

# RECORD OF SOCIETY OF ACTUARIES 1992 VOL. 18 NO. 1B

## AIDS UPDATE AND RESERVING

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Panelists: ROBERT W. BEAL  
              JON EISENHANDLER\*  
              TIMOTHY F. HARRIS  
Recorder: DOROTHY GERHART PETERSEN

- Experience, trends and projections
- Medical and disability points of view
- Pricing, underwriting and epidemiologic implications
- Results of survey on current practices

MR. WILLIAM F. BLUHM: Dr. Jon Eisenhandler received his Ph.D. from the University of Massachusetts and is the manager of special projects and analyses in the actuarial department of Empire Blue Cross and Blue Shield in New York. His primary responsibilities are in systems development for the actuarial department and analyses related to health care utilization, including AIDS. He has worked with AIDS data since 1986 and designed Empire's automated methodology, which identifies AIDS cases and claims for reporting and analysis. He is responsible for Empire's AIDS utilization projections and helped design and develop the "at-home options program," an experimental program of enhanced home care for people with AIDS.

Bob Beal is Vice President of finance for individual disability income at UNUM. Bob is a member of the Academy Committee on State Health Issues, and is on the Society Task Force for Financial Implications of AIDS. He was the principal contributor and writer of the AIDS Report for Disability Income that came out recently. Bob is the editor of the Professional Actuarial Specialty Guide on Individual Disability Income.

Tim Harris is with Milliman & Robertson and manages the St. Louis life practice. He has written several papers including "Reserving for AIDS" and "Applications of Standards of Practice." Tim is on the Life Committee of the Actuarial Standards Board and points out that the survey he will discuss has been quoted in *USA Today*, *The Wall Street Journal*, *The National Underwriter*, and *Contingencies*.

DR. JON EISENHANDLER: I've come here to discuss AIDS, or more accurately, the HIV experience that Empire Blue Cross and Blue Shield has seen. Before I get into the substance of my presentation, I'd like to give you a little background information, so you can place our experience into context. Empire Blue Cross and Blue Shield operates in eastern New York state, from New York City and Long Island north to the Canadian border. By operate I mean that we sell health insurance to people and groups who reside or work in our region. While we insure people outside of our operating area, for those people there must be some New York connection. It goes without saying that most of our business is in the New York City metropolitan area, the region that has arguably been the center of the HIV epidemic in the United States. We currently provide health insurance to about nine million people. We, for lack of a

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better term, are a "traditional Blue." We are a "not-for-profit" corporation. We receive a hospital discount to help support our social mission. This mission is manifested in a variety of ways. We still community-rate our small-group and individual policies. We do not medically underwrite in any meaningful fashion. We have open enrollment. Especially relevant in this forum is that we do not test, and indeed have opposed testing, for HIV infection.

Having said this, I must also point out that Empire as a company is now at a cross-roads. Some of you may have heard that late last summer we asked the New York State Insurance Department for permission to modify our traditional small-group, community-rated policies, such that we would be allowed to place small groups into low- and high-risk pools, with the group's rates to be a function of its pool and demographics. Our application was motivated by the fact that commercial insurers have progressively stripped away our best, that is to say our least utilizing, small groups. This has led to a significant deterioration of our community-rated pools.

Clearly AIDS, or HIV, is part of this problem. However, it would be wrong to attribute our problems in the individual and small-group market solely, or even largely, to AIDS. AIDS is but one of a panoply of problems in these markets.

From the start of the epidemic through December 31, 1991, we have identified more than 16,000 cases of AIDS among our customers. To put this in perspective, we at least partially insure about 25% of the cases in New York City, and about 30% of the cases in New York state. We have also insured many other cases in other states. Our annual incidence is about 3,000 new cases per year. This number has been stable since 1988. If, for the sake of argument, we ignore our declining enrollment for the last few years, this stability suggests that the epidemic is either peaking or at least reaching a plateau in our area. The composition of the epidemic is changing. We are seeing increasing numbers of women and children with AIDS. In our 1991 data, almost 20% of our new cases are women or children, a pattern not terribly different from the experience of New York City as a whole.

In terms of our corporation, about 0.03%, or about 3 in 10,000, of our customers are diagnosed with AIDS every year. At any given time, I estimate about 0.1%, or about 1 in 1,000, of our customers have been treated for the effects of HIV, be it for early symptoms, who are not included in the 16,000 cases of AIDS, or for full-blown AIDS, who are the 16,000 cases. I estimate that about 60,000, or 0.6% of our customers, are currently infected with HIV. This estimate is based on the assumption that 5% of HIV-infected people develop AIDS in any given year. Assuming this estimate is reasonably accurate – which, given both the literature and the sustained incidence, there is no reason to doubt that it is not – it is clear that even without additional HIV infections, the epidemic will be with us for some time to come.

It goes without saying that the epidemic has had an impact on our claim costs. For claims incurred in 1991, I have conservatively projected that we will pay about \$210 million for HIV-related care. This \$210 million represents about 3.2% of our total claim costs. This is much higher than industry norms, where I understand HIV-related costs are in the 1-2% range. Before you attribute this large HIV cost to our lack of testing and open enrollment policies, you must realize that most of our business is with large, experience-rated accounts, and they are not subject to these policies. All

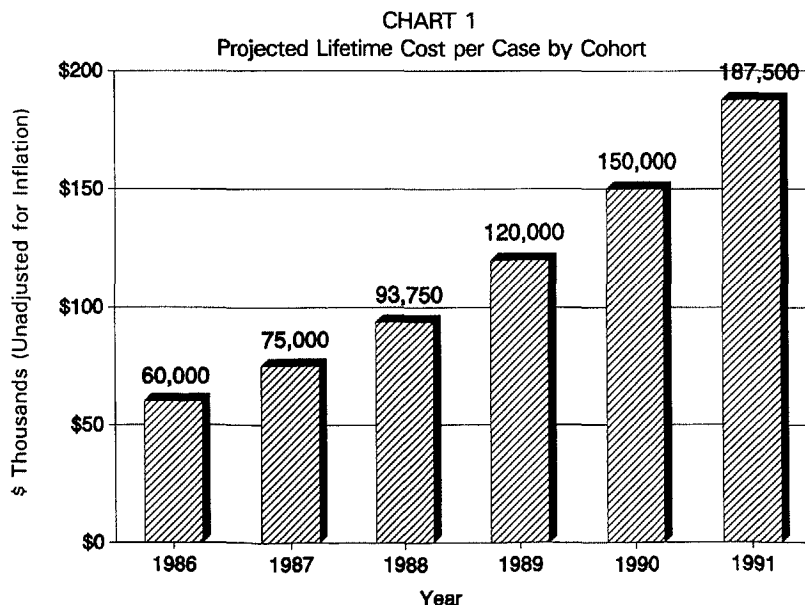
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things considered, the epidemic has been experienced proportionately across our different market segments. This, however, is changing in the small-group segment, as our competitors aggressively pursue healthier groups, i.e., those without significant health problems such as HIV-infected members.

More important than our underwriting policies in explaining the impact of HIV is the fact that we sell health insurance only in eastern New York, a region of extremely high AIDS prevalence. Our level of HIV costs may not be too dissimilar from the New York experience of other insurers. However, unlike them, our experience is not diluted by being spread over areas with a low prevalence of AIDS.

One of the better features of our AIDS analysis at Empire is a cohort analysis of HIV-related costs. This cohort analysis has enabled us to get a good handle on the trends and patterns of HIV-related cost and utilization, because now we can compare people diagnosed with AIDS at different stages of the epidemic. People are placed into cohorts based on the year in which we identified them as having AIDS. This identification is made on the basis of hospital diagnoses. We define HIV-related costs and utilization as all medical costs (less those associated with pregnancy) in the period beginning three years prior to our case identification. The earlier period is included, because we have discovered that utilization begins to increase at this point. Needless to say, our calculation of HIV-related costs continues through the termination of coverage.

Having said all this, the trends we see are quite simple (Chart 1).

