

HEALTH SECTION NEWS

"For Professional Recognition of the Health Actuary"

Issue Number 42, January 2002

Chairperson's Corner

by Daniel L. Wolak

My phone rang at about 9:25 that day at my office in Stamford, Connecticut, located 40 miles from lower Manhattan. I was just beginning to reply to an e-mail requesting catastrophic claim coverage for a group life program. On the phone was my sister. She said "Good, you're here". I asked why she was relieved. She responded "The World Trade Center has just been hit by two planes." I was stunned, said good-bye, and informed

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A Brief Note About Pricing Aggregate Stop-Loss Coverage

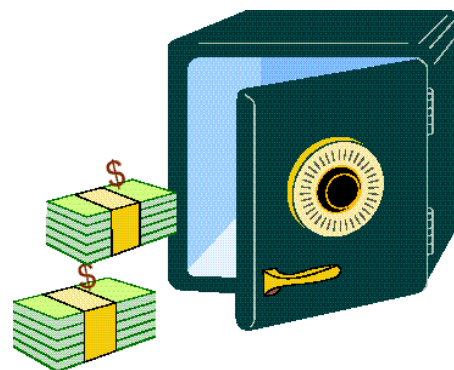
by Robert G. Mallison, Jr.,

Overview

When an employer chooses self-funding as the vehicle for providing healthcare benefits for employees, he will typically purchase stop-loss coverage. Specific stop-loss protects against catastrophic costs resulting from individual claims, whereas aggregate stop-loss protects against high-cost claim experience for the group as a whole.

In medical stop-loss insurance, most of the premium (approximately 90%) is

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ASOP No. 6 Exposure Draft Provisions Relating to Community- Rated HMO Contracts

by *J. Richard Hogue*

In October, 2000, the Actuarial Standards Board issued an Exposure Draft of a proposed revision of Actuarial Standard of Practice (ASOP) No. 6 (Measuring Retiree Group Benefit Obligations) with a comment deadline of 3/31/01. There were 22 comment letters containing several very worthwhile suggestions. (To get the comments file, send an e-mail to comments@actuary.org with Retiree Group Benefits in the subject line.)

Determination of Initial Per Capita Health Care Rate Addressed

I was particularly interested in section 3.4.5 of the Exposure Draft because it addressed the determination of the initial per capita health care rate for a plan being financed through a community-rated HMO contract. For the benefit of the reader who does not have a copy of the Exposure Draft, the following is section 3.4.5:

3.4.5 Use of Premium Rates—Although an analysis of the plan sponsor's actual claims experience is preferable, premium rates may be used as a substitute, with appropriate analysis and adjustment. Current premium rates will rarely be appropriate without adjustment for changes in benefit levels, covered population, or program administration. If premium rates are used as the basis for initial per capita health care rates, the actuary should make due allowance for the premium rate basis.

In most cases, a community-rated premium rate is not appropriate for retiree group benefit measurement purposes unless the rate is not affected by factors specific to the covered population of the retiree group (for example, the same rate would be offered to the

plan if only non-Medicare retirees were covered).

If appropriately adjusted premium rates are used as the basis for initial per capita rates in the measurement, the actuary should make an appropriate disclosure and consider the factors described in sections 3.4.6-3.4.11.

Apparent Lack of Agreement Within Actuarial Community

What I liked about section 3.4.5 was that it would seem to clarify that in most situations the use of an unadjusted community-rated premium rate to value pre Medicare eligible retiree healthcare liabilities would not be acceptable. I was surprised to see that more than a few of the comments to the Exposure Draft seemed to imply that unadjusted premium rates should be acceptable.

This lack of agreement within the actuarial community is important because these two approaches (i.e. "unadjusted" versus "adjusted") to valuing pre-Medicare eligible post retirement healthcare liabilities can result in significantly different valuation results.

Example

For example, let's assume that pre-age 65 initial per capita health care rates increase at the rate of 3% per year and that the average age of the employer's total pre-age 65 population is 38. Within such population is a subset of early retirees whose average age is 62.

The unadjusted approach would use the community-rated premium rates without adjustment as the basis for the initial per capita healthcare rates for the pre-Medicare eligible retirees.

One adjusted approach to determining the age 62 initial per capita healthcare rate would be to multiply the community rate

by 2.03 (i.e. 1.03^{24}). The age 62 initial per capita healthcare rate would be appropriate for valuing pre-Medicare eligible retirees from ages 60 to 64. Starting with the five-year age bracket from 65 to 69, an appropriate assumption for the Medicare payments should be made.

Please note that the above approach using an age-adjusted premium to calculating the pre-Medicare initial per capita healthcare rate assumes that the community rate was based only on pre-Medicare claims and enrollment and ignores the different demographics between the employer and community populations. It also uses a simplified approach to age adjusting in the sense that the arithmetically correct way would be to base the adjustment on age distributions as the aging curve is not necessarily linear.

Effect on Valuation Results

The effect on the valuation results would depend on certain other variables such as the following:

- Duration of plan benefits
- Portion of current retirees who are eligible for Medicare, and
- Retirement rates for active employees

The two approaches would produce the greatest percentage variation in valuation results in the case of a plan that paid benefits only prior to Medicare eligibility. In this situation the post-retirement healthcare costs would roughly double assuming a plan whose eligibility age was 60. The age-adjusted rate would be for a central age 62 (for ages 60-64) but the unadjusted rate would be for a central age of 38.

At the other extreme would be a valuation of a healthcare plan that paid benefits only to retirees who were eligible for Medicare. In this situation, there would be no effect on the valuation results because there would be no pre-age 65 benefits considered in the valuation.

ASOP No. 6 Related to Accounting Standards

It is important to understand that ASOP #6 is expected to apply to all post-retirement benefit valuations and not just

those performed for the purpose of complying with FAS 106. If the valuation is performed in a situation where an accounting standard does apply (FAS 106 or some other accounting standard), the actuary must insure that both actuarial and the applicable accounting standards are satisfied. Thus it is particularly important for the actuary to be aware of potential conflicts between ASOP #6 and whatever accounting standard applies. To my knowledge there are no provisions of FAS 106 that would require the actuary to use an actuarial method or assumption that violates ASOP #6. However, if some of the section 3.4.5 comments carry any weight in the drafting of the final version of ASOP #6, I believe the actuarial standard would permit the use of methods that are inconsistent with FAS 106. There would be nothing contradictory with this since ASOP #6 does not preclude the use of more stringent standards when warranted. It does mean, however, that actuaries practicing in this area must be aware of such potential conflicts.

Potential Conflicts with FAS 106

If the final ASOP #6 permits the use of unadjusted HMO community rates in valuing pre-Medicare eligible retiree healthcare liabilities, I believe that a potential conflict would exist between the actuarial standards and paragraphs 10 and 35 of FAS 106. Paragraph 10 requires a separate accounting of plans covering active employees and retirees. Paragraph 35 requires the actuary to calculate the assumed initial per capita healthcare rate on a basis that recognizes the fact that such rates vary by age.

