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### AIDS: PRICING AND RESERVING CONSIDERATIONS

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- o This session will explore:
  - Results of various studies and programs for the future
  - Methods of projecting extra mortality
  - Implications of state and federal legislation, regulation and prohibitions
  - Statutory versus GAAP considerations
  - To what extent are extra reserves required?
  - To what extent can AIDS deaths be identified?
  - Given the explosive potential of the disease, how do you price for it adequately?
  - Limitations on underwriting
  - Reinsurance implications

MR. JOHN E. TILLER, JR.: We will cover all of the topics listed in the program, but not necessarily in that order; nor will we give equal weight to every topic. Some material not outlined in the program will be discussed also. The panel does not see its function to provide answers, but to try to stimulate your thinking. In my opinion, nobody knows all the answers regarding AIDS and each company or individual has to make his own decision.

I would like to start with a comment about the world in which we live. We are all aware of the uncertainties today and it becomes tiring to hear them enumerated or emphasized time and again. However, it is worth observing that, when we are discussing AIDS, we are dealing with even more uncertainty than normal. But nobody really knows what is happening.

One of the advantages, if you can call it that, of living in Southern California is that everyday there appear somewhere between 1 and  $n$  newspaper articles (where  $n$  seems to be a continuously upward number) regarding AIDS. Just last Monday, June 6, the *Los Angeles Times* reported that the National Cancer Research Center has announced the discovery of a variation of AIDS which can hide for years. This variation did not show up in normal testing.

The discovery was based on careful testing of three very high-risk individuals -- individuals whose lifestyles and habits should have put them into a high-risk category, but who showed no signs of AIDS. With continual testing of those individuals researchers were finally able to isolate an AIDS virus. It is something called microphage cells. The article did not define this phenomenon beyond that, except to state that there is a specific test available. The test takes

## PANEL DISCUSSION

a couple of weeks for results and is not yet commercially available. Given the expense and the time elements, this test is unlikely to be of use in underwriting.

There is no further information available at this point. The article did not define a high-risk individual. Further checking with individuals monitoring the AIDS situation does not reveal any insights. Perhaps the primary point is that reports are continually coming out, and information is being advanced that supposedly enhances our knowledge of AIDS. This information also brings additional uncertainty.

Our job -- our challenge as actuaries -- is to use the best tools and the best skills available to deal with uncertainty. These skills and tools are necessary to help guide our companies and our client companies, even though there is all this uncertainty. We must react even though we consider our knowledge limited.

MR. THOMAS W. REESE: So, this AIDS problem isn't turning out to be that bad after all! So far, things have been going pretty good. You've developed a corporate AIDS index to help you monitor the situation. So far, the corporate AIDS index is still below your indicator level. I mean your corporate AIDS index, of course, that calculates the ratio of your AIDS claims to your AIDS testing costs. You're doing pretty well -- the index is still less than one!

OK, excuse me, what I meant is that the index would have been less than one except for those two large claims that were "exceptions" and weren't counted as "regular" AIDS claims. One large claim in March really was issued in 1986, just below your AIDS testing limits back then. The other was just last month, an early 1987 issue that was just below your testing limits at that time. But now your testing limits are lower, and so your corporate AIDS index is within your goals. Parenthetically, your index value might not look quite so good if you had a better AIDS claim monitoring system, but let's not get too ambitious.

Jumping ahead a few years from now, things aren't so good. It could be worse, though, and you can still manage by following through on your 1988 game plan. That is, you'll increase prices when you need to. Now your AIDS claims are reaching about 15% of total company death claims. You've developed a new corporate AIDS index -- the ratio of AIDS claims to other claims. You hope you can keep it under the industry average of 15%.

Gradually you realize that things aren't going so good, however. Your studies show that there has been bad antiselection on policyholder options. You have a frighteningly high proportion of AIDS claims among those who have exercised term renewal options and who have made term conversions to long-term policies. Infected lives are exercising every guaranteed insurability option and taking every inflation increase option. Some policyholders with flexible premium policies are increasing the amount of real insurance protection they have by discontinuing premium payments so that the net amount at risk isn't declining according to normal patterns. Some policyholders with high cash values are in the death benefit corridor situation where their death benefit increases by \$2.50 for every \$1 in premium they pay. You realize that your AIDS claims will be worse than the 15% "normal" insurer experience due to these kinds of product design antiselection.

But, let's not panic yet -- you still have options for increasing prices. There are dividends that can be cut, nonguaranteed premiums to be raised, universal

## AIDS: PRICING AND RESERVING CONSIDERATIONS

life charges that can be raised and interest rates that can be lowered, group insurance rates that can be increased, etc.

As you research the pricing increases to make, however, you realize some serious limitations. Your new corporate AIDS index currently shows AIDS claims at 15% of total company death claims. But the majority of those non-AIDS claims are at high-attained ages, where the AIDS problem isn't having much of an impact. Trying to recover your pricing losses by pricing for across-the-board higher mortality would inequitably shift the AIDS burden to the higher ages. Those lives would tend to replace their coverage rather than pay those increased costs.

Thus you realize that the AIDS pricing problem really isn't one of just 15% higher mortality, but of perhaps a multiple of normal mortality rates for males age 20 to 40. You begin to list your limitations. You look at your guaranteed maximum premium rates for nonguaranteed premium products and the guaranteed maximum charge rates for universal life products. You calculate the savings that can be achieved by lowering interest rates, but realize the effect that a lower rate will have on persistency. You also realize that lowering interest rates will increase prices for the "wrong" policies -- your AIDS problem is worse for younger ages with low cash values, not the older age, high-cash-value policies which would be affected by lowered interest rates. You also begin to contemplate the effect of increased prices on the persistency of healthy lives.

Pondering these matters, you begin work on your new project -- estimating the amount you need to set aside for AIDS claims that cannot be recovered in pricing. And you switch to a new corporate AIDS index to use in tracking your progress: the ratio of your AIDS liabilities to company surplus.

And it gets worse! Opening your newspaper, you see a new advertising campaign from New Business Life. They offer life insurance coverage at "old-time" premium rates. Their product is targeted to replacing the increased-price business of existing insurers. The replacement will be made with no underwriting other than one requirement -- a blood test for HIV infection. At this point, almost everyone who will ever be infected by the epidemic has already been infected, and New Business Life has a distinct advantage over other companies -- it is writing AIDS-free business. You close your newspaper, and you try not to think about your previous corporate AIDS index (the ratio of AIDS claims to normal claims), let alone the corporate AIDS index that you used back in 1988 (the ratio of AIDS claims to AIDS testing costs).

No, you probably won't be able to price your way out of an AIDS problem that has been ignored too long. How, then, can you avoid a scenario like the one that we've just discussed? Effective AIDS management requires appropriate attention to three key areas -- product design, underwriting, and pricing.

### PRODUCT DESIGN

I've already given some factors to consider in product design. Sound product design against the threat of AIDS should focus on two basic principles: control the insurance coverage you are providing and maximize company pricing options.

A first step in controlling the amount of insurance coverage provided is to reconsider some policyholder options that have grown up over the past several decades of relative stability that produced generally predictable risk experience rates. Perhaps term renewal privileges should be restricted to one additional

## PANEL DISCUSSION

term period or made conditional on presentation of satisfactory HIV test results. Perhaps term conversion privileges should be restricted to the first, say, five years after issue. Perhaps guaranteed insurability options and inflation increase options, which have often been made available at minimal cost, should be reconsidered.

Perhaps the recent trends in premium flexibility should be reevaluated. Premium requirements can be used to produce a net amount of insurance at risk that declines with time similar to the patterns of traditional plans of insurance.

Further, analyze how cash value withdrawals from universal-life-type products can be used to "freeze" the net amount at risk by stopping interest additions to the cash value. Certain levels of cash withdrawals can even cause the net amount at risk to increase as the cash value is decreased by future charges against the cash value. The premium option for indeterminate premium products that allows continuation of the death benefit, without paying the new, higher, premium level causes the net amount of insurance at risk to grow. Consider how premium payment requirements can be strengthened by not offering the extended term insurance nonforfeiture option (the standard nonforfeiture law requires only one, not both, of these options).

With the insurance coverage controlled, the second major principle of product design is to maximize company options for changing prices. Consider higher guaranteed premiums for traditional-type products and higher guaranteed charges for universal-life-type products. Consider lower guaranteed cash values.

