and laboratory workers. In some instances, the cover is extended to include occupations such as emergency personnel (ambulance, fire, paramedics), hospital employees and even security forces.

In order to offer such a benefit one needs to ensure the following:

- Anti-selection is minimised.
- There is appropriate data available regarding the HIV prevalence of these groups.
- There are appropriate controls in place to counteract fraud.

There are 2 approaches to offering this product. For both of them an HIV positive test result is required at claim stage to prove that the insured is HIV positive. However, under the different approaches the timing of the first HIV test to prove that the insured is HIV negative differs.

Approach 1

Under the first approach, the insured is underwritten with an HIV test at application stage when the other underwriting takes place. This approach is the simplest though there are 2 major setbacks to this approach:

1. It is not possible to determine whether the infection was as a result of occupational hazards which is what the benefit is meant to be covering.

2. All applicants have to be underwritten. This may not be cost effective at the lower levels of cover. Also, the volume of sales may be lower due to the testing requirement.

Even in countries where the national HIV prevalence rate is low, it is vital that data for the occupations being covered is obtained as the prevalence may be higher in these groups – an indication that these are high-risk groups.

For example, in South Africa the prevalence rate among nurses, police and the national defence force is higher than the rest of the country. This is due to a number of factors such as higher disposable income, same-sex hostels and migrant labour. This does not mean that the risk is not insurable – just that reliable data is required.

Approach 2

The second approach is not to perform any HIV test at application stage but rather to require that the insured submits an HIV negative test result immediately following an event that they suspect may result in HIV infection, e.g. a nurse accidentally sticks herself with a needle that has just been used on an HIV positive patient. This test would show up as negative as the insured is still in the window period. However, when tested a number of months later and they are shown to be HIV positive, one can reasonably assume that the infection was occupationally acquired.

With this approach it is vital to ensure that the appropriate controls are in place to ensure that an independent agent does the testing as those in medical occupations have far greater access to the elements (and knowledge) necessary in order to commit fraud.

Example of Approach 2

One product in South Africa covers accidental HIV infection arising during the course of normal work-related duties. The following conditions apply to the benefit:

- Occupations covered include: nurses, doctors, dentists, paramedics and ward staff; associated admin, technical, cleaning and social workers; military, prisons and police personnel.

- Each injury must be immediately treated with post-exposure prophylactics that reduce the probability of seroconversion by up to 79%.
- The accident must be reported at work within 24 hours and to the insurer within 72 hours.
- Within 72 hours of the accident the insured must submit to an HIV test (to be paid for by the insurer).
- A positive test will result in no claim being paid and the benefit will expire.
- If the result is negative, the insured must be tested no sooner than 6 months after the accident and no more than 9 months after. If this results in a positive test then the claim will be payable.

Occupational hazards in India

According to NACO the risk of HIV infection during occupation for health care workers is 0.3% (NACO, 2002d). This can be further reduced through the establishment of appropriate infection control practices and the adoption of standard safety precautions.

All hospitals maintain a register of occupational exposures to HIV among health workers. To date only one nurse has been reported to have been infected with HIV as a result of exposure in the course of occupation.

Furthermore, the use of antiretroviral drugs for post-exposure prophylaxis has meant that health workers who are exposed to the virus may be treated. NACO has made provision for anti-retroviral drugs to be made available to staff in all medical institutions in India.

CI cover without HIV test: UK

In the UK a firm of independent financial advisers has launched a new critical illness product for lesbian and gay couples, which does not require the individual to undergo a HIV test or to answer lifestyle questionnaires. The cover is offered on a term basis. The development of the product has taken five years of research (Health Insurance, 2002).

AIDS Sick as an Insured Event

Note that for the benefit above HIV infection is the insured event. This may be adapted to becoming AIDS sick being the insured event rather than HIV infected.

The cost for such a benefit (other things being equal) is obviously lower than for payment on HIV infection as the insured event is typically discounted for a further 5-8 years depending on the definition of AIDS sick being used.

AIDS Deaths

If there is no HIV/AIDS exclusion on the policy, then a claim will be payable on death due to HIV/AIDS. This would typically be where an HIV test was done at policy application stage.

7. Products covering HIV/AIDS: Group Schemes

A number of companies in South Africa have introduced products for their corporate clients in order to assist them to cope with the financial effects of HIV/AIDS. Policies for needle-stick injuries are typically provided to health-care workers. In addition to this, assessment, risk financing and disease management are provided.

There is currently one comprehensive HIV/AIDS employer-based insurance package being offered. The scheme both manages treatment of HIV sufferers and implements preventive measures on behalf of companies. Without such a strategy in place companies are faced with declining productivity and the cost of recruiting and training new staff to replace old ones. Companies are therefore starting to see the cost benefits of implementing an HIV/AIDS strategy in the workplace.