Taken together, it is clear that FAS 106 does not permit substantial cross subsidies over the age spectrum when developing the assumed initial per capita healthcare rate. This is an important concept since many insured retiree medical plans offering pre-age 65 retiree coverage do so under the same contract that covers the active employees. In these plans, the experience of the active employees and retirees is usually pooled to arrive at a single set of rates for the group rather than one set of rates for the

actives and a separate set of rates for the retirees. For these plans, setting the assumed initial per capita healthcare rate equal to the unadjusted group rate would not be correct for an FAS 106 valuation. There does not seem to be any substantial disagreement in the actuarial community in this situation or in the other common situation of the self-funded plan.

Source of Community-Rated HMO Plan Problems

The problem arises in community-rated HMO plans for the following two reasons:

1. The experience of the employer is not used directly in the determination of the rate. Some think that this point is strengthened in the case of an employer whose HMO contract is subject to regulation. With a regulated contract, the argument is made that the employer could rely on future access to healthcare coverage for any portion of his or her current or former employees.
2. The answer to question 11 of "A Guide to Implementation of Statement 106 on Employers' Accounting for Post-retirement Benefits Other Than Pensions." Question 11 and the answer thereto are as follows:

Question: Are there any circumstances in which an employer may measure its postretirement healthcare benefit obligation by projecting the cost of premiums for purchased healthcare insurance?

Answer: Yes. For a plan that stipulates that the benefit to be provided is the payment of certain healthcare insurance premiums for retirees rather than the payment of their healthcare claims, the employer should project the cost of those future premiums in measuring its benefit obligation. That projection requires an assessment of how future healthcare costs will affect future premiums.

For a plan that stipulates that the benefit to be provided is the payment of retiree's healthcare claims, the cost of premiums for insurance that an employer

A Brief Note About Pricing Aggregate Stop-Loss Coverage

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generated by the specific stop-loss coverage. Therefore, most of the analysis is focused on accurately determining the specific stop-loss premium and the aggregate attachment point. Relatively minor emphasis is placed on determining the aggregate stop-loss premium. However, as David Olsho and Mark McAllister observe at the end of their article in HSN no.38, "With aggregate claims expected to be frequent, the

aggregate premium calculation becomes as important as the aggregate attachment point calculation."

The development of a pricing model for specific stop-loss coverage can be accomplished by examining a large volume of individual claims, developing a claim probability distribution, and determining the cost for specific stop-loss at various deductibles from the distribution. There are other factors to consider

such as age and sex, area, trend (leveraged), possible savings due to claim management, etc. But the point to be grasped is that the exposure unit for specific stop-loss coverage is the individual, and finding a large population of individuals with similar characteristics (age, sex, area, etc.) is not unfeasible.

In contrast, the exposure unit for aggregate stop-loss coverage is the group. Finding a large population of groups with similar characteristics (group size, demographic profile, benefit design, etc.) is not practical. Therefore, the most common approach for the development of a pricing

model for aggregate stop-loss coverage is Monte Carlo simulation. The key parameters used in the simulation are 1) group size, 2) specific stop-loss deductible, and 3) aggregate attachment point (expressed as a percentage of expected claims) or the aggregate corridor. The purpose of this note is to identify a fourth key parameter which is often overlooked: benefit design. As we will see, this can have a significant (and perhaps unexpected) impact on the cost of aggregate stop-loss coverage.

Scope and Methodology

As previously mentioned, the purpose of this note is to examine the impact of benefit design on the cost of aggregate stop-loss coverage. Other items, beyond the scope of this note, will be briefly discussed in the conclusion.

To investigate the effect of benefit design on aggregate stop-loss pricing, we start with a claim probability distribution. We modify the distribution for the benefit plan we wish to examine, cap it for specific

Probability	Case Size Plan ==> Specific==>	Full Cost	200	500	1,500	200	500	1,500
			Rich \$40,000	Rich \$100,000	Rich \$250,000	Lean \$40,000	Lean \$100,000	Lean \$250,000
0.24000		-	-	-	-	-	-	-
0.09000		60	-	-	-	-	-	-
0.08000		135	28	28	28	-	-	-
0.06000		225	100	100	100	-	-	-
0.04500		325	180	180	180	-	-	-
0.03900		400	240	240	240	-	-	-
0.03500		500	320	320	320	-	-	-
0.03300		650	440	440	440	120	120	120
0.03000		800	560	560	560	240	240	240
0.02800		1,000	720	720	720	400	400	400
0.02600		1,200	880	880	880	560	560	560
0.02400		1,400	1,040	1,040	1,040	720	720	720
0.02200		1,600	1,200	1,200	1,200	880	880	880
0.02000		1,800	1,360	1,360	1,360	1,040	1,040	1,040
0.02000		2,000	1,520	1,520	1,520	1,200	1,200	1,200
0.02000		2,200	1,680	1,680	1,680	1,360	1,360	1,360
0.02000		2,500	1,920	1,920	1,920	1,600	1,600	1,600
0.02000		3,000	2,400	2,400	2,400	2,000	2,000	2,000
0.02000		3,500	2,900	2,900	2,900	2,400	2,400	2,400
0.01800		4,500	3,900	3,900	3,900	3,200	3,200	3,200
0.01600		5,500	4,900	4,900	4,900	4,000	4,000	4,000
0.01500		6,500	5,900	5,900	5,900	5,000	5,000	5,000
0.01400		7,500	6,900	6,900	6,900	6,000	6,000	6,000
0.01200		9,000	8,400	8,400	8,400	7,500	7,500	7,500
0.01000		12,000	11,400	11,400	11,400	10,500	10,500	10,500
0.00800		15,000	14,400	14,400	14,400	13,500	13,500	13,500
0.00600		18,000	17,400	17,400	17,400	16,500	16,500	16,500
0.00500		21,000	20,400	20,400	20,400	19,500	19,500	19,500
0.00400		25,000	24,400	24,400	24,400	23,500	23,500	23,500
0.00350		28,000	27,400	27,400	27,400	26,500	26,500	26,500
0.00325		32,000	31,400	31,400	31,400	30,500	30,500	30,500
0.00300		37,000	36,400	36,400	36,400	35,500	35,500	35,500
0.00280		41,000	40,000	40,400	40,400	39,500	39,500	39,500
0.00260		48,000	40,000	47,400	47,400	40,000	46,500	46,500
0.00235		60,000	40,000	59,400	59,400	40,000	58,500	58,500
0.00150		80,000	40,000	79,400	79,400	40,000	78,500	78,500
0.00070		125,000	40,000	100,000	124,400	40,000	100,000	123,500
0.00024		260,000	40,000	100,000	250,000	40,000	100,000	250,000
0.00004		500,000	40,000	100,000	250,000	40,000	100,000	250,000
0.00002		1,200,000	40,000	100,000	250,000	40,000	100,000	250,000
Total Expected Cost		2,591	2,083	2,268	2,330	1,847	2,025	2,086

stop-loss coverage, and simulate various group sizes. We examine two comprehensive major medical benefit plans (rich and lean) and three group sizes (200, 500, and 1500). The rich benefit plan has a \$100 deductible with 80/20 coinsurance up to \$2,500 (max out-of-pocket of \$600); the lean plan has a \$500 deductible with 80/20 coinsurance up to \$5,000 (max out-of-pocket of \$1,500). The specific stop-loss deductibles for the groups are \$40,000, \$100,000, and \$250,000 for 200 lives, 500 lives, and 1,500 lives respectively. The modified distributions are shown on page 4.