Consider what might be called a "delayed slope" dividend schedule. Dividends are reduced in early years and increased in later years. This technique helps build up a fund that is available if experience turns out worse than your pricing experience. If experience turns out as expected, the delayed dividends can be paid as planned in later durations. The philosophy here is to avoid paying out funds that may be needed later, while at the same time maintaining flexibility to pay out the funds if they aren't needed. This is a way of cutting current dividends without lowering long-term illustrated values due to unnecessarily pessimistic pricing assumptions.

Much of the same effect might be accomplished on universal-life-type products by increased current charges used in conjunction with current basis persistency bonuses. Frequent pricing projections will be required in order to keep current rates responsive to new expected experience, since the usual nonparticipating form of these products cannot generally pay out past gains nor recover past losses.

You may have noticed quite a few uses of phrases such as *perhaps should* and *consider* in the above discussion. We are certainly not trying to tell you what to do with your products. These are only ideas thrown out to stimulate your thinking about how AIDS affects product design. Actually, when discussing AIDS I find myself using words like *probably* an awful lot. And that's often used with *generally* that is a major part of the vocabulary of consultants. Add that to the actuarial *it would not be unexpected that*, and you've got a statement that we can all be comfortable with!

## AIDS: PRICING AND RESERVING CONSIDERATIONS

### UNDERWRITING

Underwriting for AIDS is the area that seems to be the one most under control at this time. Let's discuss the key financial dynamics of the decision to set your company's HIV blood testing threshold.

The first aspect of a cost/benefit analysis is to quantify the cost of a blood test. This involves more than you might think. On my list, I've used \$35 as the cost of the paramedical service that obtains the specimens. This cost varies widely by geographic location and by paramedical service. It also varies by the level of service performed. For simply obtaining specimens, it would generally not be uncommon that the cost would probably be in the range of \$25 to \$35.

Most companies, however, are obtaining a paramedical examination in addition to the specimens. The cost for the paramedical service including the exam probably ranges from about \$35 to \$55. Since blood specimens are being obtained anyway, companies are making use of paramedical exams because of the benefits derived from only a marginal extra cost. The testing lab charges the paramedical service about \$3 for each testing kit; that cost is billed to the insurance company.

The cost of the HIV blood test is only a small part of the total testing cost. The standard protocol test costs less than \$10. The T-cell test used in California costs more -- about \$35. (But don't complain! For your extra expense you are getting a much less accurate test!)

The remaining tests I include in the cost are optional. Many companies have found, however, that these tests are well worth more than the marginal cost of including them! In April 1988 I surveyed the testing practices of 30 life insurers. There were ten each of large, medium, and small sized companies in the survey. Of the 30, 29 routinely order a complete blood chemistry profile for all cases that are submitted for HIV testing. This adds about \$15 to the testing cost.

The next most common add-on to the HIV test is a urinalysis test, which now includes the detection of prescription drugs. Twenty-four of the thirty companies I surveyed obtain a urine specimen in all cases when a blood specimen is obtained, and another usually does so. The urinalysis test adds about \$4 to the total cost. This cost includes a test for nicotine.

Thirteen companies in my survey routinely test all urine specimens for cocaine. Four additional companies test all urine specimens that are submitted with blood specimens, making a total of 17 companies out of the 30 surveyed that test for cocaine along with all HIV tests. In addition, two companies would not disclose their cocaine-testing practices and four others test for cocaine within certain age and amount limits. The cocaine screen adds about \$8 to the total testing cost. This brings the total AIDS testing cost to an amount in the range of \$75 (\$100 in California).

Now, what are the benefits of the testing? A simple formula used by many actuaries is to calculate the claims saved by testing as \$500 per \$1,000 of insurance times the infection prevalence rate in the population being tested. This formula is used to solve for a testing limit that balances the testing costs.

What is the appropriate infection prevalence rate to use in the calculation? One mistake is to base this rate on the proportion of HIV positive test results being

## PANEL DISCUSSION

experienced. For example, the Home Office Reference Lab in Shawnee Mission, Kansas found only 0.14% HIV+ cases in blood specimens tested in 1987. This would result in a theoretical testing limit of just over \$100,000. But that type of analysis ignores the effect of potential policies that were never applied for simply because the testing practice was there. Further, some companies report significant test effectiveness, not due to advance knowledge of the testing level, but in applicants who withdraw from the issue process once they find out that they will be tested.

Thus a more appropriate prevalence rate would be to use the actual proportion of the population in your market that is HIV+. An article printed in Lincoln National's Winter 1988 *Reinsurance Reporter* gave infected prevalence rates as high as 1.1% for males age 20-29, 2.5% for males age 30-39, 1.8% for males age 40-49, and 1.0% for males age 50-59. The lowest of these prevalence rates, 1.0%, would result in a theoretical testing limit under \$15,000. Prevalence rates even higher than this should perhaps be used to account for antiselection when infected individuals are more likely to apply for coverage in the absence of testing.

Only to consider the benefits of the HIV test alone would result in a considerable understatement of the benefits of testing, however. Your analysis should also consider the benefits of the other tests that are conducted along with the HIV test. Actually, the value of those other benefits is far from being only marginal.

AIDS testing has reversed a decades-long insurance industry trend toward higher nonmedical limits. Many companies being forced to lower testing limits because of AIDS are discovering the benefits of a whole new underwriting technology that has grown up over the past decade or so. This technology consists of the extremely reliable tests that are available, the insurance testing laboratories that have been developed to make the tests, the paramedical services that have lowered the cost of an examination, the use of overnight delivery services for transportation of specimens, and the use of teleprocessing technology to transmit test results from the testing lab to the home office.

A new era in underwriting is being developed through these advances. The benefits from the full battery of tests are so significant that they may justify the cost of the testing by themselves. Thus it may be that it is the AIDS test itself that can be considered a marginal cost add-on, even though it is the cause for the lowered testing limits.

An additional rule for HIV testing is that it would be particularly dangerous to set testing limits much above those of other companies. Such a situation could result in considerable antiselection. I surveyed 15 large life insurers in March 1988 and found that HIV testing limits have dropped drastically in the past year. They are finding a new level at \$100,000. This was the testing threshold for five of the 15 companies.

I expect that AIDS blood testing limits will soon be driven to the \$100,000 level by reinsurers. I surveyed three large reinsurers for their requirements for business that they will accept from ceding companies. Two of the reinsurers had just changed their requirement to \$100,000, effective in February for one company and April for the other. The third reinsurer I contacted had just suggested a \$100,000 limit in February, and was planning to change it to a requirement in the coming months. Several companies I have talked to,

## AIDS: PRICING AND RESERVING CONSIDERATIONS

especially smaller ones, give their reason for their HIV testing limit as "it is required by our reinsurer."

Another eight companies in my survey of direct writing companies test all applications for \$100,001 or more; this is an over \$100,000 limit. Of those eight companies, one tests all term issues -- those plans had a \$50,000 minimum issue limit. Another of the eight tests at \$50,000 in four states. Only two of the 15 companies tests at higher levels. Both used a \$200,000 testing limit. One of those companies, however, tests at \$100,000 in eight states.

The difference between the \$100,000 and over-\$100,000 testing limits, while only \$1, is not insignificant. One company reported a doubling in the number of tests made when its limit was lowered from \$100,001 to \$100,000. I propose that this is an excellent reason to test at \$100,000. Remember, present HIV testing costs are being traded for controlled future AIDS claims; the savings in tests not made is not a real one. Besides, think what lower testing costs will do for your corporate AIDS index (ratio of AIDS claims to AIDS testing costs)!

### PRICING

Now that we've used sound product design to control the insurance coverage we're providing, and now that we're limiting our AIDS risk through appropriate selection of risks, we're ready to work on pricing for AIDS. Some pricing changes will likely be necessary -- however valiant your efforts in the first two areas, it will be impossible to achieve an AIDS-free block of business. The good news, however, is that those control measures you took back in 1988 will likely reward you in the future with an AIDS problem that can be resolved through pricing changes.

Here are two key principles for AIDS pricing: (1) When the AIDS claims actually reach their peak, pay-as-you-go pricing will become inadequate and recovery of AIDS claims losses won't be possible. (2) You don't know what the level of those AIDS claims will be.

These two principles lead to two rules for AIDS pricing: (1) Start funding for the claims now. (2) Build flexibility for changing the pricing levels that you set.

