

**1989 VALUATION ACTUARY
SYMPOSIUM PROCEEDINGS**

AIDS SESSION

MR. THOMAS W. REESE: I am Tom Reese, from Tillinghast's Irvine, California, office. My topic will be the financial implications of AIDS for life and health insurers. My theme will be that one of the key needs of life and health insurers as they face this epidemic will be the need for an effective valuation actuary.

The Need for the Valuation Actuary for AIDS

I emphasize the need for the valuation actuary mainly because this is the Valuation Actuary Symposium! But I also have three reasons:

1. The AIDS epidemic does pose a significant financial threat to insurers;
2. It is not appropriate to wash this problem away by saying (hoping) that pricing and reserve margins will cover the AIDS claims cost; and
3. This problem cannot be appropriately addressed simply by inventing a new reserve formula or by introducing a new valuation table.

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Let's review these reasons.

First, the AIDS epidemic does pose a real threat to insurers. The following table shows the present value of AIDS mortality expressed as a percent of the present value of non-AIDS mortality for a level death benefit life insurance policy issued in 1989.

Extra AIDS Mortality* Present Value:

<u>Issue Age</u>	<u>Untested</u>		<u>Tested</u>	
	<u>Male</u>	<u>Female</u>	<u>Male</u>	<u>Female</u>
25	67%	12%	8%	1%
35	28	3	2	0
45	6	1	0	0
55	1	0	0	0

* 1989 issue, middle scenario adjusted for underwriting and insured populations; 1989 nonmedical industry average mortality, 15% interest discount, level face amount, lapses at 12%, 8%, 7%, 6% 5% (5+), NO LAPSE ANTISELECTION.

The effect of AIDS is certainly quite significant for younger age adult males that have not been tested for HIV infection at issue. And even these present value figures do not show the full effect of AIDS on an annual basis in some years.

These figures assume that the effects of underwriting eliminate most of the AIDS deaths that would have otherwise occurred in the early years of the policy, even for untested business. More importantly, these figures also assume no lapse antiselection after issue. Recognition of the effect of at-risk lives retaining their coverage while not-at-risk lives lapse normally could double these percentages.

The AIDS mortality rates assumed in this example are from the middle scenario published in the 1989 report of the SOA Committee on HIV Research: "U.S. General Population AIDS Mortality Rates." These AIDS mortality rates are applied using the recommendations of the 1989 report of the SOA Task Force on the Financial Implications of AIDS.

I will not take the time here to explain any of the assumptions or specific results of these papers. Instead you can read them for yourselves. These two reports were published together by the SOA and have been available since August, 1989.

Thus the financial impact of AIDS will be significant for some types of business, which brings us to the second reason why this problem needs the attention of the valuation actuary. This reason is that pricing and reserve margins cannot be relied on to cover up the problem.

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There certainly are margins available to help in the payment of AIDS claims. However, margins alone will not be enough to meet the challenge presented by AIDS. First, margins are not adequate for all ages. Further, margins will not be adequate for all years of the epidemic. AIDS cases and deaths are still increasing rapidly, and will not likely reach a peak until the late 1990s.

Margins cannot be relied on as the solution to AIDS because AIDS claims experience varies so widely by company. AIDS experience varies significantly by geography, including regional areas and metropolitan/nonmetropolitan location differences. It varies depending on distribution methods, product type, underwriting and HIV-testing practices, insured demographic mix, and market characteristics.

Further, all margins should not be used to solve the AIDS problem because they are needed for other purposes. Besides being needed to cover other contingencies that may occur, the Standard Valuation Law does not provide explicitly for expenses. Some margins are inherently assumed to cover expense needs.

Finally, the analysis of available margins often ignores the effects of lapse antiselection. This is important not only in the basic exercise of calculating AIDS mortality rates to compare to your pricing and reserve margins, but it is also important to consider the cycles

of lapse antiselection that could occur if you tried to recover AIDS claims occurring among insureds in their 30s by increasing prices for insureds in their 50s and 60s. Those "total company" margins that may have looked adequate would not look so good if those lives not much affected by AIDS began to lapse off.