Supplying HIV/AIDS drugs free of charge to HIV+ employees may represent a cost-saving on the alternative. The reduction in mortality as a result of anti-retroviral treatment is factored into the risk benefits package that leads to cheaper premiums (Dummett, 2002).

The core product provides customised advice on the following:

- *Demographic projections:* The number of employees who are HIV positive, AIDS-sick or dying from AIDS is projected into the future, to allow the employer to assess the impact of AIDS on the organisation and plan accordingly.
- *Assessment of employee benefits arrangements:* The future cost of providing the scheme's current medical, death and disability cover is projected for the same period. Comparative costs are projected for some alternative benefit structures, which may reduce the financial impact of AIDS on the schemes. The appropriateness of the current benefit structure in an environment of escalating HIV prevalence is evaluated.
- *Comment on the indirect costs of AIDS on business:* The cost of absenteeism and recruitment is addressed.

- *Response to HIV/AIDS:* The appropriateness of the company's HIV/AIDS intervention programmes and human resource policies for dealing with the impact of the disease on the workplace is evaluated. This includes a review of the legislative framework and description of various methods of HIV/AIDS education.

The following optional extras are available:

- AIDS education workshops
- Consulting on retirement fund arrangements
- Consulting on medical arrangements
- Strategic HIV/AIDS management workshop
- Impact of HIV/AIDS on company's customer base

8. Products covering HIV positive lives

In most markets the fact that the prevalence rate is so low means that the insurance companies have not considered offering HIV positive products. In addition, countries where the epidemic is concentrated in groups such as intravenous drug users may find that a higher proportion of those infected are outside the scope of the insurance-buying market. However, some countries do provide an option to those that are HIV positive.

Before looking at these products it is important to consider some of the issues related to anti-retroviral treatment.

Anti-retroviral treatment

It should be noted that the advent of drugs for the treatment of HIV patients will not necessarily improve their insurability. One of the reasons for this is that compliance with the treatment protocols has been poor due to the side-effects of the medication and the fact that medication needs to be taken according to a very strict timetable in order to ensure that it is effective.

The fact that the cost of treatment keeps it out of the reach of that segment of the population with the highest prevalence rates means that besides the strict treatment regimen mentioned above, few additional lives would be added to the insurable pool due to cost considerations. While this comment was originally made with reference to South Africa it is equally applicable to the Indian situation.

Note that the above comment does not necessarily apply to employer-employee groups where these concerns are largely taken care of through medication at the workplace where compliance with the treatment schedule can be enforced and where the employer provides the anti-retroviral drugs.

Individual Lives

A decade ago offering life cover to HIV positive lives would not even have been considered. However, now that more is known about HIV/AIDS, especially with

regards to life expectancy once infected, life insurers are willing to offer cover under certain circumstances.

In South Africa there are 3 life insurers offering life cover to HIV positive lives. The products are offered as endowment (5-15 years) or whole life on a universal life basis with a significant savings element. Cover is limited to relatively low levels with the highest cover offered by any of the companies being limited to a maximum of R200,000 (approximately Rs 10,00,000).

Cover is restricted to persons who are not yet showing AIDS symptoms who are in stage 1 or 2 of HIV infection. For example, one company specifies the following requirements in order to qualify for this product:

- CD4 count in excess of 350
- CD4% greater than 23%
- To be p24 antigenemia negative

A US company also offers insurance for HIV positive lives. The qualification requirements are however more restrictive:

- Individuals must be between the ages of 21 and 49
- HIV must have been contracted through sexual contact or accidental needle sticks
- Lives must have been under medical treatment for the past nine months
- Previous and current CD4 counts must be in excess of 400
- Must never have been diagnosed with AIDS

In France a similar product has been proposed. Requirements are that:

- Individuals must show no sign of AIDS
- Have a CD4 count above 250
- Low viral load / slow disease progression
- Be maximum age 60 at application, with a maximum of 15 years' cover up to age 65.

No such product is currently available in the UK but the chances are that this will happen in the future. The Terrence Higgins Trust (an HIV charity) is in talks with the

Association of British Insurers (ABI) that could lead to life insurance becoming available for those who are HIV positive (Robertson, 2002).

It should be noted that the above products are still expensive and do not provide much cover so sales have been low. In addition, the stigma attached to being HIV positive makes the product difficult to sell as potential applicants are not prepared to disclose their HIV status.