I've been listening to the presidential campaign recently, and have picked up some pointers for making my points memorable. Perhaps I should put it like this: "Start in 1988, not when it's too late! Take responsibility -- build flexibility!" Anyway, your pricing efforts should consider such matters as the need for equity. Can you recover AIDS costs, which largely result from coverage on younger age adult males, by pricing for a uniform percentage increase in mortality across all ages and for both males and females? Should prices be higher in states with higher AIDS incidence or with restrictions on HIV testing and underwriting? If so, there is substantial advance preparation needed, both in developing administration systems that can vary pricing by state and in the setting up at issue of equity classes that are separate by state.

Consider the temporary nature of the epidemic. Can you cover AIDS costs -- which will likely peak in the mid-1990s and which might be "done" by the early 2000s -- with a fixed whole life product premium? Consider how little you really know about the level of AIDS claims your company will have. Does your pricing give you the flexibility to react to the different courses this epidemic might run?

## PANEL DISCUSSION

Finally, and uncomfortably, reconsider your need to be competitive for all products in all cases. If AIDS is really a problem that can't be included in your pricing, is losing sales really worse than making them?

### U.K. EXPERIENCE

Beyond changes in HIV blood testing limits, AIDS has so far had little effect on insurance product design and pricing in the United States. Whether this situation will continue remains to be seen. We can learn about AIDS pricing and product design from our counterparts overseas. Some remarkable pricing changes have taken place in England in the past few months. I worked with Mark Turner from Tillinghast's London office to report to you what progression of events has taken place in the U.K.

AIDS pricing increases for term assurance in the U.K. were as swift as they were dramatic. Two large term assurance companies increased their term assurance rates in the middle of April, and were followed by another company later on in that same month. Several other companies have increased premiums as well. Not everyone has raised their prices in this way yet, but most are expected to do so soon.

The price increases were big ones. Table 1 shows an example for one company. The percentage increases in the premium per 1,000 for a nonsmoking male issue age 30 range from 57% for 5-year level term, to 156% for 15-year term, to 85% for a 25-year level term policy. Almost all term assurance in the U.K. is of this level premium variety; annually renewable term is practically unknown there. Another company's premium rates show even larger percentage increases, but to lower new premium rates than in this example.

TABLE 1  
EXAMPLE OF U.K. AIDS TERM RATES  
PERCENTAGE INCREASES -- MALE NONSMOKER, AGE 30

<u>Level Term Period (Years)</u>	<u>Increase (%)</u>	<u>New Rate per Thousand</u>
5	57	1.55
10	142	2.42
15	156	2.78
20	121	2.90
25	85	3.09

Table 2 focuses on the 15-year term policy to show the variation in premium increases by issue age. The 156% increase for age 30 declines to 69% for age 40, 25% for age 50, and only 5% for issue age 60.

Table 2 also compares the increases for males to those for females. The increase for a nonsmoking female age 30 is only 33%, compared to the 156% increase in the male premium rate. Some companies, like this one, increased rates substantially only for male lives. Some others have maintained an age deduction from the male rate table for females and have therefore imposed substantial increases on female rates as well.

There is something happening in these premium increases beyond simple AIDS price increases, however. The entire life assurance industry in the U.K. is preparing itself for a change in commission terms beginning on July 1, 1988. I don't have time to go into that; I'll stick to the subject of AIDS. The premium



AIDS: PRICING AND RESERVING CONSIDERATIONS

changes shown in Table 2 include the effect of the commission changes as well as AIDS pricing.

TABLE 2  
EXAMPLE OF U.K. AIDS TERM RATES  
PERCENTAGE INCREASES -- 15-YEAR LEVEL TERM

<u>Level</u>	<u>Term Period (Years)</u>	<u>Increase (%)</u>	<u>New Rate per Thousand</u>
		Male Nonsmoker	
	30	156	2.78
	40	69	4.28
	50	25	9.47
	60	5	22.49
		Female Nonsmoker	
	30	33	1.31
	40	24	2.08
	50	10	5.41
	60	5	15.03

That repricing of virtually all U.K. insurance products for this summer created an opportunity to reprice for AIDS. The main impetus for the price increases for AIDS, however, came from AIDS reserve recommendations resulting from the Institute of Actuaries AIDS working party's *AIDS Bulletin No. 2* published in December 1987. The working party developed a series of projections of mortality rate increases due to AIDS. From these projections, reserving methods and levels were recommended. There has been no regulation forcing the use of these AIDS reserves, but at the February 1988 Institute of Actuaries meeting, an actuary from the Government Actuaries Department stated that they expected companies to follow the reserve recommendations.

Before I describe the reserve requirements, I want to describe the mortality projections. Time doesn't permit me to discuss the methods and assumptions used to make the projections. But I do want to describe the projections labeled by the working party as being low, moderate, and high.

These terms were used to describe the projections:

Even (the "high" projection), which could be regarded as highly pessimistic, cannot be taken as an upper bound to the possibilities, since the underlying population at risk might in fact be higher than we have assumed . . . Similarly, (the "low" projection) cannot be assumed . . . to be at the bottom of the range of possibilities, since the core population at risk may be smaller than we have assumed, and the reaction to the publicity about AIDS may be even more dramatic than (sic) we have assumed. Nevertheless, we are satisfied that the assumptions underlying (the "low" projection) are sufficiently moderate for it to be essential for insurance companies to have regard to the possibility of an incidence of HIV infection of at least this level.

With regard to reserves, the working party said:

There is no reason to delay making changes to reserves and to pricing structures to take (the "low" projection) into account. At this level there should not be any reliance placed on the presence of a solvency

## PANEL DISCUSSION

margin, which is needed to provide some protection against more adverse scenarios . . . We do not envisage . . . At this stage . . . (reserves at the "high" projection level). Companies should, however, examine the possible implications of such a pessimistic scenario, particularly with regard to finding out whether the total resources available to the company . . . would be adequate to enable the company to survive.

A type of deficiency reserves approach was taken to calculate the reserves needed for AIDS. A net level premium reserve was calculated using the new mortality basis with the old reserve basis net valuation premiums. The excess of this new reserve level over the reserve now being held is the reserve suggested for AIDS.

The amounts calculated by this approach are startling. Table 3 shows example end-1987 reserves for policies issued at age 30 at the beginning of 1988 and five, ten, and fifteen years ago. Under the low projection, the AIDS reserve at issue for a male age 30 is 3.37 per 1,000 for a 10-year term policy and 7.32 for a 20-year term policy.

TABLE 3  
U.K. AIDS RESERVES  
End-1987 Aids Reserves per Thousand  
Male Issue -- Age 30

<u>Issue Year</u>	<u>10-Year Level Term</u>	<u>20-Year Level Term</u>
	Low Projection	
1988	3.37	7.32
1983	.58	6.10
1978		3.35
1973		.58
	Moderate Projection	
1988	5.79	13.06
1983	.88	10.87
1978		5.75
1973		.88
	High Projection	
1988	8.73	22.21
1983	.92	18.69
1978		8.67
1973		.92

As large as the AIDS reserves are under the low projection, they are substantially higher for the other projections. Under the moderate projection, the AIDS reserve at male issue age 30 is 5.79 per 1,000 for 10-year term and 13.06 for 20-year term. These reserves are for products that have gross premiums of around 2.50 and 3.00 per 1,000 for the 10-year and 20-year products, respectively. Under the high projection, the reserves at issue climb to 8.73 and 22.21, respectively.

It is probably the recognition of AIDS reserve levels under the low projection that precipitated the price increases. The sudden capitalization of past losses for business on the books drew the attention of actuaries and shareholders to

## AIDS: PRICING AND RESERVING CONSIDERATIONS

the impact on profits for future business. When pricing actuaries looked at the effect of the reserves combined with assumptions about higher mortality rates, higher premium rates resulted.

These price increases we have been discussing are for term assurance products. There have generally been no price increases for permanent products. This is partially because the low projection reserve increases did not affect permanent product pricing so much, but there are more powerful reasons that are related to the types of permanent products sold in the U.K.

The two main types of permanent products sold in the U.K. are with-profit policies and unit-linked policies. The with-profit policies pay substantial bonuses which are expressed as a percentage of some assured and/or previous bonus. The main source of these bonuses is significant investment in equities and a growth on these holdings. Most with-profit offices retain substantial investment reserves which are released gradually in the form of nonguaranteed terminal bonuses. None of the bonuses are guaranteed for future declarations and therefore the companies feel safe with the option of reducing future bonus levels if necessary because of AIDS.

The unit-linked products are similar to our variable universal life products. The main difference is that the products are heavily front-end loaded, with most of the profit emerging in the first two years after issue. Further, the mortality charges deducted from the unit funds are reviewable at any time. This reviewability tends to protect companies against any fluctuations in mortality experience, allowing them to postpone any hasty rate increases.