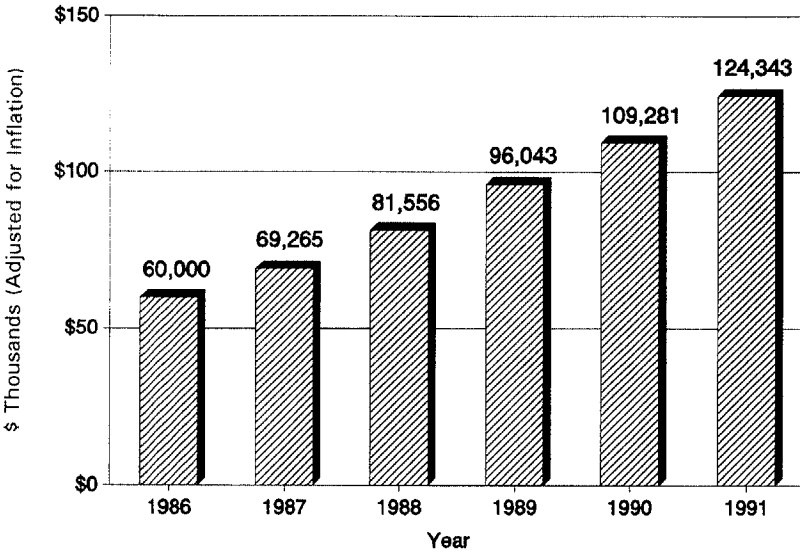


The lifetime costs of treating the effects of HIV infection, which I suspect were actually stable in absolute dollars, and even diminishing in inflation-adjusted dollars, in

the early years of the epidemic, have in the last few years been going up at a rate of about 25% per year. This rapid increase in cost is occurring despite efforts to contain costs. There are three reasons for this: inflation, improved survival, and more aggressive treatment, especially in the outpatient area.

A substantial portion of the cost increase is due to inflation. For example, in 1986, the average cost of an inpatient day for an HIV-related admission was \$590. By 1990 the figure was \$872, an increase of 47%. If we adjust for inflation, lifetime costs, though increasing at a lesser rate, have doubled since 1986 (Chart 2).

CHART 2  
Projected Lifetime Cost per Case by Cohort

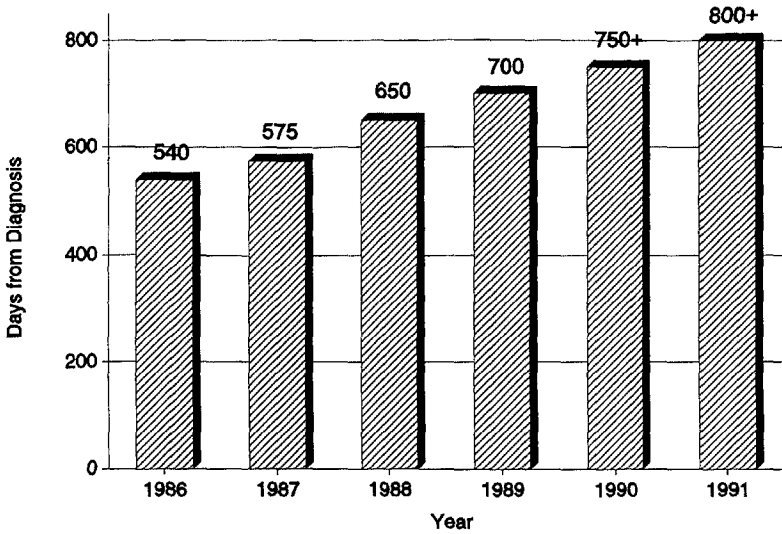


Apart from inflation, HIV-related costs are going up because of increased survival. We have seen the average survival after diagnosis go from about 540 days, or about 18 months, for the cohort of 1986, to what I conservatively project will probably be more than two years, or at least 750 days, for the cohort of 1990, and 800+ days for the cohort of 1991 (Chart 3). The impact of increased survival is twofold. First, people live longer and consequently require and utilize more services. Second, people who would have died a few years ago, now survive. These individuals are oftentimes acutely ill, and require aggressive and expensive therapies to keep them alive. We see our costs reflecting the prolongation of the process of dying.

The third reason is more aggressive treatment outside of the hospital setting. Treatment begins earlier, and is much more aggressive throughout the course of the illness. I believe it is fair to say that AIDS is changing from a disease that treated primarily in an inpatient hospital setting, to one that is treated primarily in outpatient settings. We see this in the cost data quite clearly.

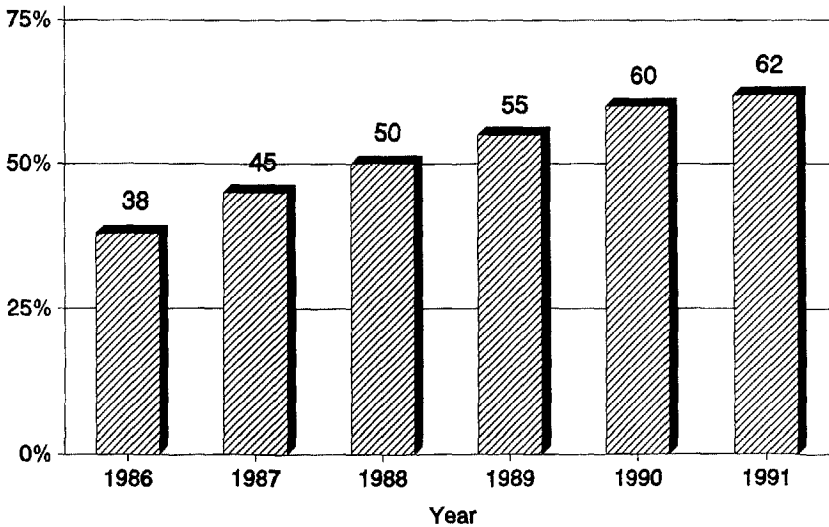
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CHART 3  
Projected Survival by Cohort



The percentage of costs associated with noninstitutional care has increased from slightly less than 40% for the cohort of 1986, to a projection of over 60% for the cohort of 1991 (Chart 4).

CHART 4  
Lifetime Costs Percent Noninpatient by Cohort

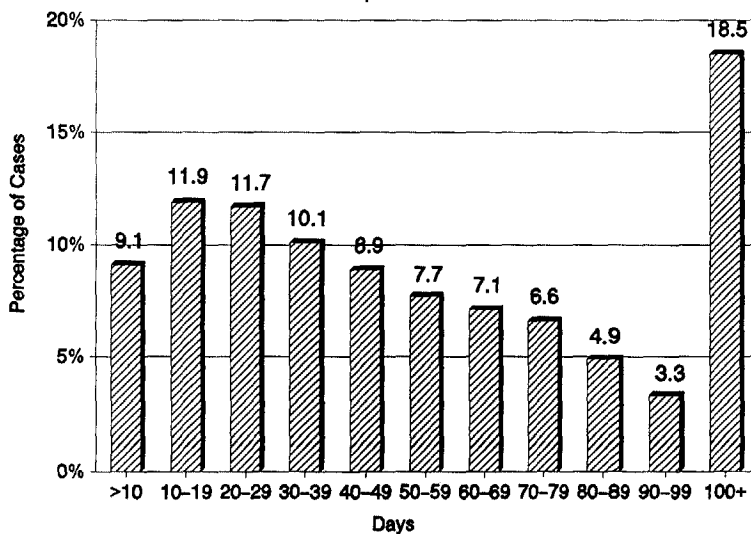


The financial impact of the aggressive use of outpatient care can be seen throughout the course of disease. In the earlier stages of the disease, average daily charges of the cohort of 1987 were less than \$4. For the cohort of 1990, they were more than \$9. In other words, it doubled, so instead of spending a couple thousand dollars in the three years before diagnosis, we are now spending about \$10,000. Comparable data for the period after diagnosis show similar trends. The average nonhospital charges per day after AIDS diagnosis and through death have increased from less than \$50 per day for the cohort of 1987, to what will probably be approximately \$100 per day for the cohort of 1990, and even more for later cohorts. Even if these numbers are adjusted for inflation, the increase, from \$50 to about \$75, is substantial. This increase again reflects the use of more aggressive therapy, keeping people alive who would have otherwise died with similar causes.

Average costs, however, can be somewhat deceiving. This is especially true when one is concerned with the experience of a few cases, which is all a typical group might have. At the individual level, AIDS is a difficult disease to predict. Within the cohorts there is a great deal of variation in utilization.

In my data, I have seen people for whom the course of disease is fairly quick, who require very little in terms of level of care, and others who survive for a considerable period of time and require a great deal of care. To illustrate this, let's look at the inpatient experience of the cohort of 1987, most of whose members are now dead (Chart 5). Some people incurred comparatively few inpatient days. Just under 10% required less than 10 days. More than half of the cohort required less than 50 inpatient days. On the other hand, a sizable minority, 18.5%, required over 100 days in the hospital. For these, you can say that AIDS is a financially catastrophic disease.

CHART 5  
Cohort of 1987  
Lifetime Inpatient Utilization



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What does all this mean for issues of actuarial concern such as pricing, reserving, etc? It means that AIDS cannot be priced for any but the largest groups. The reason for this is simple. AIDS is too unpredictable. Cases are infrequent. Our experience in the geographical heart of the epidemic is an annual incidence of three cases per 10,000 covered lives. For groups based outside of the high-incidence area, AIDS is an even more infrequent experience. Obviously, the experience of individual groups will vary from this average. Even if you can predict the number of cases, you can't predict the costs for what will most certainly be only a handful of cases. Some individuals require a great deal of medical care, others require comparatively little. Lifetime costs per case are too variable, and cannot be predicted on the group level with any kind of accuracy.