Mortgage Cover

The problem of HIV positive lives being unable to obtain cover extends beyond concerns of providing for ones family on death. For example, in South Africa when taking out a loan to purchase a house the bank may require that the applicant have sufficient life assurance to cover the loan.

If the amount of the loan is below the level at which insurers test for HIV, then an HIV/AIDS exclusion clause will apply and the bank and insured are exposed to death due to HIV/AIDS. On the other hand if the amount of the loan is above the HIV testing limit and the applicant tests positive then they would be declined insurance. Also, they may not be able to purchase one of the products described above as they are too expensive for the majority of those South Africans that are HIV positive. This means that home loans will not be available to them due to their HIV status. As a result, a significant portion of the population is unable to obtain financing for housing. A proposal has therefore been put together by the Life Offices' Association of South Africa to provide mortgage cover to HIV positive lives.

Product Concept

- A compulsory scheme whereby all individuals who qualify and who are granted mortgages in South Africa would be automatically obliged to purchase a layer of life cover through this scheme. The compulsory nature is in order to limit the anti-selection and to increase the pool of assured lives.
- There will be no medical underwriting.
- The amount of cover offered under this scheme would be a maximum in the region of R100,000 (Rs500,000).

- If additional cover is required then this cover would be purchased as a normal life product.
- Lives not qualifying:
 - Lives over 50
 - Lives who are in the very late stages of HIV or any other life threatening disease (in order to keep the product affordable)
 - Lives who are not actively employed.

9. Industry Guidelines

It is important to consider what has been done by the insurance and actuarial associations in setting the environment in which the above products have been developed. In South Africa, there are essentially 2 organisations that one would need to consider here:

- Life Offices' Association (LOA)
- Actuarial Society of South Africa (ASSA)

Within these associations there are numerous committees that focus on various issues. While most committees will at some point have to deal with HIV/AIDS, the following are specifically tasked with looking at various HIV/AIDS issues:

- LOA AIDS Strategy Committee
- ASSA AIDS Committee

The most important guidelines put in place by the LOA and ASSA are those relating to:

- HIV testing protocol (LOA)
- Reserving and pricing for HIV/AIDS (ASSA)

Both of these issues are covered in further detail below.

HIV Testing Protocol

This protocol is part of the LOA's Code of Conduct and is therefore binding on all member offices of the LOA. It addresses issues such as (LOA, 2002a):

- Identification
- Confidentiality
- Informed consent
- Pre- and post-test counselling
- Transmission of test results
- Accreditation of test kits and laboratories
- Use of exclusion clauses

Information on the following relevant aspects is discussed below:

- Proposal forms
- Pre- and post-test counselling
- HIV Tests used
- Use of exclusion clauses

Proposal Forms

The protocol requires that questions relating to the following must be included in all member offices' proposal forms, reinstatement forms and the personal statement in Medical Report forms (LOA, 2002a).

- (a) Have you ever sought medical advice, personal counseling or treatment in connection with AIDS or HIV? If so, please give details.
- (b) Have you ever been tested, received medical advice or treatment in connection with any sexually transmitted disease, including Hepatitis B, gonorrhoea, genital herpes or syphilis? If so, please give details.
- (c) Have you received a HIV vaccine as a participant in a SAAVI trial? If yes, please provide the date and place as well as your unique trial identity number.

For the first 2 questions member offices are not required to use the exact wording above.

Furthermore the following question should be included in all Medical Attendants' Report forms and Medical Report forms (LOA, 2002a):

Are you aware of any factor that places the life to be assured ("your patient" for PMA report forms) at risk of infection by the AIDS virus or any sexually transmitted disease? If so please give details including results of any blood tests or other investigations carried out.

Identity and consent forms have to be completed when HIV tests are performed. These are also prescribed by the protocol.

Pre- and post-test counselling

The applicant has the right to receive pre-test counselling. This is currently done in the form of a printed document being handed to the client. However, the LOA has recognised the need for one-on-one counselling and to this end has undertaken a pilot study. In this study counselling was provided on a voluntary basis to those applying for insurance. There was a take-up rate of only 6.4% though this was in line with expectations and 16.7% had been counselled before (Coetzer et al, 2002).

With regards to post-test counselling, where the test result is negative, the applicant is responsible for any expenses incurred. It is only in the event of a positive test result that the life office is obliged to incur the cost of one session of post-test counselling.

HIV Tests used

Three sequential ELISA tests are used to screen for possible exposure to HIV. This is based on the WHO recommendation for HIV Screening and is set out in the LOA protocol. This procedure cannot be seen as a diagnostic. False positives and false negatives may occur, however, the sensitivity and specificity of the tests is in the order of 99.5% (LOA, 2002a).