Health insurance pricing has generally gone unchanged, but there has been a widespread use of AIDS exclusion riders for health coverage in the U.K. In the event of sickness due to HIV infection, no benefits are payable. Some AIDS exclusion riders don't even provide for the return of premiums when the policy essentially becomes invalid due to HIV infection.

The use of exclusion riders is expected for U.K. disability income policies, also, but we are not aware of any that have been released yet. Disability income plans issued in the U.K. in the past several years have reviewable premiums.

The major changes in life insurance product design in the U.K. are to introduce reviewable premium rates on term assurance products. The company has the right to revise premiums, say, five years after issue. Used in combination with the large rate increases, the strategy is to price in a certain level of AIDS mortality and to add the flexibility to change rates if this level turns out to be too high or too low.

One large term insurer in the U.K. introduced in April two sets of term assurance products -- one with an AIDS exclusion provision and one without it. We don't know the company's strategy with this dual product approach. We suspect that the company will use the plan without the exclusion primarily to demonstrate the value of the premium discount for the plan with the exclusion. There would certainly be extremely strict underwriting for anyone wishing to purchase the plan without the exclusion.

The general AIDS blood testing threshold for U.K. life insurers is generally at a level of 150,000£ or higher. That is equivalent to a U.S. value in excess of \$250,000. Most companies apply these testing limits only to males, not to

## PANEL DISCUSSION

females. This high testing level is made feasible by underwriting for AIDS that can be much more focused than it is in the U.S. The aspect of U.K. underwriting that makes it more specific is the use of a detailed lifestyle questionnaire recommended for single men applying for at least 10,000£ coverage and for all applicants applying for 75,000£ or more.

The questionnaire asks whether the applicant is homosexual or bisexual or an IV drug user. It also asks that previous AIDS testing, medical advice, counseling, and treatment be disclosed (routine testing for blood donation purposes may be ignored). Further, the questionnaire asks about histories of sexually transmitted diseases including hepatitis B. The proposed signs the questionnaire, declaring that the answers are true, consenting to the company seeking more information from doctors who have attended the proposed, and agreeing that the form is part of the proposal and that failure to disclose any material fact known to the proposed may invalidate the contract.

### AUSTRALIAN EXPERIENCE

In Australia, AIDS testing limits are higher still. I worked with Ross Collins of Tillinghast's Sydney office to understand the situation there.

The Life Insurance Federation of Australia (LIFA) conducted a survey of life insurers in November 1987. The results were reported in March 1988 as shown in Table 4. The most common HIV testing limits are \$500,000 (Aust.) and \$750,000 (Aust.).

TABLE 4  
AUSTRALIAN AIDS TESTING LIMITS SURVEY  
(Australian Dollars)

<u>Testing Threshold (\$)</u>	<u>Number of Companies</u>
	<u>Life Insurance</u>
200,000	1
400,000	1
500,000	7 (23%)
750,000	15 (50%)
2,000,000	2
None	1
	<u>Disability Insurance</u>
5,000 per month	16 (88%)
6,000 per month	1
10,000 per month	1

For disability insurance, a testing limit of \$5,000 (Aust.) income per month is the most common. This compares with the general limit for disability income insurance testing in the United States at \$3,000 income per month.

These life insurance HIV testing limits seem extremely high by U.S. standards. Yet the LIFA report itself questions whether lower test thresholds are practical. The report estimates that a \$500,000 (Aust.) trigger point results in about 10,000 tests per year. A \$200,000 trigger point would raise the level to about 30,000 tests per year. A \$100,000 trigger point would require about 100,000 tests per year. LIFA states: "Not only would life office administration

## AIDS: PRICING AND RESERVING CONSIDERATIONS

procedures have trouble dealing with this volume of testing, but so too would the health authorities. The cost to the industry would also be significant."

How can Australian HIV testing limits be so high? The answer lies in the questions asked at the time of application for insurance in Australia. An applicant is presented with a standardized statement of "Declaration in Connection with AIDS." Individual insurers may vary their own declarations from the standardized guideline, but the spirit of the questions must remain the same. Incidentally, this declaration is modeled after the declaration used for prospective blood donors in Australia.

Can you imagine asking a U.S. applicant to make a declaration including the following (paraphrased) statements?

- o I have not been infected by the HIV virus.
- o I have not sought, and I am not intending to seek, a medical consultation regarding AIDS.
- o I have not requested a test for HIV antibodies.
- o Between 1980 and 1985 I did not receive a blood transfusion.
- o Since 1980, I have not worked as, nor engaged in sexual activity with a prostitute, engaged in (specified) male homosexual activities, or used illicit intravenous drugs.
- o All my sexual partners since 1980 would be able to make this same declaration.
- o I understand that this declaration is part of a proposal for life and/or disability insurance and the making of a false declaration may invalidate the contract.

If the applicant is unable to sign this block declaration, a detailed questionnaire dealing with each item separately is provided. The voluntary underwriting "Code of Practice" approved by LIFA and the Federal Minister for Community Services and Health, released April 29, 1988, states that:

[The questionnaire] should be designed to give the proposed insured an opportunity to show, if appropriate, that the proposal should be accepted . . . Because of the sensitivity, and from the point of view of privacy and understanding of the issues, it is desirable that, where possible, the answering of this questionnaire is carried out in the presence of a doctor who does understand the issues.

Despite the ability to question applicants very thoroughly, the "Code of Practice" states that the final decision should:

not be based solely on . . . The known or suspected sexual orientation of the proposed insured . . . Previous consultation about HIV infection, or testing for it with a negative result . . . (or) A positive HIV test result, unless it is from a laboratory and procedure approved by the Commonwealth Department of Community Services and Health.

What are the implications of falsely signing the block declaration? Even after the end of the three-year contestability period, the insurer can still alter its contractual obligations if it can prove fraud in the proposal. Theoretically, an AIDS claim resulting from a policy with a fraudulently signed block declaration could be dismissed even if it occurred long after issue. Practically, however,

## PANEL DISCUSSION

most insurers have not yet considered their procedures in such an event, and it remains to be seen what industry practices will evolve.

Australian insurance prices have generally not yet reflected any increases due to AIDS. Australian mortality experience had generally been improving favorably up until the onset of AIDS. Probably one aspect of AIDS pricing is that prices that would otherwise have been reduced have stayed at their former levels.

The major product design change for AIDS is the removal of premium guarantees for term policies. Most term insurance in Australia is of the Annual Renewable Term Variety (ART), although some 5-year and 10-year renewable level term plans are available. Guaranteed maximum premium schedules are not required for ART plans. Insurers have adopted, and consumers have accepted, ART premium schedules that can be changed by the company at any policy anniversary. Such changes to premium rates must be made to all policies of that type at the same time.

Most real life insurance in Australia is written on term products. The permanent life insurance products are very heavily investment-oriented; there is little mortality risk involved.

Group life and disability insurance schemes in Australia typically offer an amount of coverage, dependent on the size and insurance benefits of the group, without medical evidence of insurability. Group schemes with some insurers are now introducing AIDS or AIDS-related condition exclusions that apply for the first two years after a new individual joins the group plan.

Significant health coverage is provided by national health insurance arrangements that cover both medical and hospital benefits. Private health coverage is provided by a limited number of carriers who operate under quite strict legislation. The primary motivation for purchasing private health insurance instead of relying on the government's automatic coverage is to have the ability to choose one's own doctors and medical facilities rather than have public facilities chosen by the national coverage.

Premiums for this private health coverage are community-rated, with the same rates charged for males and females and for all ages. There are different premium rates for singles versus families. Under these conditions of a large insured base with community rating, it isn't surprising that there is generally no HIV testing for health insurance in Australia. Some life insurance companies have been considering trying to break into the health insurance market by adding health riders to life insurance policies. Their target market prior to AIDS would have been those with previously low health costs, i.e., younger age singles, but the AIDS epidemic is probably making them rethink this strategy.

Individual disability insurance policies are generally relying on AIDS exclusions and nonguaranteed premium rates, along with AIDS underwriting, to control the AIDS problem. Most disability policies are written on a YRT basis and premium guarantees have been removed similar to the situation for term life insurance.