Given that HIV/AIDS costs cannot be predicted, what then is the solution? The only solution is to treat AIDS as a comparatively rare catastrophic illness. Treat it much the same way you treat a transplant, a bad burn case, premature birth, etc.

You must provide some way to buffer a group's experience. Risk pools and reinsurance are what we do at Empire.

For AIDS, like other rare catastrophic illnesses, the answer is simply a matter of spreading risks to minimize the impact on individual groups. For our small-group and individual customers, we are essentially maintaining risk pools, albeit deteriorating, and requiring massive subsidies. For our larger groups (up to 2,000 lives), we require participation in a catastrophic claims protection program. This approach protects both us and our customers from the impact of shock claims. It gives our customers some measure of rate stability in the face of this epidemic, an epidemic that will continue for the foreseeable future.

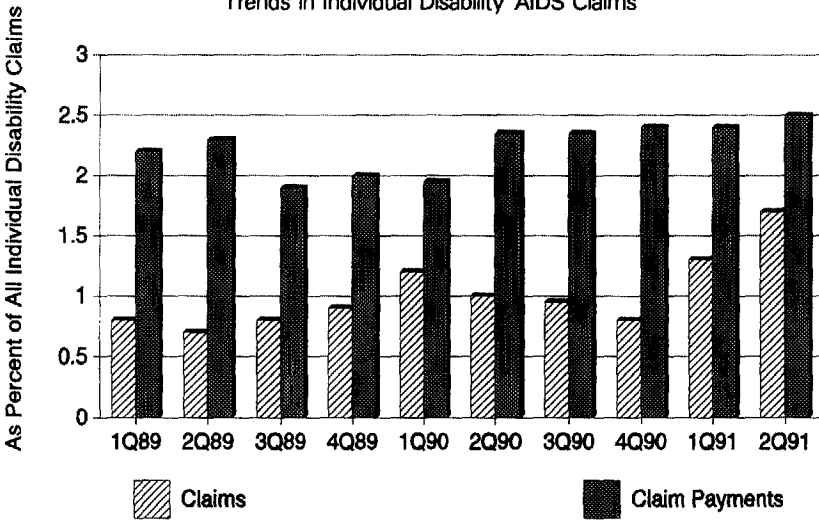
MR. ROBERT W. BEAL: Bill has asked me to give an update on the impact of AIDS on individual disability income experience. My company is the third-largest individual disability carrier in the U.S. in terms of sales, so the impact of AIDS on us should be similar to that of the industry of individual disability carriers in the U.S. I will review some industry statistics, but generally will discuss statistics relevant to my own company's experience. I would like to cover the following subjects as they pertain to individual disability. First, I will review the industry and company AIDS experience and then the impact on underwriting. Next, I'll talk about pricing and reserving, and finally give a quick overview of future developments as they pertain to this line of business.

### **AIDS EXPERIENCE**

Since the first quarter of 1989, the Health Insurance Association of America (HIAA) has conducted a survey among companies that represent the largest insurers in both the individual and group disability business. Participating companies reported AIDS claims using the Center for Disease Control (CDC) definition for AIDS, and considered all claims reasonably related to death or illness arising from the HIV infection. The HIAA reported that between the first quarter of 1989 and the fourth quarter of 1990, the number of reported AIDS claims nearly doubled. However, this fact by itself may or may not be startling.

Chart 6 summarizes some key HIAA survey results for individual disability income. It shows the trend in the AIDS claims from the survey, looking at claims as a percentage of all individual disability claims. The number of AIDS claims as a percentage of all individual disability claims has generally grown from 0.7-1.7% over the 2.5-year period. During 1990, this percentage dropped to below 1%, but turned around and increased steadily during the first two quarters of last year. It's impossible to say that the increases last year represent a surge in new AIDS claims, or just random fluctuations among a generally increasing trend. On the other hand, AIDS claim payments as a percent of all individual disability claim payments stayed relatively flat over the 2.5-year period.

CHART 6  
Trends in Individual Disability AIDS Claims



My company's individual disability experience has not been significantly different from the industry's. New AIDS claims in 1989, 1990, and 1991 were 2%, 1.4%, and 1.5% of all new claims. This trend appears headed in the right direction. Actually, we can get a better feel of the relative growth in our AIDS claims by grouping claims by calendar year of incurral.

Chart 7 shows the percentage of AIDS claims to all claims for my company, by year of incurral from 1985-90. This chart suggests that the relative impact of AIDS on my company's individual disability line may have peaked in 1988. However, as happened with the HIAA claims, our experience could change quickly in a matter of a few calendar quarters. Reporting the relative impact of AIDS on individual disability claims, whether by industry or by company, can distort the true trend in AIDS claims. This could occur if the underlying trend in non-AIDS claims is either increasing or decreasing rapidly. With this in mind, I decided to obtain my company's actual incidence rates of AIDS claims, relative to the total in-force exposed.

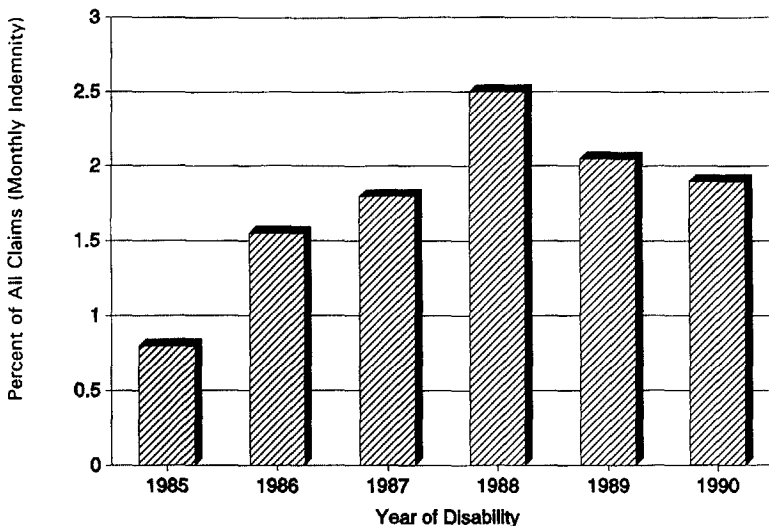
Chart 8 illustrates our incidence rates of AIDS claims by year of incurral from 1985-90. The bar graph represents all issue years combined. It appears that the incidence



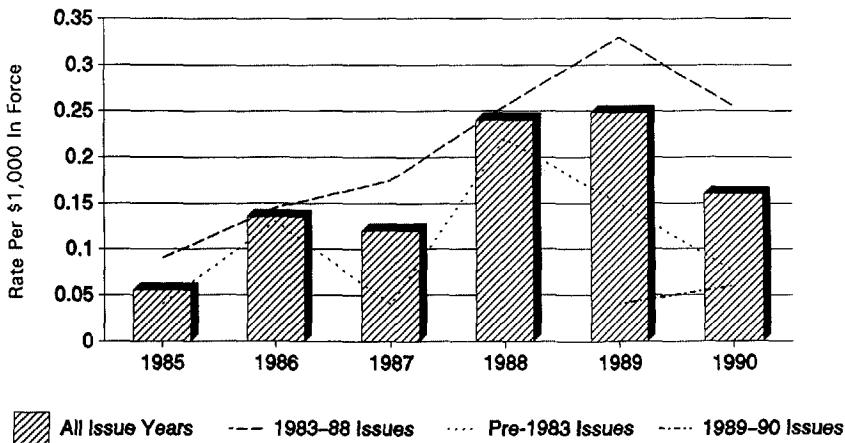
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rates peaked in the 1988-89 period at roughly 25 per 100,000, and then dropped substantially in 1990 to 16 per 100,000. I was somewhat surprised that Jon had mentioned an incidence rate of roughly 30 per 100,000. So comparing our experience in New York, I'll have to go back and reevaluate I guess.