For each combination of group size and benefit plan, we simulated 100,000 groups. The results are as follows:

1. For the 200-life group with rich benefits, the cost of aggregate stop-loss coverage, with a 25% corridor, is 1.222% of expected claim costs; with lean benefits, the cost is 1.699% of expected claim costs.
2. For the 500-life group with rich benefits, the cost is 0.382% of expected claim costs; with lean benefits, the cost is 0.573% of expected claim costs.
3. For the 1500-life group with rich benefits, the cost is 0.038% of expected claim costs; with lean benefits, the cost is 0.073% of expected claim costs.

These results may seem somewhat counterintuitive. In an attempt to try to understand these results conceptually, consider the following argument:

When benefits are reduced, the expected claims level is also reduced, but individual claims may be affected in different ways. For example, in moving from our rich plan to our lean plan, the benefit cost of \$300 of medical expenses goes from \$160 to \$0, a reduction of 100%; for \$30,000 of medical expenses, the benefit cost goes from \$29,400 to \$28,500, a reduction of only 3%. In total, the expected benefit cost in moving from

the rich plan to the lean plan is reduced by approximately 11%. However, the circumstances leading to an aggregate stop-loss claim are not 'expected'. In fact, there are more large claims (with smaller impact of benefit reduction); and thus, by reducing the expected claim level (and thus the aggregate attachment point), by an 'expected' amount, more risk is shifted to the stop-loss insurer.

Another explanation can be based on the observation that when benefits are reduced, the standard deviation of the claim distribution is reduced by an amount much less than what the mean is reduced (thus increasing the coefficient of variation).

A significant conclusion of this discussion is to note that if premiums for aggregate stop-loss coverage are determined as a constant percentage of claims (without recognizing changes to benefits), then aggregate stop-loss premiums will be **reduced** when benefits are reduced, but aggregate stop-loss costs will be **increased**.

Conclusion

The approach used in this brief note is admittedly simplistic. In a more extensive study, much more complexity could be considered. For example, the claim probability distribution could be adjusted for the appropriate age/sex mix, for area factors, for expected savings from claim management, etc. The benefit designs reviewed are also quite simplistic. A more thorough discussion could address the impact of office visit co-pays, multi-tier co-pays for prescription drugs, and other benefit design features. As previously noted, the purpose here is to demonstrate that there is an impact (which is significant) of benefit design on aggregate stop-loss costs.

Another challenge involves the ability to adequately reflect benefit design when developing the aggregate stop-loss pricing model. Monte Carlo simulation can be time-consuming and expensive.

By including benefit design as another parameter, we have multiplied the number of required simulations by a significant amount. Interpolation could possibly be used, but linear interpolation may not be the most effective. One could develop a formula from the claim distribution using a well understood statistical distribution to estimate the cost of aggregate stop-loss coverage, and then use the formula to interpolate between points identified in the Monte Carlo simulations. The author has found the lognormal distribution to be a useful tool in this respect.

We may be approaching an environment of increasing medical cost trend. We also seem to be in the midst of an economic slowdown. With this in mind, we should expect employers to consider benefit buy-downs as an alternative to help control the growth of benefit costs. The results of this discussion indicate that aggregate stop-loss costs could increase in this environment. Including benefit design as one of the parameters in aggregate stop-loss pricing models can help in maintaining the appropriate relationship between premiums and costs for aggregate stop-loss coverage.

Editor's Note: At the time this article was submitted I was doing some similar work on aggregate claim distributions with Monte Carlo techniques. My model was also simple, and I did it with macros in an Excel spreadsheet. Thus, I did not have the luxury of doing 100,000 trials. However, my results duplicated those discussed herein. Results do vary substantially, so 100,000 trials are an important resource in pricing aggregate stop loss.

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Chairperson's Corner

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others in the department about the news, news they too were just becoming aware of. I went back and completed my e-mail responding that we would not be interested in offering the life catastrophic cover to the client.

Shortly after 9:30, we had three visitors from our second largest client arrive at our office. They told us that as their plane landed at the regional airport 20 miles north of NYC, they had seen smoke coming from the WTC. From that point on, it was an eerie day with the whirlwind of events unfolding in the city 40 miles away and the need to have the meeting with our visitors.

Suddenly our lifestyles changed on that day, but also questions regarding risks changed that day. In the employer health and life insurance marketplaces, we are faced with issues we had not really thought about before. For group life, the significant issue is the concentration of risk. In the past, catastrophic covers have alleviated fears of insurers having a large loss from one event. As we move into 2002, those covers may be limited and generally are expected to exclude coverage for terrorism.

For health, prior to September 11th, we were already in a period where costs were rising at a rate that we have not seen since the late 1980s and early 1990s. Now, on top of already rising costs, we are faced with the possibility of additional drug and mental health care utilization. In addition, the healthcare

system is in a state of preparation for another type of attack that we have not seen before.

The world has changed since September 11th. How are we as actuaries responding to these changes? I hope that

"In the employer health and life insurance marketplaces we are faced with issues we had not really thought about before. For group life, the significant issue is the concentration of risk. In the past, catastrophic covers have alleviated fears of insurers having a large loss from one event. As we move into 2002, those covers may be limited and generally are expected to exclude coverage for terrorism."

you are considering the answer to that question.

Upcoming Plans

We don't know at the time of this writing if Barry Bonds will be in San Francisco in late June, but we hope that you will be. The Health Section is being represented on the meeting planning group by Karl Volkmar and Bob McGee. The Health Section will be coordinating 45 sessions, a luncheon, a reception, and a hot breakfast. In addition, the afternoon of Wednesday the 26th, the third day of the meeting, will include special health valuation actuary symposium topics.

One of the Health Section's functions is to sponsor a newsletter for the members that include articles from the membership. If you would like to contribute to this newsletter, you can do so by preparing a write-up of no more than three pages or providing several thoughts that may be only a one-half column in nature. Our

next newsletter is scheduled for April 2002.

And a Big Thanks

As incoming chairperson for the Health Section, effective this past October at the New Orleans meeting, I have the challenge of replacing Leigh Wachenheim, who held that position this past year. A big thanks to Leigh for her contributions as chairperson for the section this past year and her contributions to the Health Section during her recently concluded three-year term. In addition, thanks to Kevin Dolsky and Geoff Sandler whose terms on the Health Section also ended in October.