Thus the financial challenge of dealing with AIDS is a problem that must be addressed, perhaps by increased reserves. There is, however, no formula that can be regulated to be appropriate for all companies. This is the third reason for needing a valuation actuary to address the AIDS problem.

In particular, the report of the SOA Task Force on the Financial Implications of AIDS recommends against the development of a new valuation table for AIDS. Arguments against the need for a new valuation table for AIDS include the absence of credible insured AIDS data and the need to have mortality rates that would change by calendar year to follow the progress of the epidemic.

Also, the shape of the AIDS mortality curve would tend to "flatten" the mortality curve by increasing mortality rates for younger ages but not for older ages. This could have the effect of reducing reserves rather than increasing them.

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Other reasons for not approaching the AIDS problem by introducing a new valuation table are the unknown future course of the epidemic and the long time it would likely take to implement a new table. Considering the long implementation time, a valuation table approach would be similar to trying to increase reserves during the 1918-1919 influenza epidemic, which only lasted 9 months. The worst problem would be over before the solution was ready!

But the AIDS epidemic is clearly not like the 1918-1919 influenza epidemic. The AIDS epidemic is happening very slowly, and there is much that can be done to affect the financial impact of this epidemic on your company.

To see what can be done to change the "financial course" of this epidemic, let's examine the role of the valuation actuary with respect to AIDS. The valuation actuary must measure the potential financial impact of AIDS claims, consider the means of funding for those claims, and then determine the adequacy of reserves.

Projecting AIDS Claims

Let's consider first the measurement of the potential financial impact. What I will describe here is an approximate, aggregate method of forecasting AIDS claims. I believe this "simple" approach is appropriate, considering the assumptions that must be made.

The forecast begins by grouping policies with similar AIDS risks into mode groups as of the valuation date. Policies will be grouped by sex, issue year, attained age.

Then the in-force amounts in each future year are projected. For this projection, it is important to assume lapse rates consistent with those that would be experienced among at-risk lives. This will maintain the proportion of at-risk lives at the initial level -- this is necessary to relate the coverage amounts to general population AIDS mortality rates.

The report of the SOA Task Force on the Financial Implications of AIDS went so far as to suggest that the projection of in-force amounts be made assuming no lapses at all. Surely there will be some lapse effect even among the at-risk population, however, and some lapse assumption is appropriate.

With in-force amounts projected, AIDS mortality rates are applied to calculate annual AIDS claims. The present value can then be taken by using a discount rate that does not include an adjustment for lapses.

An offset to those projected AIDS claims will be means of funding to recoup some of this extra cost. The valuation actuary's role must be expanded to include an investigation of the effects of such funding.

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Possible sources of funding for the increased AIDS claims include reductions in policyholder dividends, increases in adjustable premiums, and increases in nonguaranteed charges, e.g., cost of insurance charges for universal life policies.

An important consideration in funding for the added cost of AIDS claims will be to consider which groups of policyholders will contribute. It will most likely not be possible to raise the necessary funding entirely from the groups of policies that are most contributing to the problem. Caps on maximum cost of insurance rates, guaranteed maximum adjustable premiums, and practical matters related to dividends will make such funding inadequate for males in certain age ranges. Even without caps on rates, how high can increases be before triggering further lapse antiselection, making the relative problem even worse for those policies that remain?

With potential AIDS claims projected and offsetting funding plans analyzed, the valuation actuary is now ready to tackle the job of judging whether reserves are adequate.

For this job, it is important to use cash-flow testing methods rather than just looking at present values. A positive current present value will not do you any good if it consists of profits in the next few years that will have already been "spent" by the time they are needed to pay for AIDS claims during the peak years. If those profits have been paid out as

shareholder dividends or used to finance other projects, the present value could well be negative at some future time.

Further, it is probably not appropriate to include margins after the worst epidemic years in the present value. It may not be possible to use those margins to recover past losses in the competitive environment that will exist after the peak AIDS claims have subsided. Further, the effects of lapse antiselection may greatly reduce those apparent future profit amounts.