In summary, insurers in both the U.K. and Australia have distinct advantages that are generally not available to insurers in this country. These include underwriting that is highly focused on high-risk individuals, stronger contestability rights, the use of AIDS exclusion provisions, permanent life insurance products that either have minimal death benefit risk or have large bonuses

## AIDS: PRICING AND RESERVING CONSIDERATIONS

that can be used to cover extra AIDS deaths, and government and consumer acceptance of nonguaranteed premium rates. The absence of these advantages in the United States, combined with an epidemic that is probably worse here, should make us pay close attention to our product designs and underwriting practices. Further, the pricing lessons given to us by U.K. term product pricing should give us strong initiative to examine the effects of potential AIDS scenarios on the profitability, and indeed viability, of our product portfolios.

### HOW MANY ARE INFECTED?

As my final point I want to address some misunderstandings that have occurred in the interpretation of the estimates of the number of HIV-infected individuals in the United States. An excellent example of the type of misunderstanding I am talking about comes from the book: *Crisis: Heterosexual Behavior In the Age of AIDS*, by Masters, Johnson, and Kolodny. Listen to this quotation from a section labeled "Some Background Facts":

Authorities are greatly underestimating the number of people infected with the AIDS virus in the population today. No epidemic of sexually transmitted disease has ever stood still, numerically speaking, without the availability of a preventive vaccine or a cure. Yet most medical experts continue to claim that there are only 1.5 million people infected with the AIDS virus today, which is the same estimate that was made in mid-1986 by the U.S. Public Health Service in collaboration with the Centers for Disease Control . . . For this reason, it is quite likely that there are now 3 million or more "carriers" of the AIDS virus in the United States.

From this reasoning, the authors estimate a current rate of new infections in the U.S. for every six month period (1.5 million in mid-1986 to 3 million at the end of 1987). From this they derive their probabilities of infection from blood transfusions, etc., which recently received so much publicity. I hope it is obvious to you that this reasoning is invalid. The two point-in-time estimates were not "1.5 million" to "1.5 million." Actually, they were "we don't know" to "we don't know."

Remember the source of the mid-1986 estimate. First of all, the estimate was not "1.5 million," but "1 to 1.5 million." Further, the estimate was made by a group of public health experts assembled in June 1986 at the Coolfont Conference Center in Berkeley Springs, West Virginia. The estimate was made by reasoning, not by sampling the population. It was the best estimate available at the time. The end-1987 estimate is 945,000 to 1,400,000, presented in a November 30, 1987 report presented by the Department of Health and Human Services, the Public Health Service, and the Centers for Disease Control. It is based on "additional data (that) have become available." A portion of this report is included at the back of chapter 1 of the Society of Actuaries AIDS Task Force report, which is now available from the Society. This new estimate is by no means a statement that the spread of AIDS stopped in mid-1986. Rather, it supposes that the mid-1986 Coolfont figures overstated the magnitude of the infection at that time.

Of course, we have to appreciate the severe limitations of the end-1987 estimate as well. The actual number of infected individuals could be significantly below or above the estimation range. And the range itself is certainly a wide one. These uncertainties should serve to drive home to us even more the need to prepare for some level of impact from AIDS on our operations.

## PANEL DISCUSSION

MR. GABRIEL L. SHAHEEN: The purpose of my portion of this session is to share some thoughts on a method to determine the AIDS impact on new business mortality assumptions. I will be sharing a paper written by Jim Keller, who is Lincoln National's Director of Reinsurance Product Development. The paper was originally published in our *Reinsurance Reporter* and subsequently has appeared or will appear in the newsletters of the Product Development and Reinsurance Sections of the Society.

I will actually walk through the method using some sample data. We will start with five sets of assumptions and then develop the additional mortality due to the AIDS epidemic. As we go, I would ask you to please focus on the method itself, since no one set of assumptions is appropriate for any one company, and many key assumptions, such as the number of individuals infected today, are at best educated guesses.

The first set of assumptions deals with the number of individuals infected today and in the future. I will assume 1.5 million individuals are infected today, 3 million individuals will be seropositive by 1991, there will be no further spread of the infection after 1991, and no cure found in the near future.

The second set of assumptions deals with the demographics of those infected. I will assume 93% of the infected individuals are male, and 23% of the infected males are IV-drug users. Let's throw out the IV-drug users, as they are unlikely purchasers of insurance. I will also ignore females, as they comprise only 7% of the AIDS victims and 50% of these are IV-drug users. Now I have to take the balance of the infected people and assign them somewhere, so let's assume the age distribution is 21% at ages 20-29, 46% at ages 30-39, 21% at ages 40-49, and 10% at ages 50-59. The next set of assumptions deals with the timing of seroconversion (i.e., when they became infected) and the resulting mortality. For now I will start with using mortality from the Cowell/Hoskins study. I will assume that existing seropositive individuals have been seropositive for an average of two years, and that new seropositive cases between 1987 and 1991 are assumed on the average to become seropositive in 1989.

The fourth set of assumptions has to do with antiselection and prevalence. I will assume there is no antiselection by the seropositive individual and that the percentage of new insureds who are seropositive will be the same as the corresponding segment of the general U.S. population. This is clearly a key assumption and one subject to debate. Many people point to an ACLI survey that indicates about 1% of individual life claims in 1986 were due to AIDS, and conclude that high-risk individuals must not be likely purchasers of insurance.

Unfortunately, life claims due to AIDS are not easily detected. In 1986, the number of AIDS deaths that were male non-IV-drug users between 20-59 represented 3.4% of the corresponding deaths in the U.S. population. This result when compared to the ACLI survey, and the recognition of difficult detection of AIDS claims, would tend to indicate that the high-risk individual is a potential insurance buyer. This seems more realistic as high-risk individuals are being counseled on the buying of insurance and there is growing evidence that they are doing so in small amounts. In addition, a recent Rand note compared the socio-economic characteristics of residences of "gay" census tracts of Los Angeles, New York City, and San Francisco to all the residences in these areas. The study shows that the selected "gay" census tracts were more likely to be self-employed and have considerably higher education and income. This would also indicate the increased likelihood of the high-risk individual purchasing



## AIDS: PRICING AND RESERVING CONSIDERATIONS

insurance. But again, let's concentrate on the method and just assume the insurance prevalence is equal to the general population prevalence.

The final set of assumptions is that application questions screen out all individuals who currently have AIDS or AIDS Related Complex (ARC), HIV-antibody tests screen out all of those who are currently seropositive, the 1975-1980 Basic Table represents standard mortality -- Litton AB lapses for those who are seronegative, and zero lapses for those who are seropositive.

Utilizing these five sets of assumptions, Table 5 shows the present value of actual to expected 20-year mortality for seropositive individuals. Table 5 is divided into two sections. The first section is for those that are seropositive today, and the second section is for those that will become seropositive between 1987 and 1991. The first line shows the present value of actual to expected (A/E) mortality; the second line shows the number of seropositive individuals (excluding females and IV-drug users); the third line shows the U.S. male population; and the fourth line shows the prevalence in the U.S. insured population.

TABLE 5  
RESULTS

	<u>Age 20-29</u>	<u>Age 30-39</u>	<u>Age 40-49</u>	<u>Age 50-59</u>
<b>Seropositive in 1987:</b>				
Present value of A/E 20-year mortality for seropositive individuals (%)	9150	4460	1890	860
Number of seropositive cases	226,000	494,000	226,000	107,000
Males in U.S. (millions)	21.3	19.6	12.8	10.6
Percent seropositive	1.1	2.5	1.8	1.0
<b>New seropositive between 1987 and 1991:</b>				
Present value of A/E 20-year mortality for new seropositive individuals (%)	5210	2530	1070	490
Number of new seropositive cases	226,000	494,000	226,000	107,000
Males in U.S. (millions)	21.3	19.6	12.8	10.6
Percent new seropositive	1.1	2.5	1.8	1.0

Next I will examine the mortality of untested business. And remember I am assuming no antiselection and the same prevalence as the population. Table 6 contains the percent seropositive in 1987, the percent of new seropositive between 1987 and 1991, and the present value of actual to expected 20-year mortality. This present value of actual to expected 20-year mortality, (e.g., 277% for ages 30-39), is not just the mortality of the seropositive individuals. This is the total actual to expected mortality for a block of untested business for ages 30-39. This block contains those currently infected, those that will become infected in the next four years, and those that are uninfected and will stay uninfected.