Joining me on the council this year will be John Cookson, Vice Chairperson, Cindy Miller, Secretary/Treasurer, Tony Wittmann, Jim O'Connor, Bob McGee, Dan Skwire, Chuck Fuhrer, and Rowen Bell.

We also have the good fortune to have the continued support of former council members who now bear the title of "Friends." The Council's Friends for this year will be Tom Corcoran, Bernie Rabinowitz, Geoff Sandler, Jeff Miller, and Kevin Dolsky.

Daniel L. Wolak, FSA, is the Chairperson for the Health Section for the 2001-2002 year. He is Senior Vice President of Group Operations at GeneralCologne Re in Stamford, CT. He can be reached at dwolak@gclifere.com.

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expects to purchase to finance its obligation may be used to measure the obligation if it produces a reasonable estimate of the future cost of benefits covered by the plan. In some situations, such as in a community-rated insurance plan that provides the type of benefits covered by the employer's plan and in which the premium cost to the employer is based on the experience of all participating employers, the claims experience of a single employer generally will have little impact on its premiums. Accordingly, in those situations a projection of future premiums based on the current premium structure and expected changes in the general level of healthcare costs may provide a reasonable estimate of the employer's obligation. However, if premiums are adjusted for the actual claims experience or the age and sex of the plan's participants (an experience-rated plan), the foregoing projection of the

employer's obligation may not produce a reasonable estimate of the future cost of the underlying benefits of the plan.

Question #11 Answer Assumes Rate Based on Retiree Experience Only

With respect to the second point, I was informed several years ago by one of the FASB technical support staff that the answer to question 11 assumes that the underlying rates for the community-rated plan in question, to be consistent with FAS 106, paragraph 10, were based on retiree-only experience. Unfortunately, such assumption was not stipulated in the answer.

Conclusion

In my opinion, FAS 106, paragraph 10 would preclude any rate that applies to

both an organization's active and retired participants from being used without age adjustment. Whether the employer's experience directly affects the rate and/or whether the rate is regulated is not even a consideration. Simply having the rate apply to the employer's active employee population would imply a rate based at least in part on active employee experience.

If the employer had a closed block of retirees to which the community rate is being exclusively applied, I would agree that the use of such rate on an unadjusted basis would be appropriate for FAS 106 purposes.

Always holding out the possibility that I might be overlooking something, I would encourage others who disagree with this position to come forth with their reasoning.

J. Richard Hogue, FSA, MAAA, FCA, EA is an actuarial consultant in Granada Hills, CA. He may be reached at hoguejr@attglobal.net.

Letter from the Editor...

by Jeffrey D. Miller

Greetings! By this time you've read more than you want to read about our new world after September 11, 2001. Many assumptions about our business have certainly changed. Personal accident coverage, for one, is not nearly as attractive to insurers as it once was.

However, we know that health insurance is a line of business requiring aggressive and diligent management on a daily basis. Thus, as



Jeff Miller

health actuaries, we simply keep doing our job.

Many thanks go to Tony Whitman, Bernie Rabinowitz, and many others who recruited authors for this edition of *Health Section News*. I'm continually amazed at the quantity and quality of material that people of our section produce when they are asked to do so.

This edition includes some very practical thoughts on pricing aggregate stop-loss coverage from Bob Mallison and some more esoteric thoughts from Harry Poteat (a guest writer) on use of clinical insight modeling in claim reserving. Richard Hogue has contributed some useful insight on retiree healthcare costs

incurred by community-rated HMOs. Cabe Chadick provides us with a summary of the NAIC Web Cast on health reserves. Rowen Bell also contributes with a useful summary of NAIC activities from the perspective of a practicing health actuary. I even threw in a piece on my recent experiences in Latin America.

We hope this edition finds you and your loved ones at peace for the holiday season. We all hope for a peaceful and prosperous 2002.

Best regards,

Jeff Miller

NAIC Health Update

by Rowen B. Bell

This is the first of what is intended to be a regular series of articles providing an update, aimed specifically at health actuaries, on items of interest at the quarterly meetings of the National Association of Insurance Commissioners (NAIC).

With the September 11-inspired cancellation of the Fall NAIC National Meeting (which was to have been held in Boston in mid-September), this is an inauspicious time at which to begin such a series of articles. However, many of the actuarial and financial NAIC working groups managed to meet during October, either in person or via conference calls, and much of the work that was to have been accomplished in Boston has in fact since been achieved.

As this is an initial article, I thought that in addition to reporting on topical issues, I would take some time to introduce some of the various NAIC groups whose work may on occasion be of interest to health actuaries. I will also add the global caveat that any opinions expressed herein are strictly my own and should not be construed as reflecting the position of my employer.

Accident & Health Working Group

The Accident & Health Working Group (A&HWG) is composed entirely of actuarial regulators, and as such it is the NAIC group that traditionally has been of greatest interest to health actuaries. You may have noticed that recent issues of the Health Section News have contained reproductions of the official minutes of A&HWG meetings. A&HWG

is a subgroup of the Life & Health Actuarial Task Force (LHATF), which tends to focus on life issues and farms out health-only issues to A&HWG. Ted Schlude regularly writes a column for the SOA's *Financial Reporter* newsletter on LHATF's activities.

I want to focus on two ongoing A&HWG initiatives of particular interest.

Leslie Jones, an actuarial regulator from South Carolina, has been leading a review of the reserve standards that

currently apply to HMOs and HMDIs (e.g., most Blue Cross / Blue Shield organizations). Her group's initial conclusion is that an appropriate policy objective is for all writers of health insurance products to be subject to the same reserve



standards—meaning both minimum reserve requirements as well as which types of reserves need to be established—and moreover, the best means of assuring consistency in this regard is the new “codification” of statutory accounting principles, as opposed to new or revised model laws or regulations. As such, her group will shortly begin reviewing the codification SSAPs (Statements of Statutory Accounting Principles) to see if there are any adjustments that need to be made in keeping with this objective.

Still to be resolved is the question of differences in actuarial certification standards between different forms of companies writing health insurance. Life companies (those filing the “blue” statement blank) are subject to the asset adequacy analysis requirements of the Actuarial Opinion and Memorandum

Regulation (AOMR), with its “adequate in light of the assets held” opinion language. Health companies (those filing the new “orange” statement blank, i.e. HMOs and HMDIs) are subject to a different certification standard that does not contain an asset adequacy analysis component but uses the phrase “good and sufficient” in the opinion language. P&C companies (those filing the “yellow” statement blank) that write health insurance, of which there are several (most prominently Anthem), are subject to a third standard.

Another A&HWG initiative involves revisiting the current rate filing paradigm for individual health insurance. One of the objectives of the initiative is to see if a solution can be found to the public policy quagmire caused by the “closed block problem”. This refers to the situation where an individual medical policy form is closed to new entrants and future increases are based on the experience of this closed cohort, which over time tends to deteriorate at an increasing rate owing to the effects of what has been labeled “cumulative antiselection”. As a result, the people remaining under the policy form (who typically are no longer insurable, else they would apply for a new policy at lesser rates) are faced with a Hobson's choice: lapse and join the ranks of the uninsured, or bear the burden of large rate increases year after year. This problem has led some to suggest that our current individual health insurance marketplace is intrinsically unhealthy.