AIDS Reserve Methods

One method of setting up reserves for unfunded AIDS claims costs would be to set up the projected present value of AIDS claims, net of funding recoveries, as an immediate reserve.

The report of the SOA Task Force on the Financial Implications of AIDS described two alternative AIDS reserve methods. These are the "fund accumulation" method and the "augmented mortality" method.

The fund accumulation AIDS reserve method was described by Dave Holland in the 1988 report of the SOA AIDS Task Force. It operates similarly to the funding of a pension plan. The AIDS reserve fund value at the beginning of the period increased by interest and a

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periodic AIDS claims funding contribution and decreased by AIDS claims paid during the period.

The periodic contribution amounts can be thought of as a type of "normal cost" of AIDS claims. These contribution amounts would be calculated by dividing the present value of projected AIDS claims, net of the fund already held, by an annuity factor that reflects the period over which the AIDS costs are to be funded.

An advantage of this method is that it is self-correcting for changes in the estimated amount of AIDS claims. When the AIDS claim estimate is revised -- as it is expected to be quite often, given the uncertain nature of these projections -- the periodic contribution amounts will change to fund to this new level over the remaining planned funding period.

Another advantage is that individual company experience will be directly reflected by deducting actual AIDS claims in the recursive development of the AIDS mortality reserve.

The time period over which contributions should be calculated should be set according to the expected period of time to the end of the "high" AIDS claims. The period should certainly be short enough so that the fund values are always positive. It is doubtful whether

a company would be able to realize planned AIDS claims funding contributions in years after the time that the peak of the epidemic has receded.

The augmented mortality AIDS reserve method uses more traditional reserve calculation formulas. For this method the normal reserve is subtracted from a special reserve calculation that includes AIDS mortality. The reserve calculated with AIDS mortality is based on the valuation mortality table increased by AIDS mortality based on the year of issue. Note: This work need not be done separately for each year of issue -- groupings of issue years could be used.

Special consideration must be given to the AIDS reserve net premium for the calculation of augmented mortality AIDS reserves. It would not be appropriate to assume that AIDS claims can be funded over the entire duration of a whole life policy, given the likely much shorter duration of the period of high AIDS claims. Thus the premium payment period should be shortened, for this calculation, in order to build up a reserve that is appropriately matched to the expected extra mortality cost.

There are two ways to deal with this need for a shorter premium period for the augmented mortality AIDS reserve. The simpler way is to treat the policy, for this calculation, as if it were, say, a 15-year pay life policy.

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A more precise method would use a two-step net premium approach. For policy years after the high AIDS claims period, the valuation net premium is equal to the whole life valuation net premium on the same policy using the normal valuation mortality table. For policy years before that time, the valuation net premium is the amount needed, together with the whole life premiums after the high AIDS claims period, to mature the policy using the valuation mortality table increased for AIDS.

AIDS Management Strategy

A final consideration in the role of the valuation actuary with respect to AIDS is the company's program to manage the problem that AIDS presents. While this may not be seen as a normal role for the valuation actuary, it is critical that the valuation actuary at least be aware of, and preferably involved in, the company's AIDS management program.

An appropriate AIDS management program includes claims analysis and projection, funding to meet the AIDS claims cost, and careful planning to reduce AIDS risks and to schedule for future claims payments needs. Such a program will give the company the greater flexibility it needs to deal with the future peak AIDS claims period in a manner that is least disruptive to the company's financial operations.

As part of the involvement in managing for AIDS, the valuation actuary should be involved in developing and implementing a program for the advance funding for future AIDS claims. Funding for those claims instead of following a "pay as you go" approach will increase the company's flexibility to deal with potentially high AIDS claims levels during the peak years.

Funding in advance through price increases now will mean that less severe price increases will be needed in the future, thus preventing high future lapses.

For participating policies, advance funding in the dividend formula is superior to reflecting AIDS only in studies of historical experience. There is a long time lag between the incidence of AIDS claims and when they will enter the dividend formula through experience adjustments. This method will lead to very large dividend adjustments that will be made after the fact, thus making it questionable whether these experience dividend adjustments can actually be implemented.