**CHART 7**  
UNUM Individual Disability AIDS Claims



**CHART 8**  
UNUM Individual Disability AIDS Experience  
Incidence Rates by Year of Disability



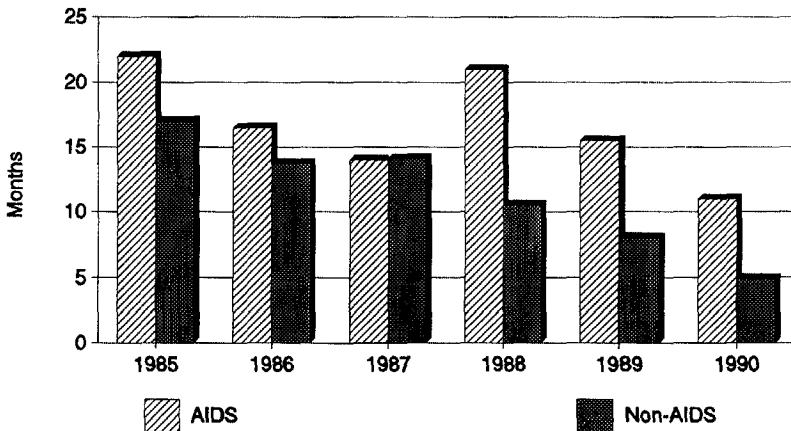
Breaking these incidence rates down by issue year gives a clearer picture of the underlying trends in our individual disability AIDS claims. I first grouped all business issued prior to 1983, believing that this experience might track closer to the general population trends and be less affected by antiselection in newer business. In general, the AIDS incidence rates for this business have remained relatively low, peaking in 1988, and dropping significantly each year thereafter. On the other hand, the business issued between 1983-88 shows the greatest impact from antiselection. My company began blood-testing in mid-1987, but statistically, the incidence of AIDS claims on new business did not drop substantially until 1989. Apparently, in 1987 and 1988, a number of AIDS claims were getting in under the blood-testing limit.

The HIAA survey also reports the average duration of AIDS claims. For individual disability, the average duration of AIDS claims has increased from 10 months in early 1989 to 14 months by mid-1991. However, in my opinion, this figure is a little deceiving, since it's based on only closed claims.

With a block of new claims, the average duration of closed claims will be shorter than the ultimate average duration of the whole block of claims, but will generally increase over time as the block matures.

As a better indicator of the cost of AIDS claims relative to others, I like to look at the average duration of claims by calendar year of incurral, and include both the open and closed claims. Chart 9 compares the average duration of our experience as of December 31, 1991 for the various cohorts of claims at my company.

CHART 9  
Average Duration of AIDS Claims  
Relative to Non-AIDS Claims  
UNUM Experience Includes Open and Closed Claims



Average duration is defined here as the total payments paid to date, divided by the monthly indemnity for all claims disabled in a given year, including the ones still open. This chart drives home the fact that in spite of some of the high mortality rates

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associated with AIDS claims, the total benefits paid on an average AIDS claim will most likely be higher than on a non-AIDS claim. This is because the monthly termination rates for AIDS claims stay in the 3-4% range during the first couple years (actually indications are that it goes beyond that), compared to non-AIDS claims, which typically have monthly termination rates of 30%, dropping quite quickly to 1% during the same time frame. As each cohort of claims matures, I expect the duration of AIDS and non-AIDS claims to become closer, but not necessarily converge.

I think many of us might conclude that the impact of the AIDS epidemic on individual disability income insurance has not lived up to our worst fears, at least, not yet. In late 1990, the CDC revised its estimate of the number of HIV-infected lives in the U.S. from 1.5 million to 1 million.

It also reduced its projection of new diagnosed cases in 1990, 1991, and 1992 by 15%, 16% and 17%. The individual disability income statistics that I've just shared indicate that the cost of AIDS on this business has not gotten so large as to be labeled devastating and appears to be waning.

Certainly, other forces in the individual disability market have had a much greater impact on the market's overall claim experience in recent years.

In spite of these observations, we may not be out of the woods yet. The threat of the epidemic advancing throughout the heterosexual insurable population always exists. But even more realistically, the potential impact of the HIV asymptomatic risk may be closer than we'd like, particularly in the health care market. I'll talk more about this later when I discuss future developments.

### **IMPACT ON UNDERWRITING**

Now let's turn our attention to the impact of AIDS on underwriting. By 1988, most disability income carriers had begun to implement blood testing for the HIV virus in their underwriting requirements. As I said before, my company initiated blood testing in mid-1987. The early blood tests involved drawing two or three tubes of blood from the applicant and having the laboratory perform a battery of tests. What we discovered was that not only could we screen for the AIDS virus, but there was a lot of other valuable information becoming available. We could now detect liver problems, diabetes, and high cholesterol, among other things. In fact, as the incidence of AIDS claims never seemed to reach our worst expectations, many of us felt (or at least hoped) that the value of this additional information might more than offset the cost of the future AIDS claims.

Now that the state regulatory obstacles around blood testing have been removed, the disability income carriers have worked to fine-tune their blood testing requirements, seeking an acceptable balance between protective value, cost, and customer acceptability. I'd like to mention a couple of issues around the blood test that we had to face.

First was the cost of blood testing. Insurers found that the expense of underwriting costs skyrocketed with the new blood tests, since typically 15 various tests were performed. Even though they found the information valuable, insurers looked for simpler and cheaper tests that would still do an effective HIV screen and provide much of the

same important non-HIV data. My company replaced the Chem-15 blood test with a microtest that provides a gamma glutamyl transpeptidase (GGT) liver function test, a glycohemoglobin test for diabetes, and a cholesterol check, in addition to the HIV test. Some companies have also controlled blood-testing costs by raising limits in low-AIDS-incidence states and dropping them in high-incidence states. This ensures that the HIV test would be a much more cost-effective screen.

The second issue is customer appeal. The thought of having blood drawn is not appealing to many people. Thus, it was not surprising that this aspect of the underwriting process was greeted by agents with little enthusiasm. In response, companies have tried more appealing ways to get the same data, or at least test for HIV. There are several alternatives to drawing blood from the applicant's vein, which my doctors call the venipuncture method. First, there is the finger stick method, where the finger is pricked and the blood sample is absorbed onto a filter paper, or collected into a small plastic container. Then there is the urine HIV test, and the saliva HIV test. The urine and saliva HIV tests appear to have traded the protective value of the non-HIV blood tests for more customer appeal. Unfortunately, for the laboratories that developed these two tests, the Food and Drug Administration has yanked them for now. My company allows the applicant the choice of either the finger stick or the venipuncture method. In my opinion, it hurts less to have blood drawn from the vein than from the top of my finger, but then to each his own.

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Next, I would like to discuss the financial side of the issue, particularly the pricing and reserving. When the AIDS epidemic first started to get significant attention from the individual disability carriers, many of us actuaries probably felt that we were between a rock and a hard place. Since about 90% of the individual disability insurance written is noncancelable, we knew we couldn't do anything about the in-force business, because the rates were guaranteed. We could only direct our attention to repricing new business, but if we price based upon our worst fears, our products would be uncompetitive. Subsequently, our companies implemented blood testing, and we all hoped that the extra benefits of blood testing were sufficient to cover the extra cost of this additional underwriting requirement and the cost of any new AIDS claims. Luckily, the competitive pressures have reversed themselves somewhat, and companies are now a little more able to increase rates than they were for the last few years. However, the additional margins in the new rates are intended to cover not only the cost of AIDS, but worsening non-AIDS experience, and last, but not necessarily least, the DAC tax.

Now let's visit reserves. There has been some discussion around whether or not there should be special reserves set up recognizing AIDS. The 1990 *Transactions* contained a report written by the Society Task Force on the Financial Implications of AIDS, titled, "The Financial Implications of AIDS for Life Insurance Companies in the United States." This was followed by a second report addressing the specific individual disability issues. The objectives of this task force were threefold: first, to provide information useful in the assessment of the financial effect of AIDS; second, to provide recommendations regarding the role of the valuation actuary in addressing the impact of AIDS; and third, to evaluate alternative means of reserving for AIDS in statutory and GAAP financial statements. The task force concluded that it is "essential for all actuaries responsible for reserve valuations to evaluate the effect of AIDS on

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their companies." It recommended that these analyses include, at a minimum, development of estimates of the cost of AIDS and studies of the adequacy of reserves in the face of AIDS. Although the task force did not recommend that special reserves for AIDS be held, it did conclude that "in the event that reserves need strengthening, it is appropriate that the actuary recommend to management the specific manner in which reserves should be established for AIDS."

In 1991, the consulting firm of Milliman & Robertson, and Mr. Harris in particular, conducted its second annual AIDS Reserving Survey. Out of the 100 companies surveyed that had individual disability insurance in force, only five established an additional reserve for AIDS at the end of 1990. Thirty-eight companies responded that AIDS was covered by margins in the reserve tables, and 49 responded that they felt the AIDS risk (as it applied to individual disability) was insignificant. I suspect the latter response in many cases reflected the relatively small sizes of the various in-force blocks, and not necessarily an imprudent attitude towards the AIDS risk.