The A&HWG has outsourced the study of this complicated issue to an Academy task force, chaired by Bill Bluhm and including representatives from the industry, regulatory, and public policy communities. The task force has been active for well over a year at this writing but is not expected to conclude its work until late 2002.

Statutory Accounting Principles Working Group

The multi-year “codification” project culminated in the issuance of a new Accounting Practices & Procedures Manual that became effective in January

2001. This new statutory accounting manual is organized as a series of Statements of Statutory Accounting Principles (SSAP), in much the same way as GAAP accounting centers around a sequence of Statements of Financial Accounting Standards (FAS). The regulators on the Statutory Accounting Principles Working Group (SAPWG) were responsible for the codification project, and their work continues today with respect to both the issuance of new SSAPs and the modification of existing SSAPs.

A significant portion of SAPWG's attention in 2001 was devoted to SSAP 84, a new statement on admissibility of health care receivables that takes effect 12/31/2001. These assets were not addressed during the original codification project, which means that they would have automatically become nonadmitted on the year-end 2001 statutory balance sheet had SSAP 84 not been approved. I want to focus here on some aspects of SSAP 84 that may influence health actuaries' reserving practices.

First, SSAP 84 affirms that rebates owed to insurers by pharmaceutical benefit managers are to be booked as a separate asset, and that when the rebates are received they are to be booked as a reduction to claims expense rather than as a revenue item. This has several implications on reserving:

- If you have been explicitly reducing your unpaid claims liability by the amount of pharmacy rebates yet to be received (rather than booking the rebates as a separate asset), then you will need to change your practice.
- If you have not been explicitly booking pharmacy rebates as either an asset or a contra-liability, but instead have been implicitly taking their existence into account in setting the unpaid claims liability, then you will need to change your practice.
- Reserve adequacy studies will need to be adjusted to reflect the fact that the paid claims runout contains "negative claims" (i.e., the rebate payments received) that weren't part of what was accounted for in the unpaid claims liability.

Second, the portion of SSAP 84 dealing with admissibility of loans or advances to providers uses provider-specific claim liabilities as a cap on the amount of the asset that may be admitted. In most cases, the admissibility cap is the liability for reported claims relating to the given provider. However, in certain cases involving hospitals, the admissibility cap on the loan or advance is the total unpaid claim liability (i.e., inclusive of IBNR) relating to that hospital. Thus, finance staff may need the valuation actuary to prepare ICOS and/or IBNR estimates on a provider-by-provider basis in order to establish that the amount advanced to each such provider is below the SSAP 84 admissibility limit.

Emerging Accounting Issues Working Group

Whereas SAPWG promulgates new or revised statutory accounting guidance, the regulators on the Emerging Accounting Issues Working Group (EAIWG) issue authoritative interpretations on the meaning of existing statutory guidance. Obviously there are indelible connections between these two topics, and indeed the two working groups share many regulators in common and rely on the same NAIC staff. The topics addressed by EAIWG can come from many sources—insurers, trade associations, audit firms, and professional bodies such as the Academy.

One recent EAIWG interpretation involves a portion of codification that has been somewhat controversial among health actuaries, namely the language in SSAP 55 stating that "management shall record its best estimate of its liabilities for unpaid claims". EAIWG was asked to clarify this language as it pertains specifically to health insurance and the concept of a margin for adverse deviation. Its conclusion was to assert that SSAP 55 neither prohibits nor mandates conservatism in health claim liabilities. This answer may not assuage the concerns of some health actuaries that, insofar as this issue is concerned, statutory accounting is not entirely in synch with the Actuarial Standards of Practice.

Risk-Based Capital Task Force

The Risk-Based Capital (RBC) Task Force is charged with maintaining the NAIC's RBC formulas, of which there are three, corresponding to the three primary statement blanks—Life, P&C, and Health. The task force has a separate working group for each formula, although there is some overlap in membership between the three working groups. While each working group makes decisions with respect to its own formula, those decisions are subject to approval by the task force, so as to assure consistency between the formulas where appropriate. The RBC Task Force relies heavily on the Academy to provide technical recommendations in response to requests for assistance.

Earlier in the year, the Life RBC Working Group approved an extensive series of changes recommended by the Academy, many of which fell under the label of "tax consistency" changes. The Life RBC formula now has a dual structure: each risk component uses a "pre-tax" risk factor to calculate a capital requirement that is ultimately reduced by a "tax adjustment" in order to arrive at a "post-tax" RBC number. While this new structure will take effect for Life RBC in 2001, it was not replicated by either of the other two formulas. As a result, the differences between the Life and Health RBC formulas are somewhat greater in 2001 than in previous years.

The Health RBC Working Group had asked the Academy to make recommendations for 2002 with regard to these same tax consistency issues. In an October report that was approved by the working group, the Academy concluded that there was no urgent need to adapt the pre-tax / post-tax dual structure for use in Health RBC. Moreover, the Academy recommended that, with respect to asset and credit risks, there should be agreement wherever possible between the Health and P&C RBC formulas. In particular, the Academy recommended that Health formula should only move to the dual structure if and when the P&C formula does so; as of this writing, the P&C RBC Working Group does not

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appear to be seriously contemplating such a move.

For further details on Academy RBC proposals, see <http://www.actuary.org/naic.htm>, which contains an archive of all recent Academy reports to NAIC groups on RBC and many other issues.

Blanks Task Force

The regulators on the Blanks Task Force approve changes to the annual and quarterly statement reporting forms and instructions. In their annual meeting each October, they consider changes not for the next year but for the subsequent year, i.e. the October 2001 meeting dealt with changes to the 2003 blanks. Proposals for blanks changes are typically referred to

the Blanks Task Force from other NAIC groups, such as those discussed above.

A major initiative that was just passed by this task force in October is what I will call the "Health blank migration" proposal. This idea originally came from the RBC Task Force, who observed that there are many companies that anyone would think of as being "health insurers" but that, for historical reasons, file the Life blank or the P&C blank. Since risk-based capital is tied to the statement blank, such companies are subject to Life RBC or P&C RBC rather than to Health RBC. The RBC Task Force felt that it would make more sense for all "health insurers" to be regulated by the Health RBC formula, and it concluded that the most practical way to accomplish this would be to get all health insurers filing the Health statement blank.

What the migration proposal does is create a framework by which certain Life

and P&C filers will move over to the Health blank, assuming no objection from their domiciliary regulator. To be eligible for migration, health insurance products must represent (on a net-of-reinsurance basis) at least 95% of a company's premiums, and at least 95% of its reserves, for two consecutive years. Companies that are 100% health under this measurement are always eligible to migrate; companies that are between 95% and 100% health are only eligible if they pass some geographic concentration tests. It is very important to note that, in this context, "health insurance" excludes long-term care and disability coverages.