PANEL DISCUSSION

TABLE 6

UNTESTED

	<u>Age 20-29</u>	<u>Age 30-39</u>	<u>Age 40-49</u>	<u>Age 50-59</u>
Percent seropositive in 1987	1.1	2.5	1.8	1.0
Percent new seropositive between 1987 and 1991	1.1	2.5	1.8	1.0
Present value of A/E 20-year mortality (%)	253	277	150	112

Before we move on to look at tested business, we need to first examine a term called *positive selection*. Experts indicate that at least 85% of those that are infected do not know that they are seropositive. It is believed that high-risk individuals will avoid being tested either by buying smaller amounts, going to a different company, or not purchasing insurance. From the life insurer's point of view, this is *positive selection*. You may think of it as a sentinel effect of testing. As we examine the actual to expected mortality for tested business, we will examine four scenarios of positive selection. We will examine 0% positive selection (i.e., positive selection does not exist), 50% positive selection (i.e., half of the normal insurance buyers that are seronegative but will become seropositive will avoid being tested), 67% positive selection, and 90% positive selection.

Table 7 contains the actual to expected mortality for HIV-antibody tested business. I am assuming that the HIV-antibody test perfectly screens out all those that are seropositive today, and therefore, the percent of seropositive in 1987 in this block of business is zero. The first line of Table 7 shows the percent of new seropositive between 1987 and 1991, and then presents the present value of actual to expected 20-year mortality under our four scenarios of positive selection. For example, assuming 50% positive selection, then the mortality on a block of HIV-antibody tested business for ages 40-49 would be 109% of expected.

TABLE 7

HIV-ANTIBODY TESTED

	<u>Age 20-29</u>	<u>Age 30-39</u>	<u>Age 40-49</u>	<u>Age 50-59</u>
Percent new seropositive between 1987 and 1991	1.1	2.5	1.8	1.0
Present value of A/E 20-year mortality (%):				
0% positive selection	155	165	118	104
50% positive selection	128	133	109	102
67% positive selection	118	122	106	101
90% positive selection	106	107	102	100

Unfortunately, not all jurisdictions allow us to use the HIV-antibody test. A substitute, the T-cell test, is being used. It is very roughly estimated that the T-cell test will only screen out 50% of those that are seropositive. Table 8 develops the mortality for T-cell tested business. The first line shows the percent of seropositive in 1987 with the normal T-cell test. Since only 50% get screened out, this is one-half of what was shown in Tables 5 and 6 (untested).

AIDS: PRICING AND RESERVING CONSIDERATIONS

The next line shows the percent of new seropositive between 1987 and 1989, and then the next four lines contain the present value of actual to expected 20-year mortality for the four scenarios of positive selection. Please note that the positive selection applies to both the seropositive today and the seropositive in the next four years.

TABLE 8  
T-CELL TESTED

	<u>Age 20-29</u>	<u>Age 30-39</u>	<u>Age 40-49</u>	<u>Age 50-59</u>
Percent seropositive in 1987 with normal T-cell test	.5	1.3	.9	.5
Percent new seropositive between 1987 and 1991 (%)	1.1	2.5	1.8	1.0
Present value of A/E 20-year mortality (%):				
0% positive selection	204	222	134	108
50% positive selection	153	162	117	104
67% positive selection	135	141	112	103
90% positive selection	111	113	104	101

We have now looked at the impact on untested business, HIV tested business and T-cell tested business. And if all the assumptions were correct and the geographic distribution of a company's business were the same as the distribution of the US population, we would be close to being finished. But it's not, as the AIDS epidemic has not hit all areas of the country in the same proportion, so it makes sense to vary the expected additional mortality geographically. To determine a geographic impact factor, the following equation maybe used.

$$\text{Geographic Impact Factor (GIF)} = c_1 \times (b_1/a_1) + c_2 \times (b_2/a_2) + \dots + c_{50}(b_{50}/a_{50})$$

where

- $a_1$  = the percent of the ordinary insurance written by the insurance industry in state #1
- $a_2$  = the percent of the ordinary insurance written by the insurance industry in state #2, etc.
- $b_1$  = the percent of seropositive individuals in state #1
- $b_2$  = the percent of seropositive individuals in state #2, etc.
- $c_1$  = the percent of business a company writes in state #1
- $c_2$  = the percent of business a company writes in state #2, etc.

This formula takes the percent of a company's business in any particular state, times the ratio of the percent seropositive in that state compared to the U.S. as a whole, divided by the percent of industry business in that state. Two of the three factors can be easily obtained. The company should be able to determine the "c" factor (the percent of business a company writes in a state). The "a" factor (the percent of ordinary insurance written by the insurance industry in a particular state) can be obtained from the *Life Insurance Fact Book*. The difficult factor to determine is the percent of seropositive individuals in a particular state.

PANEL DISCUSSION

State	( $b_x / a_x$ )
New York	.226/.070 = 3.229
California	.219/.118 = 1.856
Florida	.074/.049 = 1.510
Texas	.076/.083 = .916
New Jersey	.067/.035 = 1.914
Illinois	.029/.047 = .617
Pennsylvania	.028/.045 = .622
Massachusetts	.021/.024 = .875
Georgia	.023/.031 = .742
District of Columbia	.020/.003 = 6.667
All Others	.217/.495 = .438

The above uses the percent of recent AIDS cases in a particular state for the percent seropositive in that state. Many experts feel, however, that the AIDS epidemic is spreading into the historically low-risk areas. This would indicate that a factor greater than one should be slightly decreased and a factor less than one should be slightly increased.

There are other factors that will impact on a particular company. Those other factors can include the distribution system (career/broker), the target market (urban/rural), product type (perm/term), and corporate attitude (testing limits, underwriting standards, external image). How to adjust for these is more difficult, and I won't spend any time on that.

Now, back to an assumption for a moment. As mentioned earlier in the list of assumptions, we assume that the progression from seroconversion to AIDS, and from AIDS to death is that derived in the Cowell/Hoskins paper from the Frankfurt study. The CDC/San Francisco data suggests a slower progression. Looking at this difference over seven and one-third years (which is the length of that CDC/San Francisco City Clinic study), present value of anticipated mortality from the CDC/San Francisco City Clinic study is about 65% of the increased mortality based on the Frankfurt data. The Frankfurt study had difficulty in determining when an individual seroconverted. The San Francisco City Clinic study was a hepatitis type B study, which may be more indicative of the high-risk insured U.S. population. There are some indications that the progression should be slightly slower, and we'll discuss that a little later.

Now to bring the method together. With use of the previous tables, the geographic impact factor, and the relationship of the CDC/SFCC study to the Frankfurt study, the expected mortality for a company's new business can be estimated. Table 9 shows an example on how to estimate the mortality, based on the distribution of new business for ages 30-39. In this example, I will assume that 20% of the business is untested, 3% of the business is T-cell tested, and 77% of the business is HIV-antibody tested. The geographic impact factors for these three segments are: .84 for the untested, 1.86 for the T-cell tested (which is the California factor), and .81 for the HIV-antibody tested (which is all but California). I will assume that the positive selection factor for tested business is 67%, and I will use the 65% factor for the CDC/SFCC study. Calculating the expected mortality for ages 30-39 would then be done as shown in Table 9. Overall, these assumptions show that the block of business for ages 30-39 would exhibit 129.7% of expected mortality.

AIDS: PRICING AND RESERVING CONSIDERATIONS

TABLE 9

EXAMPLE-MALE AGE 35

	<u>Percentage Business</u>	<u>Geographic Impact Factor</u>
Untested	20	.84
T-cell tested	3	1.86 (CA only)
HIV-antibody tested	77	.81 (All but CA)

Positive selection factor for tested business is 67% and the CDC/SFCC data factor is 65%.

Expected Mortality:

Untested	$.20 \times \{1 + [(2.77 - 1.00) \times .84 \times .65]\}$	= .393
T-cell tested	$.03 \times \{1 + [(1.41 - 1.00) \times 1.86 \times .65]\}$	= .045
HIV-antibody tested	$.77 \times \{1 + [(1.22 - 1.00) \times .81 \times .65]\}$	= <u>.859</u>
		1.297

Now that completes a look at the method. If you've been focusing on it and not the assumptions, I appreciate your effort. But now I'm going to violate my own request and talk about a couple of assumptions that warrant some further looking into. First, rather than use the percent of AIDS cases recently reported in the geographic impact factor, you may wish to project the distribution of AIDS cases by state as this would be more representative of the current seropositive insurance-buying population.

