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The Impact of AIDS on the Insurance Industry

by David M. Holland

Acquired Immune Deficiency Syndrome (AIDS) will have a tremendous impact on the insurance industry in North America. In "AIDS, HIV Mortality and Life Insurance," Michael Cowell and Walter Hoskins project that, for business currently in force, life claims will amount to $50 billion over the remainder of this century. Assuming Human Immunodeficiency Virus (HIV) infection decreases to zero by 1997, AIDS claims on individual business currently in force will rise to around 18% of total claims in 1997 (assuming no AIDS claims from issues after 1986.) If HIV testing is not permitted and insurance sales increase at a 5% annual rate, an additional $20 billion of individual AIDS claims are projected by year-end 2000. These projections do not include AIDS-related claims for disability and health insurance, which would also be substantial.

AIDS is devastating. As of August 31, 1987, 41,366 AIDS cases have been reported to the Centers for Disease Control (CDC); of these, 23,884, or 58%, have resulted in death. Cowell and Hoskins modeled mortality for someone with AIDS by death rates of 45%, 45%, 35% and 25% for years 1, 2, 3, and 4 on, respectively. The resulting life expectancy from diagnosis of AIDS is only about 2.1 years.

A key challenge in measuring the impact of AIDS has been to develop a model to estimate the number of people infected with HIV and to measure the progression from infection through development of AIDS to ultimate death. The Cowell-Hoskins

Continued on page 3 column 1

The Future of the Actuary/ The Actuary of the Future

by Gary Corbett

The future of the actuary has been a subject of active discussion within the Society for at least the past five years. The March 1982 *Actuary* carried an article by Bill Poortvliet summarizing the conclusions from a survey of actuarial employers conducted in 1982 by the Career Encouragement Committee. One of the conclusions was, "Employers are not focusing on numbers alone; they appear to be looking for actuaries with a broader bent, going well beyond the traditional technical skills."

In an early discussion of the Committee on Planning, actuaries were characterized as being in one of two groups. One group consisted of multi-disciplinary individuals with high communication skills; the other comprised the more traditional numbers-oriented actuaries. During these early discussions, the Committee identified a hypothesis which seemed to supply a common root for the many issues being examined. This hypothesis was: "In a world of increased change, actuaries as a group need to increase their abilities to deal with change. We need greater competence in such skills as: problem identification, dealing with unstructured situations, applying inter-disciplinary approaches, communications and conceptualization."

Employers were described as wanting people who could sort through a mass of information to identify key problems and who were willing and able to operate within ambiguous, unstructured situations. Problem-solving in such an environment requires analytical skills, which must be combined with the ability to weigh risks and to make decisions. Management and communication skills were also deemed important if an actuary were to advance past the technical level.

As a means of increasing their nontechnical skills, current FSAs can participate in various continuing education activities, and the Society's continuing education program has been responding to this need in recent years. With regard to the development of future Fellows, selection, recruiting and education can play an important role. It is with this in mind that the

Continued on page 2 column 2

In this issue:

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Future of Actuary Cont'd.

Committee on Planning has been working with the Career Encouragement and Publications Committees to increase the emphasis on the nonmathematical and business aspects of an actuarial career, particularly in publications aimed at prospective actuaries.

This year's Committee on Planning transferred its focus from a primarily inward look at the actuary of today to an outward look at the actuary of tomorrow. Jumping ahead to the early years of the 21st century, a century in which our current members will spend most of their collective careers, the Committee has asked such questions as:

- What will, should, or can the role of the actuary be?
- What knowledge, methods and skills will be required of the actuary?
- What are the implications of the above for selection, education, training and research?

These and other important questions have been the subject of extensive discussion this year, including a recent all-day meeting in New York involving noncommittee members Jim Anderson, Roy Anderson, Jim Hickman and Fred Kilbourne. The Committee on Planning has now established a task force to undertake a structured, in-depth study of The Actuary of the Future/The Future of the Actuary. This task force includes employers of actuaries and users of actuarial services. Its charge will be to report to the Board of Governors by October 1988, with recommendations addressing such questions as:

- Should the Society's education (basic and continuing) and research programs be expanded to include disciplines and businesses not currently covered by the syllabus?
- Should the Society ensure that members are educated in non-actuarial areas vital to success?
- Should the Society's education and research programs be expanded to cover nontraditional applications of actuarial science?
- What should be the common core of knowledge possessed by all Society Fellows?
- How should the Society communicate, both within and outside the profession, the changing role of the actuary?
- How should the Society modify its selection methods to attract individuals who are more likely to succeed as actuaries in the future?

The Committee is well aware that many Society members question whether a problem really exists. Some have advised, "If it ain't broke, don't fix it." The May 1987 issue of *The Actuary* published a supplement — "The Value of the Actuary—The Future of the Society," which discussed some of these questions. Although many of the articles were provocative and responses were encouraged, only a few were received. This lack of response, combined with the results of last year's Actuarial Profile Survey, provides evidence that many of our members are not very concerned either about their own futures or the future of the profession. On the other hand, evidence does exist from other sources, such as the FEM White Paper survey, that a significant number of our members do share the Committee's concerns. These concerns include the declining need for actuaries in certain practice areas, the changes in the skills required for an actuary to succeed, and the possibilities of our better serving society in general through broadening the scope of actuarial activity.