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From Art to Science - Using Clinical Insight Modeling to Strengthen Actuarial Prediction

by Harry Poteat

(Summary of Dr. Poteat's talk at the Society of Actuaries Annual Meeting, October 21-24, 2001, Section # 58 – "Applying Clinical Insight to Price Catastrophic Risk.")

During my talk I explained the concept of clinical insight modeling. He discussed two different models: the Markov State Transition (MST) and the Rational Artificial Intelligence (RAI) model. The MST model is designed to function in data-poor environments utilizing a benchmark database developed through a process of triangulation. The RAI model is designed for use in data-rich environments where data mining and analysis can identify whether the data forms patterns that

facilitate the prediction of future costs of individual patients (claimants).

Clinical insight modeling consists of three fundamental elements: 1) the incorporation of reproducible, objective processes into predictive models; 2) the use of all available predictive data, particularly epidemiology; and 3) validation of the models. In catastrophic risk prediction, standard statistical models often do not apply. Technology moves forward so rapidly that what made patients expensive five years ago may not make them expensive today, and even if the types of expense remain similar, the case rates and severity for cases in these areas is constantly in flux.

Leverage Technology

One way to achieve repeatable, definable and objective processes—a core element of clinical insight modeling, is



by developing predictive modeling software technologies. Medical Scientists Inc., a Boston-based healthcare software and services firm, has developed a portfolio of predictive modeling technologies to address both data-poor and data-rich environments. MediSave™ is a disease-specific decision-support software suite that predicts

the future outcomes, event rates and direct and indirect costs of disease for a population (even without specific claims experience). The software can also predict the financial impact that potential intervention (e.g., case management) will have upon a population. Hybrid^{AI™} leverages rational artificial intelligence, which evaluates multiple artificial intelligence modeling methods to find the best model, validates the model for accuracy and then allows the user to implement this custom made model. The output of the system is a custom made model derived from the managed care plans data and experience. Hybrid^{AI™} enables identification of potentially catastrophic cases in less time with greater accuracy.

Knowledge is Power

The second key element in clinical insight modeling is to utilize all available predictive modeling information. One way to accomplish this is to involve

of disease progression can provide insight about case mix severity. In a data-poor environment, demographics combined with the epidemiology of disease can be leveraged to reach estimates of case rates (prevalence and incidence) and severity (progression). Using MST models, it is also possible to relate catastrophic risk to levels of medical management. MST models can adjust for changes in treatment and technology. For example, the probability of a diabetic developing kidney failure when not taking a specific medication is 4.9% per year and when taking the medication it is 2.9% per year.

The Litmus Test

The final key element in clinical insight modeling is the concept of validation. By necessity, most modelers use the past as a focus of validation for their models, which is subject to inaccuracy given how rapidly technology and treatments change. Imagine validating a prediction

attempted to duplicate the way the brain thinks about problems. The premise behind rational artificial intelligence is that it is not necessary to use neural net technology to solve every problem. RAI models access many different artificial intelligence learns to find the best predictive model from data presented to it.

For example, the risk of developing catastrophic complications from diabetes is often proportionate to the number of years a person has been a diabetic, a linear problem. Age and risk for prostate cancer in men is linear over certain broad ranges. Using a rational artificial intelligence approach, simple models should be used to attack such simple problems and complicated models used to solve more difficult problems, such as the relationship of median income to catastrophic neonatal risk.

Summary

Clinical insight modeling represents an evolution in medical actuarial prediction that provides an alternative to experience-only pricing. The models allow explicit adjustment for changes in treatment and technology to help meet the challenge of predicting catastrophic risk. My talk emphasized the need to use all available data (e.g., not just pricing) and the need for predictive processes to be both validatable and reproducible.

"Using epidemiological data to predict future case rates provides a means to compensate for the difficulty of obtaining rare claims experience data so as to determine case rates for a population."

medical personnel in renewal underwriting and case management to obtain some clinical insight which can then be combined with the actuaries' understanding of the mathematical patterns inherent in the population and experiences gleaned with other similar populations, as well as some ideas about industry trends and cost over time. A major shortcoming of this approach is that it provides minimal information about case rates. Using epidemiological data to predict future case rates provides a means to compensate for the difficulty of obtaining rare claims experience data so as to determine case rates for a population.

Epidemiological risk factors for a disease can be translated into an overall case rate for the disease and knowledge

for the use of mechanical hearts in 2005 based on year 2000 data. Instead of the traditional approach, the Medisave MST model incorporates a process of combing or "triangulating" claims experience, expert opinion and medical literature (to contain epidemiological and product information) in an effort to model the future. Validation is performed against historical data to supplement the process.

The RAI Advantage

A data-rich environment, when available, is optimal for the use of RAI, the second generation of data-mining technologies. The first generation of artificial intelligence products in health care relied nearly exclusively on the use of a predictive technology called neural nets that

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Medical Insurance in Latin America: Lessons Learned

by Jeffrey D. Miller

Introduction

I served as chief actuary for a medical reinsurance facility active in Latin America and the Caribbean from early in 1998 to early in 2001. At its peak, the facility managed about \$30 million in medical reinsurance premium. Reinsurance support for the facility was withdrawn early in 2001. To the best of my knowledge, run-off liabilities are still being settled.

This article will document the lessons learned in managing the actuarial aspects of this facility. It will contain many clichés and most of the lessons documented apply worldwide, not just in Latin America. It is said that a smart person learns from his or her own mistakes, and a brilliant person learns from the mistakes of others. I hope to help readers move toward brilliance.

Universal Truths

Those who manage insurance programs can often forget the basic universal truths of our business. Managers of medical insurance programs are particularly susceptible to this challenge. Universal truths apply worldwide, but ignoring them can be particularly dangerous in developing economies such as Latin America.

We've all heard the saying: "Work expands to fill the available time". A similar version says, "Medical care expands to consume the available resources". Once a person is injured or ill and enters most medical care systems, there is no natural limit on the money that can be spent treating that person. Only standards of medical practice or limited resources can limit the treatment. Limitations on resources generally arise from limitations in medical insurance contracts.

In the U.S., we know that utilization of medical care increases dramatically when costs are covered by insurance. Insurance increases the resources available, and medical care expands to consume the available resources. International reinsurance can increase the resources available for medical care in

developing countries. The result is exactly the same from a national perspective in developing countries. Medical care expands to consume the available resources. Thus, pricing reinsurance arrangements in developing countries based on historic utilization patterns is certain to lead to losses.

We also know that physicians control utilization of medical care. If maximizing care increases a physician's income (as in fee-for-service medicine), then controlling utilization of care is nearly impossible. Medical insurance programs must be designed and managed to the benefit of physicians as well as patients in order to control utilization. Nearly all successful managed care programs recognize this universal truth. In developing countries, physicians have even more control over utilization. Potential patients are plentiful. Thus, if a physician can maximize his or her income by maximizing the treatment provided, then utilization can not be controlled.