In the worst cases, advance funding for AIDS claims may give the company the simple ability to pay its claims. In this case, advance funding is for survival, not just flexibility.

As an example of an advance funding approach, consider the "delayed" slope dividend scale. Dividends are reduced now to build a fund that could be used to pay worst-case AIDS

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claims. If AIDS claims are not that high, those funds can be paid out as dividends higher than the current scale.

But, and this is the point, funds have been retained to pay high AIDS claims should that become necessary. If the current scale continues to be paid without building up such a fund, the reflection of experience will reduce dividends to recover those claims, but the reductions may become so large that they disrupt the pattern of dividends.

Basically, the AIDS management problem is really a surplus management problem. The company's AIDS strategy must center around the needs for adequate company surplus.

Then the AIDS problem can be seen as a type of asset-liability problem -- what resources will be available to meet AIDS claims? When considering how much surplus could be used to pay AIDS claims, management must consider other demands on company surplus. Such demands include dividends, debt payments, and growth needs.

Actuarial Standards Board Draft

What will the Actuarial Standards Board have to say about all of this? My last topic is the contents of the coming exposure draft of the actuarial standard of practice: "Guidance on Estimating and Providing for the Cost of HIV-Related Claims Covered Under Life and

Accident and Health Insurance Policies." What follows comes from the draft as it existed on August 30, 1989. There may well be substantial changes from this draft before the proposed standard is exposed for public comment.

This exposure draft is expected to be released in late October 1989, with the comment deadline ending February 15, 1990. Thus there will be no standard of practice in effect for year-end 1989, but the expected principles will be known.

The drafted standard of practice "sets out the considerations that bear on the actuary's professional responsibilities arising as a result of the Human Immunodeficiency Virus (HIV) epidemic."

The background comments state that a standard of practice is needed because "little guidance is currently available to actuaries in estimating and providing for extra claims resulting from HIV infection."

The background comments further state that "margins in statutory reserve bases are not intended to cover the full range of potential loss from mortality or morbidity that might occur in excess of the reserve base." It further states that "any such excesses should be covered by the insurer's capital and surplus funds."

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The drafted standard then discusses some of the pertinent characteristics of the epidemic. First, the epidemic is distributed unevenly across the U.S., being particularly concentrated in major metropolitan areas. But there are changes occurring in this distribution -- the prevalence of cases tends to be increasing in the lower prevalence areas.

Second, the prevalence of HIV-infection is certainly different among insured populations than it is among the general population. (The report of the SOA Task Force on the Financial Implications of AIDS contains a couple of ways to begin to analyze this difference.)

Third, insured AIDS claims experience will vary considerably by underwriting practices, including HIV-testing history.

Fourth, some products are more sensitive to antiselection and thus may have higher AIDS claims experience.

In the section on analysis of issues and recommended practices the drafted standard begins by stating that first the valuation actuary "will require an understanding of the company's strategy for dealing with the HIV epidemic." The company's strategy includes such matters as pricing, underwriting, marketing, surplus, and reserving philosophy.

Second, "the actuary must also ascertain the company's mortality and morbidity experience generally, and for HIV claims specifically, if possible."

Third, "the actuary may need to undertake cash flow testing" in order to give an opinion about the adequacy of reserves. There is an existing standard of practice on this subject that should be consulted. The AIDS epidemic is just one of the needs for doing such testing.

Fourth, the draft states: "If the cash flow testing indicates that reserves should be increased, . . . reserves should be increased directly; an allocation of surplus would not be sufficient." In order for the actuarial opinion to state that reserves are adequate, actual reserves must be adequate, not reserves plus certain surplus.

In performing this reserve testing, the actuary "should test a range of HIV impacts" to determine the possible outcomes.