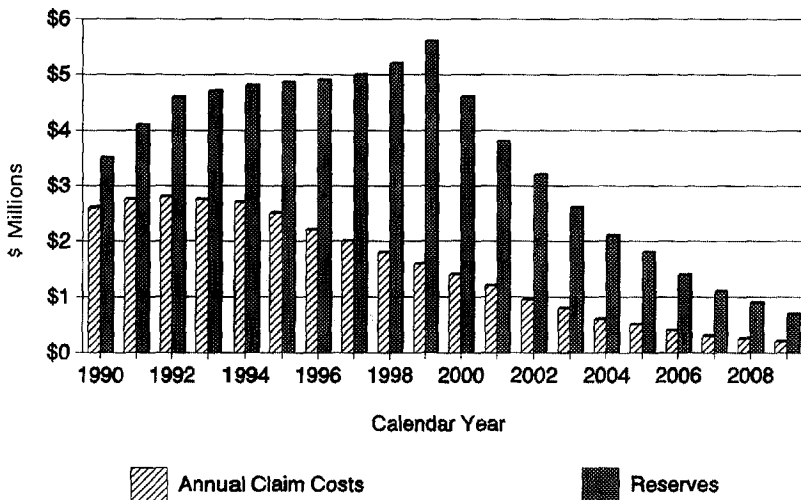
My company was one of the five respondents holding an additional individual disability reserve for AIDS. Now I know some of you are probably saying, "now, isn't he special." Our initial concern was that the GAAP active life reserves for business issued prior to 1990 may not have sufficient margin to absorb the extra AIDS claims. For business issued in 1990 and later, we felt that the pricing covered the risk. We then decided to hold the same reserves for both statutory and GAAP. If I had been so inclined, I could have argued that the statutory active life reserves had sufficient margin to cover the AIDS risk, since the statutory reserves on our business issued prior to 1988 are based upon the conservative 1964 Commissioners Disability Table (CDT), and the AIDS reserve that we developed was not very large relative to that basic reserve. However, we felt that the additional conservatism was reasonable, in light of the considerable uncertainty about the magnitude of the emerging risk. In retrospect, I think I should have recognized only the after-tax cost of the AIDS claims in the statutory reserves. Even though it is not a tax-qualified reserve, the future AIDS claims would be tax deductible. So I think a little redundancy is there, as well.

Our method for setting up the additional AIDS reserves involves first projecting the future AIDS claims from business issued prior to 1990. To do this, we rely heavily on the Society of Actuaries HIV Research Committee general population model, which is also included in the 1990 *Transactions*. Our actual AIDS claim incidence was compared to expected claims based upon the general population model. This gave us the adjustment factors that reflected our own level of experience, and that could be applied to the incidence of future claims from the general population model.

The future AIDS claim costs were projected to the year 2019. We estimated the present value of these costs as of December 31, 1989, when we set these reserves up, to be a full \$16-20 million. We decided to initially just fund \$2.5 million, and then fund the remaining reserve to a level percentage of the persisting premium on this block of business for the years 1990-99. This meant that this business had to have available margins of 2.2% of premium to cover the risk. If we had felt the margin was not available, then the entire present value of future claims might have had to be prefunded at the end of 1989. Chart 10 shows the future annual AIDS claim costs and the pattern of the additional AIDS reserves through the year 2009. After 1999, these reserves are paid up. We have monitored the emerging incidence of AIDS

claims in 1990 and 1991 against the assumptions in those reserves. It appears that experience is running about 70% of expected.

CHART 10  
Future AIDS Claim Costs and AIDS Reserves



At the same time that we were setting up additional active life reserves, we also began valuing claim reserves for AIDS claims using termination rates that reflected AIDS experience. As to be expected, AIDS claim terminations are primarily due to death. The Society of Actuaries model of the general population assumed annual mortality rates of 40%, 40% and 35% in the first three years, and 25% thereafter. My company assumed an annualized claim termination of only 35% in the first three years of disability, and 25% thereafter to recognize improving survival rates among AIDS victims. Recently I tested our experience against those assumptions, and saw that our actual claim termination experience over the last few years had been 30.6% in the first year after incurral, 44% in year two, 43.9% in year three, and 33.4% thereafter. On average, the annualized termination rate for AIDS claims has been 36%.

The claim reserve pattern for AIDS claims under these assumptions is considerably different than for non-AIDS claims. Chart 11 compares the claim reserves per \$1 monthly indemnity for a claimant age 35 at disability with a 30-day elimination period and a to-age 65 benefit period. The non-AIDS reserves are based on the 1985 Commissioners Individual Disability Table A (CIDA) discounted at 6% per year, and the AIDS reserves are based on my company's AIDS termination assumption.

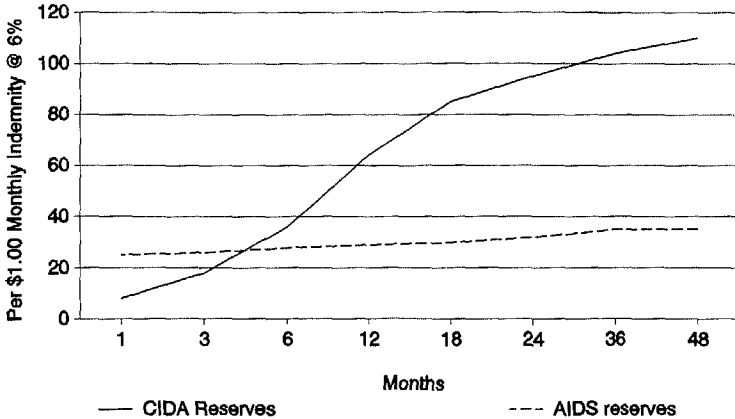
The AIDS reserves are considerably greater early in the disability, but the difference disappears quickly. The non-AIDS reserves continue to climb, but the AIDS reserves remain quite flat. I think this approach is worthwhile. However, if you do this with

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statutory reserves, you need to test to make sure your statutory reserves in total satisfy the statutory minimums as defined.

CHART 11

Claim Reserves AIDS versus Commissioners Individual Disability Table A



Age 35, 30-day elimination period, to age 65 benefit period.

### FUTURE DEVELOPMENTS

Until now, you may feel that my comments reflect an element of complacency, that possibly for individual disability insurers, the worst of the epidemic is over, that possibly we have things under control with blood testing, higher rates, and for some, extra reserves. I wish that was the case. Unfortunately, there are social developments right now that may have a dramatic impact on the overall cost of the AIDS epidemic for individual disability insurers.

I'm not referring to the risk of the AIDS epidemic accelerating in the heterosexual insured population, although this could become a larger concern in the not-too-distant future. Rather, I'm referring to the HIV asymptomatic risk, or more specifically, the question of whether a seropositive health care worker with an individual disability policy is contractually disabled if he or she is suffering a financial loss due to the infection, but is not functionally disabled. The tragedy of five patients who contracted the HIV infection from a seropositive dentist in Florida has brought to the forefront of public debate the question of whether HIV-infected medical practitioners should be required to stop performing procedures that put patients at risk of infection, or at least inform patients that they are seropositive. The risk of such a transmission appears to be extremely small. In fact, the five infected patients of the Florida dentist are the only documented cases of such a transmission to date.

The CDC estimates the probability that a seropositive surgeon will pass the virus to a patient during an operation to be between 1 in 42,000 and 1 in 420,000. But the fear of contracting the virus through involuntary exposure and the ominous prognosis

once infected certainly overrides the smallness of these probabilities. A *Newsweek* poll in June 1991 showed that public opinion supports restricting the activities for health care workers. Ninety-four percent of the sample of 618 adults agreed that all physicians and dentists should be required to tell patients if they are infected with HIV; 63% said seropositive surgeons should be prohibited to practice; 60% said seropositive dentists should be prohibited; and 51% said all seropositive physicians should not practice.

In July 1991, the CDC issued a recommendation that "health care workers who perform exposure-prone invasive procedures should know their HIV antibody status." It further said that HIV-infected health care workers should perform exposure-prone invasive procedures, only if an expert review panel so advises, and if they inform patients that they are seropositive. The CDC was then planning to compile a list of "exposure-prone" invasive procedures. However, the CDC opposed restrictions on the clinical activities of health care workers who perform nonexposure-prone invasive procedures, provided they use recommended techniques and comply with universal precautions and sterilization/disinfection procedures. It also stated that the seropositive health care workers who comply with universal precautions and sterilization procedures, but who do not perform invasive procedures, pose no risk of transmitting HIV to patients.

Facing strong dissent from the medical community, the CDC dropped its plan to compile a list of "exposure-prone" invasive procedures, and modified its earlier recommendation. It now refers only to invasive procedures. The CDC's new recommendation is that health care workers who perform invasive surgical, dental, or obstetric procedures should know their HIV antibody status. Furthermore, it said that an expert review panel should decide on an individual basis which invasive procedures seropositive health care workers may or may not perform, and when patients must be told that a health care worker is HIV infected.

How do all of these issues affect individual disability carriers? First, let me state that all major disability income contracts in the marketplace today are obligated to pay for disabilities that result from the HIV virus and AIDS. The issue centers on contractual obligation to those who have a financial loss as a result of being unable to work due to testing positive, rather than as a result of being functionally disabled. This is a significant issue for many health care workers who fear that should they become infected, they will be required to terminate their practice, hence, their source of income. This requirement may be forced upon them by a review panel or by voluntary or involuntary disclosure of their seropositivity to their patients. And this could occur while they are otherwise functionally able to practice their occupation.