Second, another critical assumption is the progression from seroconversion to AIDS and then from AIDS to death. We started with initially using the Cowell/Hoskins mortality from the Frankfurt study. As described earlier, we thought that the San Francisco City Clinic study might be more representative of the high-risk non-IV-drug users in the U.S. The highest risk individuals, and those in the San Francisco City Clinic study, were probably the more promiscuous individuals, who may well have had other sexually transmitted diseases that possibly had already impaired their immune system. As the disease spread to the less promiscuous high-risk individuals in the early to mid-1980s, one may theorize that the progression in the earlier durations will be lower. In addition, possible medical advancements, that would not be a cure or vaccine, may slow the progression from seroconversion to AIDS, but this improvement is unlikely until the mid- to late 1990s. Also, life extending drugs such as Azidothymidine (AZT) may delay the mortality for the more recent AIDS victim.

Pricing for the AIDS epidemic is quite difficult, especially with a lack of hard data and historical trends. However, the pricing actuaries must attempt to realistically determine the impact. Business can be broken into testing categories, geographic adjustments can be made, and most of the assumptions will have an impact. I hope this methodology will assist in the process.

Now I want to make some comments on identification of AIDS claims. I've put some comments together fairly quickly, and I won't get into claims projections or underwriting issues, but I will talk a bit about some experience we've had at Lincoln National Reinsurance; how we try to identify AIDS claims, and the reporting of AIDS claims.

## PANEL DISCUSSION

First, a little bit about our experience. Through 1987, we had identified 125 AIDS claims in our individual life line of business in reinsurance. Of those 125, 46 occurred within the contestable period, of which 14 have been resisted -- all successfully. You might be interested to know that one of these policies was contested on the basis simply of a change of insurability. There was no misrepresentation in the application, but between the time of application and policy delivery, the proposed insured went to Europe and was diagnosed as having AIDS. When this was subsequently discovered, the policy was contested successfully.

It does appear that companies are taking a conservative approach on AIDS claims, resisting only those for which a very solid defense can be built. This is due to a reluctance of doctors to give information relating to AIDS and also to the potential for adverse publicity and punitive damages. But where companies do resist, it generally works. Now, is that good news or bad news? Well, maybe we finally found an area that holds down legal expenses, but, on the other hand, it's not necessarily good for mortality.

So how do you identify AIDS claims? It would be pretty simple if it were just a matter of looking at a death certificate and seeing that it said AIDS. Unfortunately, many times the death certificate indicates the last disease that a person had, if it is even that specific, so you have to guess. And you have to make that guess based on whatever the cause of the disease was and whatever the other circumstances are. For example, a person may have died of pneumocystis carinii pneumonia, but the death certificate may simply say pneumonia. Now if that person were a single young male living in L.A. with an unusual beneficiary, he may have died of AIDS, though we would not count that as an AIDS claim without further evidence. But the death certificate may not even go so far as to say pneumonia. For example, the death certificate that an insurance company receives from New York City will generally just indicate that the person died of natural causes, or that they died by accident, or that it was homicide or suicide. Obviously, that's not going to be of much help in positively identifying AIDS claims, and there are a lot of AIDS claims from New York City. In general, direct writers have more information on the other circumstances involved on the insured than do reinsurers, and both companies know more about contestable claims than they do about incontestable claims, since you rarely spend the money to investigate a claim that's not contestable.

But the identification continues to get tougher, as it appears that some hospitals now are protecting confidentiality by deleting information on HIV status from records sent to insurance companies. In addition, AZT will push more claims beyond the contestable period. This will make it more difficult to identify them and, of course, to resist any claims where there was misrepresentation.

So how much underreporting is there? Obviously, nobody knows how much underreporting of AIDS claims or of AIDS cases there is. The CDC estimates that there is about 20% underreporting of AIDS cases to them. A study completed in April 1987, by the State of California, said that there was 17-25% underreporting of AIDS cases. Now, when you take that together with the case in New York City where the death certificate doesn't indicate the specific cause of death, it's very conceivable that there are AIDS situations that are being reported to the CDC that an insurance company has no way of finding. Given this, one would expect that the amount of underreporting that the CDC or the State of California suspects would be the minimum boundary for the underreporting in insurance claims, particularly life insurance claims. The ACLI and HIAA

## AIDS: PRICING AND RESERVING CONSIDERATIONS

acknowledge that as few as 50% of the AIDS claims actually incurred by insurance companies may be recognized as AIDS claims.

To look from another angle, let's go back to Lincoln National Reinsurance claim experience for a moment. I mentioned before that through 1987 we've had 125 individual life claims that we could identify as AIDS claims, of which 46 were contestable. So by number, 37% of our AIDS claims have been contestable. Of all of our claims in 1986 and 1987, about 21% were contestable, so a higher percentage of our AIDS claims are contestable, or occurring earlier in duration than our general claims. This means one of two things -- either there is antiselection amongst the AIDS prevalent population or else we are better able to identify those in the contestable period. Neither, of course, is good news, and there's probably some of both going on. Nevertheless, our medical people and researchers who look at this situation feel that we are probably not recognizing around half of our AIDS claims.

Just a comment on reinsurance implications. I think generally it works best for both companies -- the direct writer and the reinsurer -- if the reinsurer gets drawn into the development process of the product. I know from my own experience companies have felt that the reinsurer should have been involved earlier. We need to know the people that are doing the product development, as well as the people that are handling the reinsurance. And, as the direct writing company walks that reinsurer through what is going on in the direct side, what the thinking is and how they are dealing with AIDS, the reinsurer is better able, of course, to do something appropriate on the reinsurance side.

MR. TILLER: In contemplating potential actions for the AIDS situation, one can see the pricing is, in theory at least, relatively easy. There is freedom of action here in that the company can change its decisions and its procedures. However, each company and each actuary must deal with inforce business as it was issued in the past and as it is presently represented upon our books.

I would like to turn our attention now to the question of reserves for both statutory and GAAP purposes. In making these comments I also refer you to a more extensive set of comments developed at the Society of Actuaries Symposium on AIDS. Specifically Bill Koenig from Northwestern Mutual gave a relatively thorough discussion of reserves and reserving considerations at that meeting. I would encourage each of you who are interested to get a copy of the entire Report of the Society of Actuaries Task Force on AIDS and the transcriptions of the various sessions at that symposium.

To what extent are extra reserves necessary? Well, to be perfectly honest, I do not know, nor I believe does anyone else. One reason I am a moderator and also functioning as a panelist, is that I could not find anyone else who would address both the statutory and the GAAP issues.

First, let us look at the statutory aspects. It is my contention the reserves are not the issue, but that surplus management is. The true issue is claims in excess of normal claims -- whatever that may be. Reserves by their nature refer to the inforce and not to new business.

Consider any valuation table; for example, the currently used 1980 CSO. Is that table adequate for reserves in light of the additional mortality we might expect from AIDS? Some studies say that table is adequate overall, but that it may not be adequate at younger ages. Older ages have significant margins,

## PANEL DISCUSSION

whereas the younger ages may have less margin. The mortality curve resulting after AIDS is factored into consideration may be flatter than that currently assumed. This, of course, could lead to lower overall reserves, especially if it is found that the older ages have excessive margins. Of course, the higher mortality at younger ages could lead to higher net premiums. Any such analysis is dependent upon the percentage of lives with AIDS at each age. No other assumption is so crucial as the age mix and the percentage of lives having AIDS at each duration. Frankly, no other assumption is so uncertain at this point.

So, let's try to address the question; is the 1980 CSO adequate? Well, probably, if you have happen to have an average company doing average business across the country. However, if your business is disproportionately written at the younger ages, or geographically or otherwise exposed beyond the norm, then the reserves generated by this table may be inadequate by themselves. In other words, if your mix of business is "wrong," then the 1980 CSO might not be adequate for your company.

Furthermore, other studies have shown that inadequacy may extend across the board on more competitive term plans with a level net amount at risk. In other words, the adequacy of reserves may be dependent upon a decreasing net amount at risk. This particular aspect may apply more broadly than the general inadequacy of the table. However, in determining the adequacy of reserves, we need to look at the entire line or block of business, not just at a particular product.

So, we are back to the question of; are extra reserves necessary? I believe the answer to this depends upon your company and its assumed future experience. Items to consider include: past AIDS claims history; age, sex, and geographic distributions; past underwriting standards and marketing practices; and past competitive precision.

Earlier I said that surplus management rather than reserves is the real issue. There are only three ways to really pay for extra claims, if there are any extra claims. These are reserves, surplus, and future margins -- whatever the source. These future margins come from your pricing assumptions vis-a-vis your actual experience. This can be extra loads which are in the mortality to start with, interest beyond that priced for, or lower expenses. However, each of us realizes that reserves do not magically appear. There are only two sources of reserves; one is current surplus and the other is future margins. (You could consider additional capital infusions in the future, but I am considering a company as an ongoing, independent operation.)