The nature of the epidemic makes it virtually impossible for the actuary to make AIDS claims projections based on internal claims data. Thus, the standard recommends that "the actuary should consult with and be familiar with all available external information pertinent to his or her particular work, as well as the company's own experience." A bibliography is

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included, which contains such publications as the 1987 Cowell and Hoskins paper, the 1988 Society of Actuaries AIDS Task Force report, the 1988 Dave Holland papers, and the 1989 Society of Actuaries reports I referred to earlier.

The drafted standard stops short, however, of recommending specific numerical standards for AIDS mortality. Instead, it states that "the actuary will necessarily use judgement in selecting appropriate assumptions." Surely, any standard selected today would soon be out of date. Valuation actuaries must continue to base their assumptions on currently available information.

Finally, the drafted standard addresses communications and disclosures. The valuation actuary "should be prepared to demonstrate either that net statutory or GAAP reserves contain adequate provision for (AIDS claims) or that any excess claims cost not covered is provided for by an appropriation of surplus or by other adjustments."

The actuary should prepare a report documenting the assumptions made in developing this opinion. If no additional reserves are established, the actuary should fully document the reasons why.

Finally, if the actuary deviates from this standard, the actuarial communication should disclose "an appropriate and explicit statement with respect to the nature, rationale, and effect" of the procedure used.

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Trevor C. Howes, of Tillinghast's Toronto office next summarized the experience in Canada with respect to AIDS valuations. He reviewed the contents of the December 1988 Canadian Institute of Actuaries AIDS memorandums, and gave the highlights of a survey of Canadian insurers he conducted earlier this year. A copy of Trevor's survey results analysis is attached.

SURVEY OF 1988 AIDS PROVISIONS

I am pleased to report the principal findings of our recent survey concerning the treatment of the AIDS provision for 1988.

Ninety percent of the actuaries responding indicated that they established a provision for AIDS at the end of 1988, virtually all of whom followed the approach suggested by the Guidance Notes for valuation actuaries.

The remaining 10% studied the problem but didn't establish a provision for AIDS.

As indicated by the following table, most companies, stock or mutual, set up the AIDS provision as an actuarial liability.

GENERAL APPROACH TO AIDS PROVISION FOR 1988
NUMBER OF RESPONSES BY TYPE OF COMPANY

<u>Action Taken</u>	<u>Stock</u>		<u>Mutual</u>		<u>All Combined</u>	
AIDS not considered	0	0%	0	0%	0	0%
No AIDS provision but AIDS analyzed	4	13%	1	6%	5	10%
Actuarial liability	14	42%	9	53%	23	46%
Appropriation of surplus	13	39%	4	24%	17	34%
Combination of above	<u>2</u>	<u>13%</u>	<u>3</u>	<u>17%</u>	<u>5</u>	<u>10%</u>
Total responses	33	100%	17	100%	50	100%

Just over half the actuaries surveyed reduced the calculated AIDS provision by a further amount, most commonly based on the future difference between gross and net valuation premiums. The following table summarizes the methods used.

ADJUSTMENT TO CALCULATED AIDS PROVISION

<u>Method Used:</u>	<u>%</u>
No offset	42
Differences between gross and net	35
Redundant valuation margins	10
Other reasons	13

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For all companies combined, the scenario most commonly used to model AIDS was the one with declining future infections. As can be seen in the following tables, stock companies used the declining scenario more often than mutuals, and the conservatism of the approach increased according to the company size.

FUTURE INFECTION ASSUMPTIONS BY TYPE OF COMPANY

<u>Assumption</u>	<u>Stock</u>		<u>Mutual</u>		<u>All Combined</u>	
Level	7	24%	5	31%	12	27%
Declining	19	66%	6	38%	25	55%
Other	<u>3</u>	<u>10%</u>	<u>5</u>	<u>31%</u>	<u>8</u>	<u>18%</u>
Totals	29	100%	16	100%	45	100%

FUTURE INFECTION ASSUMPTIONS BY SIZE OF COMPANY (Assets in 1,000,000s)