This issue has been addressed by many individual disability carriers through extra-contractual administrative letters stating the company's various stances toward the coverage available, between the time one tests positive for HIV and the time one becomes functionally disabled. My company states that "benefits would be payable during that time period in question to health care workers whose occupation requires performance of certain exposure-prone procedures that might be lawfully mandated by a legally constituted licensing body not to perform those procedures." I understand that's one of the more conservative views in the marketplace; there are several other company stances. There is plenty of room for honest differences in opinion and



## AIDS UPDATE AND RESERVING

approach to this issue. The unfortunate development occurs when one company's stance is used as a competitive advantage over another. I suspect no one wins in that battle.

In summary, we are not out of the woods yet with respect to the AIDS epidemic. Before it goes away entirely and that will be many, many years from now, I'm sure the AIDS risk as it affects individual disability insurance will take on many new faces. We must continue to be diligent and responsible in formulating our best solutions.

MR. TIMOTHY F. HARRIS: What are the other actuaries doing? That's what we tried to find out the last three years in surveys that we sent out. We've also covered cash-flow testing as well in the past two surveys. Why have we done this survey? As consulting actuaries, people expect us to do this type of thing. Also our client assignments had revealed an apathy, or a lack of attention to the AIDS issue, when we did our first survey three years ago. That was combined with the fact that I am, and have been, a member of the Life Committee of the Actuarial Standards Board, and in 1990 we were addressing a potential standard on reserving for AIDS, but nobody was really sure what actuaries were doing in this area. There was a general impression that there was some apathy, and we thought we'd do the survey to find out what was actually going on.

Our first survey indicated that somewhere in the neighborhood of 15% of the responding actuaries had not even looked at the literature on the AIDS risk, and about one-half of the actuaries had not projected their company's AIDS claims. This year's survey was mailed out to 404 U.S. companies. Included were companies that reported at least \$20 million of gross income in the most recent year. We received 140 responses to the survey, including 33 from mutual or fraternal companies, 96 from stock companies, and 11 from Blue Cross/Blue Shield organizations.

Let's talk for a while about what actuaries should be doing in the area of reserving for AIDS. As I mentioned, at one point in time, there was to be an actuarial standard of practice, "Guidance for Estimating or Providing for the Cost of HIV-Related Claims." This standard went through two draft periods, and the final result was that based on the responses and the opinions of the members of the Academy of Actuaries, the Committee felt that the principles applicable to HIV were similar to those applicable to other causes of claims, and that it would be inappropriate to imply that HIV claims should be treated differently than other claims in order to develop an opinion. So the Life Committee of the Actuarial Standards Board recommended to the ASB that we instead amplify Recommendation 7, which still exists in the Academy's financial reporting recommendations and interpretations, and that the exposure draft not be promulgated as a standard.

Recommendation 7 of the Academy's Financial Reporting Recommendations gives specific advice as to the practices that are to be followed by an actuary opining on the adequacy of statutory reserves. Specifically, in those instances where there is evidence that because of company experience or practices, inappropriate or inadequate statutory reserves standards, or extraordinary external events occurring prior to the statement date, the statutory reserves might not make good and sufficient provision of unmaturing obligations, then the actuary should make further tests. Recommendation 7 is still a requirement of the Academy of Actuaries, and will be

incorporated into the appointed actuary standards when they're finalized. The bottom line is that actuaries have been and are required to address the AIDS issue when establishing reserves.

The first question in our survey was, did your company establish additional liabilities for AIDS in its 1991 statutory statement? For the individual life line, 10.85% of the people that wrote individual life established a reserve at the end of 1991. That compares to a percentage of 9.43% in 1990. For individual disability, the rate for 1991 was 5.6% versus a 5% rate in 1990. For individual medical, there was a rate of 2.7% for 1991 versus 2.1% for 1990.

For the group life line of business, there was a 7.8% rate for 1991 and a 6.51% rate for 1990. For group disability, the rate was 9.18% for 1991 and 5.26% for 1990. Lastly, for group medical the rate was 7.41% for 1991, and there was actually a higher rate for 1990, 10.34%. In general then, we've seen an increase in the percentages of companies establishing reserves for AIDS, except for the group medical (Chart 12).

Our next question in the survey asked what method was used to establish additional reserves for AIDS? Table 1 shows what the actuaries used.

Nobody used a multiple of existing reserves. Various percentages of people used the adjusted table approach; 15.4% used that for individual life, 28.6% for group life, and 20% for group disability. The more popular approach was to establish a lump sum in addition to the statutory reserve; 80% for individual life, 75% for individual disability, 50% for individual medical, 57% for group life, 60% for group disability, and 40% for group medical. Then also on group medical, 60% were using some other approach.

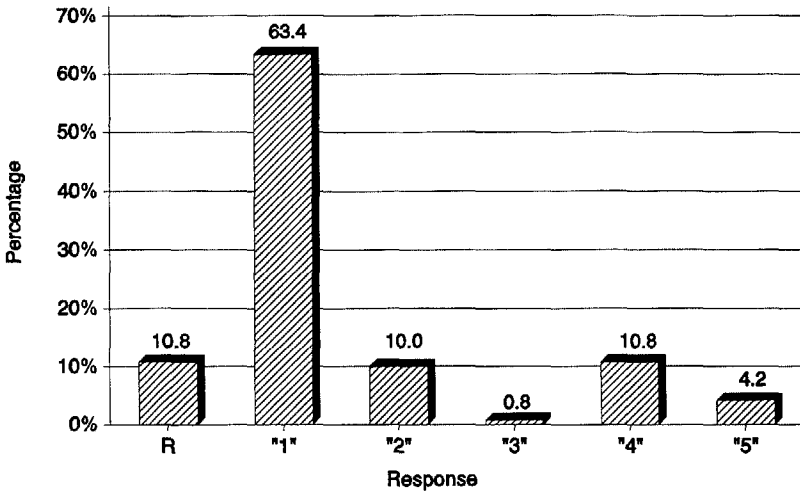
Other approaches that were commented on in the survey were to establish case reserves for all reported and unreported AIDS claims, to design conservatism into existing reserves, and to set up an additional reserve equal to a percentage of one year's paid claims.

An interesting question was our Magic Johnson question. This question was put in at the request of the editor of *Contingencies*, following our publication of the results of a previous survey. The responses were rather interesting. The question was, "In 1991, Magic Johnson made public the knowledge that he carries the HIV virus. Since this announcement, has your company reconsidered its philosophy regarding AIDS?" Only one person said their company had. The respondents commented that they felt that their testing was already at an appropriate level, and some said that they were involved in programs to educate their employees and the community regarding the AIDS risk.

It seems that the insurance industry is ahead of the rest of the population, in that we didn't jump when Magic Johnson told everybody he had AIDS.

AIDS UPDATE AND RESERVING

CHART 12  
Individual Life



- |   |  |
|---|--|
| R -- Liability established                    | 4 -- Covered by a strategy of changed nonguaranteed elements, dividends or increased premium |
| 1 -- Covered by margins in tables             | 5 -- Other   |
| 2 -- Felt to be an insignificant risk         |  |
| 3 -- Management decision to delay recognition |  |

Response Percentages by Line of Business*						
Line of Business	R	1	2	3	4	5
Individual Life	10.8%	63.4%	10.0%	0.8%	10.8%	4.2%
Individual Disability	5.6	53.6	35.2	1.4	4.2	0.0
Individual Medical	2.7	43.8	32.9	1.4	9.6	9.6
Group Life	7.8	42.2	26.7	1.1	17.8	4.4
Group Disability	9.1	41.8	29.1	0.0	16.4	3.6
Group Medical	7.4	30.9	29.4	0.0	19.1	13.2

\* Percentages are based on those that write each particular line; those that do not have been excluded.

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TABLE 1  
What Method Was Used To Establish Additional Reserves for AIDS?

Line of Business	Response Percentage by Line of Business*				
	A	B	C	D	E
Individual Life	0.0%	15.4%	79.9%	0.0%	7.7%
Individual Disability	0.0	0.0	75.0	0.0	25.0
Individual Medical	0.0	0.0	50.0	0.0	50.0
Group Life	0.0	28.6	57.1	0.0	14.3
Group Disability	0.0	20.0	60.0	0.0	20.0
Group Medical	0.0	0.0	40.0	0.0	60.0

\* Possible Responses:

- A -- Multiple of existing reserves
- B -- Adjusted tables
- C -- Lump sum estimate in addition to statutory requirements
- D -- Gross Premium Valuation approach
- E -- Other

We added some questions to our previous survey format for the health insurance line. The ACLI and the HIAA, in a report that's probably a few years old now, was projecting that A&H claims would account for 73% of total AIDS claims by the year 2000. This was based on its middle scenario, which in turn was based on reproduction of CDC June 1988 projections through 1992. These projections are a bit high. But this is what it was projecting at that time. It was projecting that by the year 2000, the group medical line, for example, was going to have close to \$8 billion of AIDS-related claims.