Future margins, however, are also the source of future surplus growth. Therefore, reserves are not the issue, but rather the management of current and future surplus. In other words, what plans does your company have to meet all of its future obligations, both to policyholders and shareholders and for growth?

The company needs to determine its future obligations using a best estimate projection, but it also should recognize the need to monitor and modify these projections. If extra claims emerge, the company needs to determine how these are going to be met: current surplus, which means establishing the extra claim revision now; future margins, which can be used either to pay-as-you-go or to set up reserves as you go; or a combination of current surplus and future margins.



## AIDS: PRICING AND RESERVING CONSIDERATIONS

The key is not how a company addresses the issue. I am not in a position to say that one approach is preferred over another. However, it is important that each company determine a systematic methodology to estimate the amount of its extra claims and to establish a mechanism to increase or decrease reserves or allocated surplus as appropriate. After all, it is just as important to reduce reserves when claims occur or experience improves as it is to establish reserves prior to negative experience. At the risk of stating the obvious, we should document some of the sources of future claims funds:

- o If your business is participating, you can lower dividends.
- o If your business consists of nonparticipating, indeterminate premiums, then you may have the option of raising premium rates or the cost of insurance rates. This may prove difficult as rate increases have not been done extensively. Companies probably run a greater risk of negative market reaction to these rate increases than to lowering dividends on a participating plan.
- o If your products call for excess interest credit, then that credit can be reduced in the event of adverse mortality experience. This may not be possible for certain indexed products or with certain guarantees.
- o There is always the possibility that expense savings will be realized and these can be used to fund additional claims. From the point of view of company management, gains from one line of business may be available to offset extra claims in other lines of business more severely impacted by AIDS. This may or may not be an appropriate consideration for a given company and each company must deal with that situation individually.
- o Stock companies must decide if they should lower shareholder dividend commitments. While this may have an impact on debt servicing or plans for growth in shareholder dividends, it may be necessary for the continued growth and viability of the company.

Setting up the entire amount of extra claims now is probably unrealistic, especially as the projected need is very likely to change. Therefore, I would find it difficult to advise a company to follow the approach of earmarking an amount of surplus now, expecting that it would cover all future excess claims. A pay-as-you-go policy is probably more realistic. It is important, however, to establish a program to fund extra claims in the event that the current reserve does prove to be inadequate. The best way to do this is for a projection such as a gross premium valuation.

A major difference between reserves and earmarked surplus is the tax treatment. The bottom line is that if a reserve can be tax deductible, the government will pay for approximately one-third of that reserve. If your projection proves to be accurate, then the benefit to the company ultimately is the aftertax investment gain on one-third of the reserve from the time the reserve is established until the time the claim is paid. After all, the company will get the deduction at the time a claim is paid anyhow. Mutual companies will also receive the benefit of permanent savings of the differential tax. If the company can tax qualify a reserve, it would be considered intelligent planning to meet your future claims needs today. This improves the solvency capability of your company and allows the government to pay part of the cost.

In order to qualify a reserve for a tax deduction it must meet some specific standards. In general, the reserve must be required by state law and based on an established table, interest rate, and method. This may be a difficult standard to meet with respect to AIDS.

## PANEL DISCUSSION

It is possible to qualify a reserve if it is established for additional substandard mortality benefits and is based upon a specific premium or charge. While it is too late to add an additional premium to the inforce business, companies may find that they can establish an extra charge in the dividend formula for participating plans. This idea is not immediately applicable in nonpar business.

There is a third provision in the Internal Revenue Code which allows for the establishment of reserves to meet an unforeseen event. This is a more nebulous standard and needs further research.

I would like to emphasize at this point, that neither I nor my firm are tax counsel nor do we provide tax advice. Any decisions in this area obviously should be discussed with adequate tax authorities. From my point of view, the important point is to determine if a reserve is needed and then to determine if adequate tax argument prevails. Solvency of the company should not be based upon tax arguments.

The considerations are largely the same for GAAP as for statutory reserves. However, it should be noted that statutory accounting focuses upon solvency of the company, but GAAP accounting focuses upon a best estimate of earnings. Assumptions under GAAP tend to be more aggressive (i.e., lower mortality, higher interest), so the margins in GAAP may be even lower. Some companies margins are extremely thin already and just a little additional mortality may cause loss recognition, especially as current experience often shows lapse rates higher than expected and investment returns lower than expected in pricing. Provisions for adverse deviation may be thin or nonexistent also.

How does AIDS affect this? To begin with any additional mortality due to AIDS may cause the margins which are present to be eroded. AIDS will definitely cause an erosion in every company, and it may cause the margins to totally disappear in some companies. This is something that each company must analyze for itself -- but carefully and with objectivity. It is possible to create a loss recognition situation if the company views AIDS too negatively or adopts too cautious an approach in reviewing its GAAP reserves.

I do not believe the company should move too precipitously on this. It is important to remember that many of the products issued by stock companies have provisions for premium adjustment. There may be a potential increase of premiums, thereby increasing future income flows. Most of all, one must look at all elements in reviewing GAAP, not just the impact of AIDS. All the sources of future margins or future company actions, as I mentioned earlier in discussing statutory reserves, are even more applicable in discussing GAAP reserves. GAAP reserves should probably be changed more cautiously than statutory reserves. An error in GAAP reserves is more likely to create an adverse effect. After all, statutory reserves can be released and used elsewhere, while a change in GAAP reserves, which creates a loss recognition, can hurt the shareholders but will not benefit the policyholders.

For most companies any loss recognition which might occur as a result of additional AIDS mortality would presumably cause a reduction in GAAP deferred taxes. This is not a 100% offset, but it does provide some cushion for earnings.

All of us in the stock insurance company environment, either those with companies or consultants, should keep in mind that the investment community has shown some nervousness and concern regarding AIDS and the future of life

## AIDS: PRICING AND RESERVING CONSIDERATIONS

insurance stocks. We should not hide our heads in the sand, however. Knowledge, as we have heard on many occasions, is more valuable than fear. Knowing what will happen allows you to manage your company better and to communicate better with the stock analyst.

Returning to the issue of surplus management, I'd like to focus on shareholder dividends. It is important that my comments not be taken out of context. These comments are totally independent of any tax considerations and I do not wish it to be said that I equated policyholder dividends and shareholder dividends in any sense other than cash flow and surplus effect. However, I believe that stock companies must learn to use their shareholder dividends and to manage their surplus in much the same way that mutual companies have historically managed policyholder dividends and allocated them by duration.

Many stock companies have been asked to dividend to shareholders or holding companies the vast majority, if not all, of their statutory gains. These funds were used to provide a return to stockholders, to finance other corporate activities, or to service debt. Many stock companies must plan further ahead than they have in the past. Companies need to have at least a five-year projection, although I would recommend a 10-, 15-, or 20-year projection. It is important to look ahead, not just to earnings, but to the surplus which a company must have to stay in business, especially with the additional threat of AIDS.

Long-term surplus management is a fairly new concept for many stock companies. The pressures for current return on equity and to build that return lead to a tendency towards minimal capitalization, if not undercapitalization, in many stock insurance companies. Any extra surplus held by a company for future claims is still equity and reduces ROE. I suggest you work with your management and your board of directors to develop a shareholder dividend and surplus management program which will plan for the future. Such a program will be the key to meeting obligations to policyholders, as well as debt service commitments, shareholder dividend commitments, and continued growth. There is an advantage to the stock company: at least it does not pay an additional tax on accumulated surplus as does a similar mutual company.

MR. S. MICHAEL MCLAUGHLIN: First, I would like to clarify one minor point which was mentioned, namely that the U.K. does not regulate reserves for AIDS. Actually the U.K. does not regulate any reserves at all. The appointed actuary has considerable latitude in setting reserves, although of course, his basis must be disclosed and must be justifiable. AIDS reserves are treated consistently.

I was interested in Tom Reese's offer to convert U.K. AIDS reserves of 1£ per 1,000£ of face amounts into U.S. dollars. It seems to me, at least based on current practice, that the exchange rate works out to \$0 per \$1,000 of face amount. We have a client owned by a U.K. parent which does report reserves for AIDS to the parent, but does not hold reserves for AIDS in the USA.

For comparison to the reserves factors per 1,000 illustrated by Tom, we have calculated reserves factors in the range of 50 cents to \$2 per \$1,000 of face amount. These numbers were for all types of insurance combined, not just term. In at least one situation, the magnitude of the reserves for AIDS had a significant impact on a decision to purchase a block of business.