The task force, in addressing these concerns and the questions raised will assess the extent to which any significant future problem does exist. We expect the nonactuaries of the task force to help considerably in this regard. The task force will most likely involve additional employers and users in its deliberations.

Within the profession, and particularly within the Society, we are encouraging a wide discussion of The Future of the Actuary/The Actuary of the Future. Past-President Harold Ingraham wrote on this subject in the July issue of the Academy's *Actuarial Update*. At an open forum at the

Continued on page 3 column 1

Future of Actuary Cont'd.

annual meeting in Montreal, Jim Curtis, Jim Hickman, Bob Shapiro and I led a discussion of The Actuary of the Future, receiving significant audience input. The task force is interested in your views as well. Please direct comments to its chairperson, as shown in the 1988 *Yearbook*. Alternatively, you can send your thoughts to me at my address, and I'll see they are forwarded. (Mr. Gary Corbett, Tillinghast/Towers Perrin, One Atlanta Plaza, 950 E. Paces Ferry Road, Atlanta, GA 30326.)

If the need for actuaries is indeed shrinking either because the need for what we do is declining or because others, be they professionals or general managers, can do the job better, the actuarial profession should not attempt to stem the tide. However, many of us do not accept that society's need for actuarial skills is decreasing; rather, we see many areas that would be better served by an expanded actuarial presence.

Here's to our future. It will be what *we* make it.

Gary Corbett is with Tillinghast/Towers Perrin. He is the SOA President for 1987-88.

AIDS Cont'd.

model used for financial projections shows a cumulative 900,000 people infected in 1987, rising to 2.5 million by the year 2000. By 2000, the cumulative number of AIDS cases is projected to be 1.6 million, of which 1.3 million would have died.

Compared to the 1980 CSO Basic Male Non-Smoker Table rates, the mortality of someone who currently tests positive for HIV would be in excess of 5,000% of standard. Although the underlying patterns of mortality for someone who is HIV positive are so different from those of someone who is standard that mortality ratios may be questionable, it is clear that the level of mortality is far beyond what is considered insurable, even at the highest substandard rating.

Another expression of the impact of the high mortality to be expected for someone who is HIV positive is to look at the present value of future claims. Cowell-Hoskins determined:

> [P]rogression to AIDS and death under the slower SFCC[San Francisco City Clinic]/CDC assumptions produces death claims that, discounted at 6% interest, would require a net single premium of $515 per $1,000 issued to an HIV infected individual.

The Cowell-Hoskins paper is a landmark in actuarial literature. Actuarial techniques of numerical analysis, life contingencies and survival models have been combined with tools from biostatistics and epidemiological modeling. From this, the authors have derived practical information about the projected impact of this disease. You are encouraged to study this paper in detail; if you have not received a copy, contact the Society Office Research Department.

In spite of the tremendous advance represented by the Cowell-Hoskins paper, certain factors which should be kept in mind when considering its results are:

1. The model is based on an assumed population at-risk of AIDS of 3 million male homosexuals and bisexuals, plus 750,000 IV drug abusers. These groups represent approximately 90% of the adult AIDS cases reported to date in the U.S.
2. Additional information is needed on the spread of AIDS in the heterosexual population. Reported cases of heterosexual transmission account for approximately 4% of the AIDS victims overall, but 30% of the female cases. Because the heterosexual population is so large, a spread at even a much reduced rate could still result in a large infected population.
3. The model for estimating the number of people infected has been fitted to CDC data of AIDS cases and deaths. Although this is thought to be the most reliable information available, there are problems with underreporting and with delays in reporting to the CDC. A 20% increase in cases has been cited as a possible adjustment for underreporting. In its December 29, 1986, report, CDC showed 29,003 cases had been reported through that date, but from its August 31, 1987, report, 33,475 cases are shown as having been incurred by the end of 1986.
4. As of September 1, 1987, the CDC revised the definition of AIDS to include dementia and emaciation. These cases were previously considered AIDS Related Complex (ARC) rather than AIDS and were not in the AIDS tabulations. The revised data from the CDC should be carefully studied. (This new information was not available when this article was being prepared.)
5. Although the Cowell-Hoskins model is consistent with other models, such as the one by Jeffrey Harris at M.I.T., some other models have produced significantly different results. For example, a report prepared by the RAND Corporation states that the CDC:

   > figure is now thought by many to be too low, particularly because it employs a very conservative estimate of HIV (Human Immunodeficiency Virus) incubation or latency, which determines how many seropositives convert to symptomatic AIDS over a period of time. Others think that underreporting of AIDS cases is even more egregious than the official corrections would suggest and that the extent of heterosexual transmission has been underestimated. Thus, although 220,000 cases might serve as a low-range estimate, case load numbers of 400,000 and 750,000 in 1986-1991 are more credible mid- and high-range estimates.

   There appear to be little hard data supporting the RAND report; until more data become available, the CDC estimate must be considered more reliable.

   Major research facilities outside the insurance industry are developing a number of models. These facilities have tremendous resources and support; with additional and more refined data, we hope that more sophisticated and accurate models can be developed.
6. The Cowell-Hoskins financial models were fitted to AIDS experience collected by the ACLI/HIAA for 1986. Data received after publication indicate actual experience may have been higher than previously thought.
7. The financial numbers are based on a model which assumes that the rate of infection will decline to zero by 1997. This reduces the ultimate

Continued on page 4 column 1