The first of our health-insurance-related questions asked what percentage of the dollar amount of 1991 claims was AIDS-related? Seventy-two percent of the respondents said that their individual medical claims were less than, or equal to, 1% of their total claims. For individual disability, 81% of the respondents said that AIDS-related claims were less than, or equal to, 1% of the total. For group medical, it was 72%, and for group disability, 71%. When I first saw the results of Table 2, I thought these looked a little too low. It looked like too many responses were in the less than or equal to 1% area, and I thought that maybe some respondents were just putting zero in there, and pulling the results down a bit. But we actually had some comparable data from the 1990 ACLI HIAA survey that shows comparable results. It shows that for individual A&H, 67.6% of its respondent companies reported that less than 1% of claims were AIDS related. And for group A&H, 74.6% said that less than 1% of their claims were AIDS related. This made us feel a little better about our results.

Let's look at results separately for a higher risk group of companies, consisting of companies that had more than 25% of their business in higher risk AIDS states including California, New York, New Jersey, Florida and Texas. There was a noticeable shift to the right in this table for this group which is what you would expect.

We put in a couple of questions regarding whether or not companies were trying to exclude AIDS under any of their coverages, or whether they were imposing any limitations on amounts paid out for claims.

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TABLE 2  
What Percent of the Dollar Amount of Your 1991 Claims Was AIDS Related?

Line of Business	Response Percentage by Line of Business – All Companies				
	Percent of Total Claims				
	≤1%	>1% & ≤2%	>2% & ≤3%	>3% & ≤5%	>5%
Individual Medical	72.0%	14.0%	4.0%	2.0%	8.0%
Individual Disability	80.5	9.8	2.4	7.3	0.0
Group Medical	72.1	20.9	4.7	2.3	0.0
Group Disability	71.0	16.1	3.2	9.7	0.0

Line of Business	Response Percentage by Line of Business – Companies that Have at Least 25% of Their Business in CA, NY, NJ, FL & TX				
	Percent of Total Claims				
	≤1%	>1% & ≤2%	>2% & ≤3%	>3% & ≤5%	>5%
Individual Medical	64.7%	11.8%	0.0%	5.9%	17.6%
Individual Disability	53.0	23.5	5.9	17.6	0.0
Group Medical	58.8	35.3	5.9	0.0	0.0
Group Disability	57.2	28.6	7.1	7.1	0.0

There was a piece recently in *The Wall Street Journal* that said that many multinational companies were excluding AIDS claims on foreign employees. It's not uncommon in foreign countries to write out the AIDS risk. It's quite common in the U.K. In the U.S. though, it doesn't appear to be very common. Table 3 shows that only 4.2% of the responding companies are excluding it under individual medical. And we show that close to 3% are excluding it under group medical.

TABLE 3  
Are You Presently . . .

Area	Excluding AIDS under Any Coverages?		Imposing any Limitations on Amounts Paid Out for AIDS Claims?	
	Yes	No	Yes	No
Individual Medical	4.2%	95.8%	9.9%	90.1%
Individual Disability	0.0	100.0	1.6	98.4
Group Medical	3.2	96.8	4.8	95.2
Group Disability	0.0	100.0	0.0	100.0

Note: None of the companies that have at least 25% of their business in CA, NY, NJ, FL and TX are excluding AIDS under any coverage. Only 8.7% of those that write individual medical and 4.0% of those that write individual disability who have at least 25% of their business in the high-risk states are imposing any limits on the amounts paid out for AIDS claims.

When we asked whether or not they were imposing any limitations on the amounts paid out for AIDS claims, about 10% were for individual medical, around 2% were for individual disability, and about 5% were for group medical. The results indicate that very few companies are imposing any limits or excluding AIDS claims. This may

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be due to state regulation. We also looked at these results for the higher risk group of companies, and found that virtually no one in that group was excluding or limiting AIDS claims.

We also put a few questions into the survey that we felt would provide some interesting information for this session. The first of these was; "What is the estimated insured cost of an AIDS case over the duration of the illness?" The results were put into Table 4, which shows these results by ranges. For individual medical, the majority of the respondents are in the \$25-50,000 range of the estimated insured cost of an AIDS claim, with an average of \$74,400. For individual disability, they're bunched up at less than \$25,000, with an average of \$27,757. Group medical runs almost the gamut, with 13.3% at less than \$25,000, and 13.3% greater than \$100,000, with an average somewhere around \$60,000. Group disability is the smallest, with most responses under \$25,000, and an average of \$11,000.

TABLE 4

What Is the Estimated Insured Cost of an AIDS Case over the Duration of the Illness?

Area	Response Percentage by Line of Business - All Companies					Average
	Range					
	≤ \$25,000	> \$25,000 ≤ \$50,000	> \$50,000 ≤ \$75,000	> \$75,000 ≤ \$100,000	> \$100,000	
Individual Medical	19.0%	52.4%	4.8%	9.5%	14.3%	\$74,413
Individual Disability	62.5	25.0	0.0	12.5	0.0	27,757
Group Medical	13.3	33.4	20.0	20.0	13.3	58,885
Group Disability	100.0	0.0	0.0	0.0	0.0	11,171

Area	Response Percentage by Line of Business - Companies That Have at Least 25% of Their Business in CA, NY, NJ, FL & TX					Average
	Range					
	≤ \$25,000	> \$25,000 ≤ \$50,000	> \$50,000 ≤ \$75,000	> \$75,000 ≤ \$100,000	> \$100,000	
Individual Medical	33.3%	33.3%	11.1%	0.0%	22.3%	\$66,500
Individual Disability	50.0	40.0	0.0	10.0	0.0	27,900
Group Medical	0.0	40.0	40.0	20.0	0.0	50,311
Group Disability	100.0	0.0	0.0	0.0	0.0	11,339

The next question we added inquired about the estimated insured duration of an AIDS claim, how long these people were covered under insurance. For individual medical, the majority of responses were between one and three years, with an average of 2.77 years. For individual disability, respondents clustered around one to two years, with an average of 2.2 years. The averages in Table 5 and in the previous table were the sum of the responses divided by the number of the respondents. For group disability, responses bunched up in the one-to-two-year range, with an average of 1.88 years. For group medical, responses bunched up again in the one-to-two-year range, with an average of 1.83 years.

Our survey's next question was one that Bill Bluhm had asked that we put in, to provide some useful information.

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TABLE 5  
What Is the Estimated Insured Duration of an AIDS Case?

Area	Response by Line of Business -- All Companies					
	Range					Average Years
	≤ 1 Year	> 1 Year ≤ 2 Years	> 2 Years ≤ 3 Years	> 3 Years ≤ 4 Years	> 4 Years	
Individual Medical	9.1%	31.8%	34.6%	13.6%	9.1%	2.77
Individual Disability	13.6	50.0	18.2	13.6	4.6	2.20
Group Medical	0.0	68.8	31.2	0.0	0.0	1.83
Group Disability	13.3	66.7	13.3	0.0	6.7	1.88

Area	Response Percentage by Line of Business -- Companies That Have at Least 25% of Their Business in CA, NY, NJ, FL, & TX					
	Range					Average Years
	≤ 1 Year	> 1 Year ≤ 2 Years	> 2 Years ≤ 3 Years	> 3 Years ≤ 4 Years	> 4 Years	
Individual Medical	11.1%	44.5%	22.2%	22.2%	0.0%	2.22
Individual Disability	16.7	50.0	25.0	8.3	0.0	1.90
Group Medical	0.0	66.7	33.3	0.0	0.0	2.03
Group Disability	12.5	62.5	25.0	0.0	0.0	1.77

Here we asked the companies what their disability income blood testing limits were for AIDS for males age 25-45. Looking at 1991, (Table 6) the results we show about 7% of the responding companies testing all of the applicants, then 20% testing at the \$3,000-per-month level, and 10% testing at greater than \$3,000 per month.