For those who participated in the vaccine trials, if one of the ELISAs were reactive then a PCR test would be done.

Use of Exclusion Clauses

The LOA feels that use of exclusion clauses should be kept to a minimum and wherever possible should be replaced with one of the following:

- Retest products
- Lower testing limits
- Appropriate product pricing

AIDS exclusion clauses should only be used where the applicant is not tested for HIV at the inception of the policy.

This is only likely to happen in instances of very low cover – in most cases this would be for products such as credit life.

Where an exclusion clause is used, the LOA recommends the following clause:

“If the Assured’s death is directly or indirectly attributable to the Acquired Immunodeficiency Syndrome (AIDS) or infection from any Human Immunodeficiency Virus (HIV) no benefit will be payable unless the claimant can prove that it is not so attributable.”

In addition, when an HIV/AIDS exclusion clause is applicable, applicants should be informed in plain language of the exclusion, prior to the issuing of the policy. The LOA agreed on the minimum disclosure requirements for the use of HIV/AIDS exclusion clauses and implemented these with effect from 1 March 2002. The following items should be covered in the disclosure:

- Why the exclusion clause is applied for the product.
- What the practical implications of such an exclusion clause are for the client, e.g. when will a claim be paid and when will it be declined.
- Which alternatives the client has, should he/she prefer to buy a product without exclusions.

Professional Guidance

Occasionally there are issues where the profession feels it necessary to provide explicit guidance. HIV/AIDS is one such case. ASSA has issued guidance notes dealing with reserving and pricing for HIV/AIDS as well as a document setting out recommended Continuing Professional Development (CPD) for actuaries.

Reserving and Pricing

Professional Guidance Note (PGN) 102

This requires the valuator to take into account the effect of HIV/AIDS on the financial soundness of the company. With specific reference to HIV/AIDS, the valuator needs to consider:

- The expected financial impact of AIDS on the company.
- Possible methods of funding the financial cost of AIDS-related claims, including consideration of equity between different groups.

- The amount and timing of any additional reserves that need to be established.
- The financial soundness of all products being marketed.

As experience differs significantly between life offices, the guidance note lays out processes to be followed and issues to be considered rather than prescribing specifics.

Reserves should allow for the additional mortality experience likely to be experienced. Allowance can, however, be made for future management action taken to restrict the impact of the disease. In addition to these reserves, contingency reserves should be established to allow for the possibility of AIDS mortality being higher than expected (ASSA, 1995).

Professional Guidance Note (PGN) 105

This guidance note recommends the basis for determining projected extra AIDS mortality. Separate bases are considered for individual and group lives as well as for high and low risk groups.

The rates are based on the ASSA2000lite model. Parameters for the model were set using HIV testing statistics from a large life office for individual assured lives and figures from a survey covering the whole industry for group lives (ASSA, 2002).

AIDS CPD

As part of the Continuing Professional Development (CPD) requirements of ASSA, guidelines have been issued as to the type and depth of knowledge that is required from actuaries operating in the South African market. The key items covered are the “matrix of understanding” and a list of references (ASSA, 2001b).

The “matrix of understanding” sets out the depth of knowledge that is required for each subject for the following specialist areas: Life, Pensions and Healthcare. Within each specialist area product development / pricing, valuations and advisors to trustees are all considered separately. Depth of knowledge is divided into 3 categories and varies from general awareness to detailed knowledge.

The list of CPD reading provides a useful list of references and websites many of which have global application.

10. Conclusion

HIV/AIDS presents an interesting challenge to all involved in the insurance sector, not least of all to the product development actuary. While India is currently in a situation where the epidemic calls for caution amongst insurers rather than alarm, a careful watch needs to be maintained on the future progression of the epidemic to ensure that one is not caught unaware.

In the meantime, there are a number of actions that actuaries in India can take:

- Learn as much about HIV/AIDS as you can: only through knowledge can you protect your company.
- Learn from other countries' experiences: this may help you get to an "ideal solution" sooner.
- Keep an eye on the business you are writing: determine whether you are exposed to any high-risk groups or regions.
- Continue to test at sums assured that make financial sense.

For now it would seem that the situation requires monitoring more than anything else. However actuaries should also bear in mind other aspects relating to the epidemic. For example, while actuaries in South Africa have achieved a lot with respect to HIV/AIDS there are always other areas where one can get involved:

"The industry, however, has to be even more proactive in managing the financial risks that AIDS presents. Thought should also be given to ways in which unclaimed benefits, after every effort has been made to trace dependents, can be productively used in the interest of the growing number of AIDS-orphaned children."

Gill Marcus – Chairperson: Financial Services Board

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