Finally, universal participation is required to make medical insurance programs viable. Just like Robin Hood robbed from the rich and gave to the poor, healthcare programs rob from the healthy and give to the sick. If the healthy don't participate, there's not much money to give to the sick. Developing countries in Latin America recognized this truth early on, and nearly all have laws requiring mandatory participation in healthcare plans. However, most of these countries are better at writing laws than they are at enforcing them. From a theoretical perspective, social healthcare plans in Latin America look much better than the system in the U.S. However, administration of these plans leaves much to be desired, and the result is even more adverse selection than we see in the U.S.

Latin American Challenges

Some of the challenges we experienced seemed to be unique to developing countries, and were certainly present in Latin

America. The biggest challenge was the concept of WIN-WIN business relationships. Most of the people in Latin America believe that the international insurance markets, and particularly U.S. insurers, control all of the money in the world. In fact, they aren't too far from being correct. However, the idea that we were doing business in Latin America in order to make money was often lost on our clients. They seemed to think that we were there to give them money. Many seemed to view international business relationships as either WIN-LOSE or LOSE-WIN situations. They always wanted to make sure they were on the winning side.

We were challenged to design reinsurance arrangements that were WIN-WIN deals, and then sell them to our clients. In retrospect, a WIN-WIN medical reinsurance arrangement in Latin America is likely to look more like a financial guarantee than a risk transfer. Such guarantees can probably be designed to meet the requirements for reinsurance written into the law in many countries and still avoid contributing resources that are likely to expand medical care.

What About the Future?

Despite the challenges documented above, I'm still looking forward to re-entering the medical insurance market in Latin America. Medical systems are still being developed to treat over 400 million people. That's a real challenge. When I do start working in the market again, I'll follow these rules:

1. Don't rely on past experience as a predictor for the future.
2. Make sure that physicians are on my side of the table.
3. Never close a transaction that doesn't look like a WIN-WIN deal.



Health Care Cost Trends 2002 – An Insurer's/Reinsurer's View on Cost Increases for Group Medical Business

by Achim M. Dauser

When an actuary considers how to set rates for group medical business for the upcoming renewal period, it is critical to know how health care costs are developing. A profitable block of medical business can quickly turn into a substantial underwriting loss when cost trends for the different components of medical business are underestimated. This is particularly true for Employer Stop Loss Reinsurance, which is generally protected on an excess basis. Cost trends for claims that exceed the deductible usually are a multiple of the base medical trend as a result of the leveraging effect.

Current Market Environment

In the early 1990s, medical inflation decreased and reached a low of 2 to 4% in the mid 1990s. Since then, medical inflation has been increasing and the new millennium marked a return to double-digit increases. Aside from the inherent reasons of an aging population, high cost therapies and new technologies, the current drivers of soaring health care costs are prescription drug cost increases, a managed care backlash and the economic downturn. Undoubtedly, the events of September 11th will impact certain components of healthcare. The implications are numerous—increases in prescription drugs for depression, stress, anxiety and sleep problems and the development of a completely new consumer behavior, the hoarding of antibiotics due to the perceived threat of a chemical attack or bioterrorism.

Prescription Drugs

Over the last several years, the cost of

prescription drugs was the fastest growing component of trend and one of the main drivers of increased costs. Pharmaceutical industry marketing to providers and patients has significantly driven trend. According to a study prepared by the National Institute for Health Care Management, consumer drug advertising rose 35% last year from \$1.8 billion in 1999 to \$2.5 billion in 2000. Increases in the sales of the 50 drugs that were most heavily advertised to consumers accounted for almost half of the \$20.8 billion increase in drug spending last year.

The spending increase can be attributed to a boost in the utilization of the 50 drugs, and not to a rise in price. There are several studies predicting cost increases for prescription drugs of between 17 and

20%. These numbers take into account the fact that—other than last year—many employers have put in place a wide variety of alternatives to take control of prescription drug costs. With a slowing economy and lessening pressure on employers to provide attractive reward packages, health plans now

include higher co-pays, three-and four-tier plans and lifestyle drug exclusions.

On the other hand, a slowing economy with layoffs centering on young and single employees will result in an increase in drug costs for the “remaining” active group of employees.

The impact of September 11th on cost increases for prescription drugs could be significant. Increased drug utilization of antibiotics, antianxiety and antidepressant medications already can be noted. If

we assume that two out of ten employees will receive antibiotics related to the current anthrax scare and the war on terrorism at a cost of \$100 per employee, drug costs for the insurers will go up by more than 2.5% over the next year. Additional screening, testing and other treatments triggered by the new uncertainties the patient now has to overcome will result in a further drug cost increase.

Overall, with drug spending still being the fastest growing sector, it can be assumed that cost increases for prescription drugs in the current environment will be between 25 and 30%. It remains to be seen how quickly the consumer will react in these times of uncertainty and how soon the economy will rebound. Both factors will have a significant impact on trend for drugs.

Base Trend

Wide spreads in premium rates can exist within geographic areas, industries and within health care delivery systems. However, significant increases in medical costs appear across all plan types without regard to industry or geography. Recent HMO price increases have exceeded those of many PPO plans and even some traditional indemnity plans. Managed Care Organizations have increased hospital and physician reimbursements and eased the restrictions on access resulting from gatekeepers, pre-authorizations and capitation (managed care backlash).

Outpatient treatment will increase due to the recession and individuals facing unemployment who will seek medical care before their health insurance runs out. According to several surveys for the year 2002, a medical base trend between 13 and 15% can be assumed with some variations depending on the type of plan. However, the survey results do not take into account the events of September 11th or the deepening economic downturn. Counseling, treatment of mental illness



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Health Care Cost Trends

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and other stress-related physician visits have likely increased across the country and are not necessarily limited to the geographic areas of the attacks. Physician visits for screening and testing to exclude anthrax will increase. Higher utilization will correlate with increased diagnoses of more severe diseases and will result in further treatment costs. The extent of these factors is unclear at this point in time. However, in constructing scenarios assuming how many individuals out of a hundred will receive mental treatment, how many will see their doctors for anthrax checks or other testing, and how many of those will require further treatment due to an unclear diagnosis, I am able to develop about a 3 percentage point additional cost increase, with even higher results for the New York area. Based on these factors, it seems appropriate to expect a medical base trend in the neighborhood of 16 to 18% depending on the plan type.

Leveraged Trend

For insurers and reinsurers in the stop loss market, the question "What is the trend for large health claims?" is crucial. The experience of the last two years shows that rate increases of 25 to 30% have not necessarily improved underwriting results. Currently, rate increases between 40 and 50%, depending on the deductible level, are not uncommon. Most of the factors described above including uncertainties related to the war on terrorism and the current bioterrorism scares will have a small impact on leveraged trend.