TABLE 6  
Disability Income Blood Testing Limits for AIDS for a Male Age 25-45

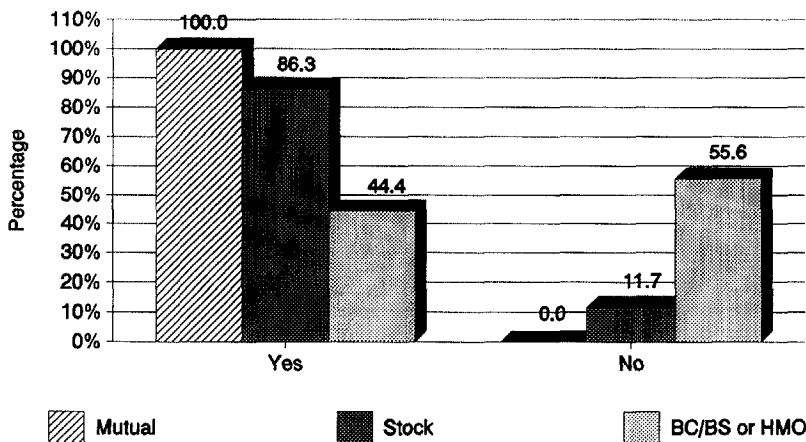
Year	Male Age	Percentage of Responses by Age and Year of Issue -- Individual Disability Responses						
		Testing Limits in \$ of Monthly Income						
		All	≤ 1,000	1,500	2,000	2,500	3,000	≥ 3,000
1988	25	3.7%	14.8%	7.4%	14.8%	11.1%	33.4%	14.8%
	35	3.7	18.5	7.4	14.8	7.4	33.4	14.8
	45	7.4	18.5	7.4	14.8	7.4	33.4	11.1
1989	25	7.1%	14.3%	7.1%	17.9%	10.7%	28.6%	14.3%
	35	7.1	17.9	7.1	17.9	7.1	28.6	14.3
	45	10.7	17.9	7.1	17.9	7.1	28.6	10.7
1990	25	6.9%	13.8%	10.3%	24.2%	10.3%	20.7%	13.8%
	35	6.9	17.2	10.3	24.2	6.9	20.7	13.8
	45	10.3	17.2	10.3	24.2	6.9	20.7	10.3
1991	25	6.9%	10.3%	10.3%	31.1%	10.3%	20.7%	10.3%
	35	6.9	13.8	10.3	31.1	6.9	20.7	10.3
	45	10.3	13.8	10.3	27.6	6.9	24.2	6.9

We also looked at the results for the higher risk group, and really didn't see any difference in the testing limits, which is somewhat surprising. For group disability, we only had a few responses and those responses indicated that they were testing at somewhere between the \$2,500- and \$3,000-per-month level.

We asked whether or not the company's AIDS claims had been noticeably reduced because of their blood testing. The responses to this question surprised me. Maybe people didn't understand the question, but 45.8% of the respondents said that their claims really hadn't been reduced because of the testing. Now it may be that the testing, combined with the increase in the AIDS claims, has caused a leveling of the AIDS claims within the companies.

I'm going to go quickly through some of our cash-flow questions and responses here. First, we asked people whether or not they included a comment on cash-flow testing in their 1991 statutory opinion. We found that all the mutual companies had commented on cash-flow testing in their statutory opinion. Chart 13 shows lesser percentages for the stock companies and the Blue Cross/Blue Shield organizations.

CHART 13  
Cash-Flow Testing



Based on the comments that we received, even though actuaries commented on cash-flow testing, their comment often was that they didn't do it. So we have a lot of people still not doing cash-flow testing. The results from the 1990 survey indicated lesser percentages of actuaries performing cash-flow testing.

The next question was, has your company actually done any cash-flow testing? Chart 14 shows 84.8% of the mutual companies are doing cash-flow testing in some way, shape, or form, and 25% of the Blue Cross/Blue Shield organizations are doing cash-flow testing.

In what areas is cash-flow testing being done? Most of it is in the valuation area (Chart 15). Some of it is in pricing, some of it is for New York Regulation 126 (where you have to do it).



AIDS UPDATE AND RESERVING

CHART 14  
Percentage of Responses by Type of Organization

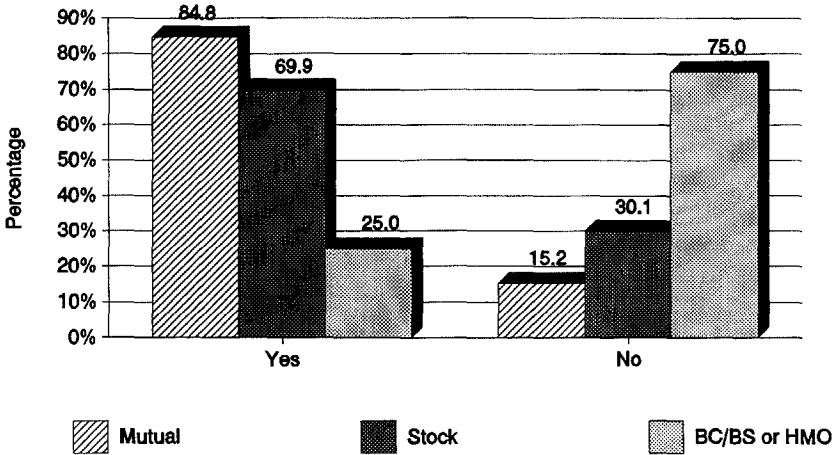
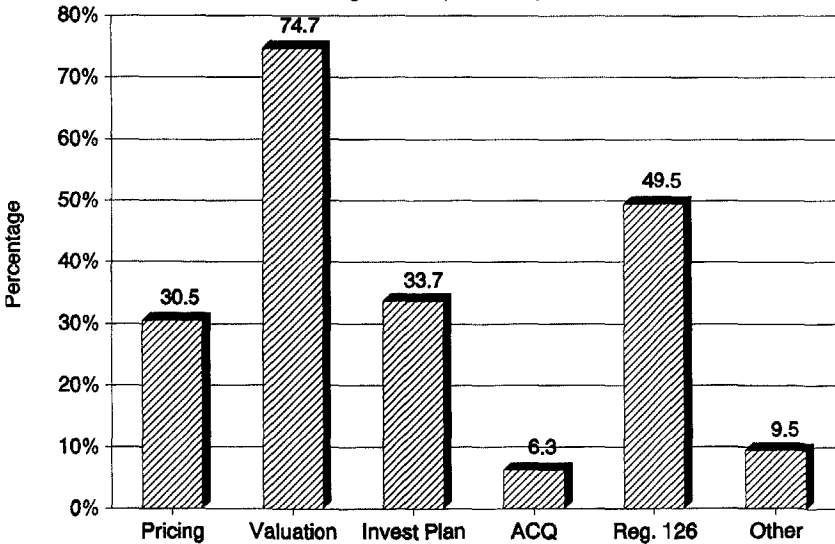
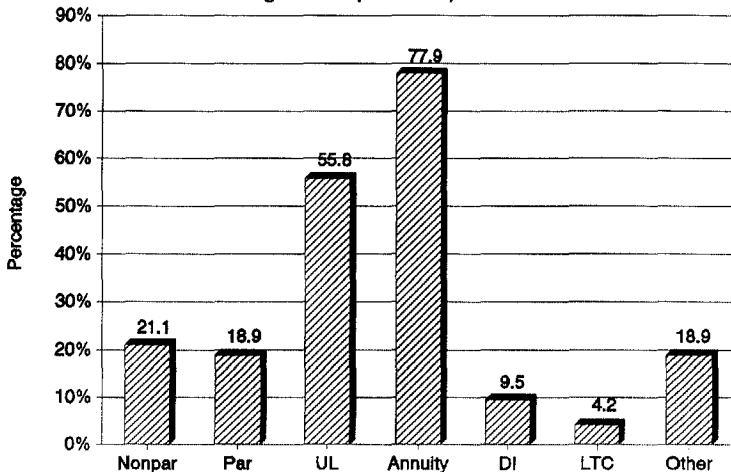


CHART 15  
Percentage of Responses by Area



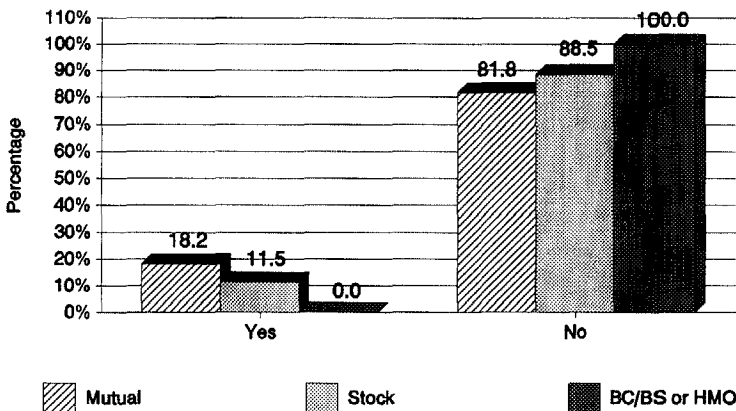
For what lines of business was cash-flow testing done? Chart 16 shows 9.5% of the respondents have done cash-flow testing for the disability income line, and 4.2% of the respondents are doing it for the long-term-care line.

CHART 16  
Percentage of Responses by Line of Business



Was cash-flow testing used to analyze the financial impact of AIDS (see Chart 17)?

CHART 17  
Percentage of Responses by Type of Organization



AIDS claims are supposed to peak early in the next century, and you may want to make sure you've got enough cash around to pay these claims when they come due. We do show a number of companies that are using cash-flow testing to examine their AIDS risk.