<u>Assumption</u>	<u>Up to \$100</u>		<u>\$100 to \$500</u>		<u>\$500 to \$2,500</u>		<u>\$2,500 Plus</u>		<u>All Combined</u>	
Level	0	0%	5	31%	3	30%	4	40%	12	27%
Declining	8	89%	9	56%	5	50%	3	30%	25	55%
Other	<u>1</u>	<u>11%</u>	<u>2</u>	<u>13%</u>	<u>2</u>	<u>20%</u>	<u>3</u>	<u>30%</u>	<u>8</u>	<u>18%</u>
Totals	9	100%	16	100%	10	100%	10	100%	45	100%

The average values over all surveyed companies of the 1988 provision for AIDS per thousand of dollars of life insurance, were as follows:

AVERAGE AIDS PROVISION PER 1,000 BY LINE OF BUSINESS

<u>Line of Business</u>	<u>Stock</u>		<u>Mutual</u>		<u>Combined</u>	
	No.	Amt.	No.	Amt.	No.	Amt.
(Life)						
Non-par individual	(23)	\$1.17	(10)	\$0.68	(33)	\$1.02
Non-par individual (adjustable)	(11)	\$0.99	(6)	\$1.07	(11)	\$1.02
Par individual	(12)	\$0.65	(11)	\$0.52	(23)	\$0.59
Group Life	(2)	\$0.30	(3)	\$0.06	(5)	\$0.16

Finally, I want to thank you for your cooperation in completing the survey. If there is any way Tillinghast can assist you in the future, please don't hesitate to call.

Yours sincerely,

Trevor C. Howes

SURVEY OF 1988 PROVISIONS FOR AIDS CLAIMS

Please indicate the most applicable answers for your company to each of the following questions. Feel free to elaborate on any answers if you wish. REPLIES REQUESTED BY APRIL 15, 1989.

1. With respect to business in Canada, was a provision made for AIDS in the 1988 financial statements? If so, in what form?

- No -- AIDS problem not considered at this time.
- No -- AIDS problem studied, but no additional provision considered appropriate at this time.
- Yes -- a provision for AIDS was established by:
 - a special actuarial liability
 - an appropriation of surplus (or required reserve, for foreign companies)
 - a combination of the above

(If No, proceed directly to question 5.)

2. With respect to the AIDS provision established,
- a. Was the general approach suggested by the 1988 Guidance Notes for Valuation Actuaries followed?
 - Yes
 - No
 - b. Did you assume
 - level future infections?
 - declining future infections?
 - another approach to future infections?

3. Was the provision otherwise calculated reduced for other reasons? (More than one answer may apply.)

- No, no further offset taken
- Yes, reduction taken for future differences between gross and net valuation premiums
- Yes, reduction for redundant valuation margins taken
- Yes, reduction taken for reasons other than those above

4. Special provisions for AIDS were established at December 31, 1988 in the following amounts by line of business:

LIFE INSURANCE:	<u>Amount of Provision (\$000's)</u>	<u>Amount of Insurance In-Force (\$000's)</u>
Non-par Individual (fixed prem)	_____	_____
Non-par Individual (adjustable)	_____	_____
Par Individual	_____	_____
Group Life	_____	_____

ACCIDENT & SICKNESS INSURANCE:	<u>Amount of Provision (\$000,s)</u>	<u>Premiums In-Force (\$000's)</u>
Individual LTD	_____	_____
Group LTD	_____	_____
Group Health	_____	_____

5. a. Company Name: _____

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b. Company Classification:

- Stock
- Mutual
- Foreign
- Canadian
- Direct Writer Reinsurer Both

c. Size of Company: (Assets in Canada)

- Under \$100 million
- \$100 to \$500 million
- \$500 to \$2,500 million
- Over \$2.5 billion

d. I would would not be interested in participating in a more detailed survey, or in future surveys on the topic of AIDS. (Please indicate specific interests or any suggestions as to preferred wording of questions.)

Completed by: _____

Title: _____ Phone: _____

All answers will be kept CONFIDENTIAL. A summary of responses will be distributed to all participants, as soon as possible. Please send completed surveys to: Trevor Howes, Tillinghast, 250 Bloor Street East, Toronto, Ontario M4W 3N3.

Thanks for participating!