However, an increased utilization of outpatient care can trigger expensive treatments, which will exceed the employer's retention. Furthermore, the managed care backlash has caused managed care organizations to increase payments to providers and it is doubtful whether outlier thresholds have been adjusted adequately.

In this environment, it can be expected that particularly the number of large claims will increase, thereby resulting in an increase in leveraged

trend. Trend assumptions of up to 30% at a deductible of \$50,000 and up to 35% at a deductible of \$100,000 do not appear overly conservative.

Future

The managed care backlash and recent events are further driving health care costs. Many companies will pass along cost increases to their employees. This cost shifting could accelerate in 2003, since many health care cost decisions for 2002 were made earlier this year when no recession was expected. Considering the current social and economic market environment there is no end in sight to double digit increases in health care costs.

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Investigation of High Deductible Trend

by G. Russel Hugh

Each year health actuaries repeat the activity of assessing and revising rate manuals for the upcoming year, and thus commences the annual debate over the elusive and decidedly significant figure of trend. This year, perhaps the result of uncertainty created by a few years of poor experience, estimates of trend have varied widely, especially at higher specific deductible levels. In an attempt to find some conclusive evidence to support a concrete figure for high deductible trend, I have examined large claim data with an eye on the variance in frequency and severity. As a result of this study I have noted some fluctuations in the last few years that deserve additional attention. The data, which I will detail below, bears out the reality that trend had increased

dramatically since 1998. This increase was surprisingly large at the highest deductible levels, and was impacted by both the frequency and the severity of claims at these levels.

To conduct my study I have used a reasonably credible database of large claims spanning a six-year period from 1995 through 2000. The database, though not as large as the exposure base for the upcoming Society of Actuaries Large Claims Study, had a total certificate count of approximately five million. Claims represent amounts in excess of a minimum retention of \$250,000 and a maximum retention of \$750,000. Claims were limited to a total annual figure of \$1,000,000. Completion factors were applied to more recent data to reflect expected claim reserves.



From my database, I have observed that since 1998 PEPM costs have increased by 30%, 74%, and 157% per year for the \$250,000, \$500,000, and \$750,000 deductible levels, respectively.

These results are in line with the general consensus that trend has increased significantly in the last few years. For comparative purposes, using simplified assumptions of 12% underlying annual trend, constant frequency, and average ground-up claims of \$390,000, \$625,000, and \$865,000 at the \$250,000, \$500,000, and \$750,000 deductible levels, respectively, the expected leveraged trend from 1998 to 2000 was 31%, 51%, and 71%. In this simplified example, the actual and expected trends are nearly the same at \$250,000, but I found it to be of particular interest that the increases in cost were so skewed to the higher deductible levels. Though I expected a larger figure at these levels due to deductible leveraging, I did not expect that alone to create such sizable increases.

In an effort to identify the cause(s) of the higher than expected trends, I looked at the frequency and severity of the claims at these higher deductibles. Table

1 shows the total PEPM costs, frequency rates, and average severity for the database by claim year and deductible level. At the \$500,000 deductible, the frequency and severity have nearly identical impact on the PEPM cost. At the \$750,000 deductible, however, the increase in cost is driven by the significant jump in frequency. If the pricing for 2000 were set using the 1998 expected trends, losses of about \$2,200,000 and \$1,000,000 would have resulted at the \$500,000 and \$750,000 deductible levels, respectively, as illustrated in Table 2.

It might have been adequate to conclude the study by simply determining and assigning a new trend figure to each deductible level for the upcoming year's manual. I am, however, reluctant to thus ignore a potentially critical trend in large claims and its impact on costs. Referring to recent SOA health meeting sessions, "outlier" provisions in provider reimbursement contracts, combined with

rapid advances in medical technology, increasing consumer expectations, and population aging, may provide some anecdotal evidence as to the causes of the daunting increases in trend.

Though incomplete, this initial investigation into the existence of and causes of large cost increases at high deductible levels has convinced me that the issue is deserving of greater attention in the future to prevent a dramatic deterioration in results at what in the past may have been considered "safe" retention levels. The review of additional data with claims by diagnosis would be helpful in continuing this investigation, as well as input from claims management personnel and experts in emerging clinical research.

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TABLE 1
Database Results by Claim Year and Deductible

Claim Year	Excess Claims PEPM by Deductible			Claim Year	Excess Claim Frequency by Deductible			Claim Year	Excess Claim Severity by Deductible		
	\$250k	\$500k	\$750k		\$250k	\$500k	\$750k		\$250k	500k	\$750k
1995	\$1.63	\$0.21	\$0.02	1995	0.174	0.018	0.005	1995	\$112,252	\$139,874	\$63,745
1996	\$1.59	\$0.19	\$0.05	1996	0.172	0.016	0.006	1996	\$111,378	\$141,298	\$95,576
1997	\$1.62	\$0.31	\$0.03	1997	0.191	0.018	0.006	1997	\$101,624	\$206,481	\$73,413
1998	\$1.62	\$0.24	\$0.03	1998	0.141	0.023	0.003	1998	\$137,984	\$124,599	\$113,369
1999	\$1.97	\$0.55	\$0.14	1999	0.156	0.029	0.012	1999	\$150,924	\$230,362	\$141,469
2000	\$2.71	\$0.73	\$0.17	2000	0.211	0.040	0.016	2000	\$154,684	\$220,813	\$131,647

TABLE 2
Illustration of Actual to Expected 2000 Database Results

Deductible Level	'98 Actual PEPM Cost	Expected Annual Trend to '00	'00 Expected PEPm Cost	'00 Actual PEPM Cost	2000	2000	2000
					Monthly Cert Count	Monthly \$ Gain/Loss	Monthly % Gain/Loss
\$500k	\$0.24	51%	\$0.55	\$0.73	1,000,000	-\$2,193,312	-25%
\$750k	\$0.03	71%	\$0.09	\$0.17	1,000,000	-\$987,324	-48%

SOA's Webcast on NAIC Health Reserves Guidance Manual

by *Cabe W. Chadick*

On October 9, 2001, the Society of Actuaries held its first-ever Webcast. This first webcast focused on the NAIC Health Reserves Guidance Manual, a topic that garnered approximately 60 interested participants. The Webcast grew out of communication efforts from the Joint SOA/Academy Committee for Communications on Health Issues, SOA staff members, as well as the three panelists.

What is a Webcast and how does it work?

The SOA's first Webcast was a 90-minute interactive audio and world-wide-web conference. The Webcast was billed as a cost-effective way to learn about the subject and gain some Professional Development credits, all without having to fly to a seminar. All one needed to participate was a phone and a modem connection for Internet access. Two days prior to the Webcast, the participants received detailed instructions via e-mail on how to dial into the conference via a toll-free number and where to locate the presentation, which was in MS Powerpoint format. The audience followed the graphics presentation broadcast over the Internet and accessed the audio portion of the conference via the telephone.

Three experts volunteered to present

their viewpoints in print and audio and answer questions. The design of the Webcast allows for substantial audience participation. Prior to the presentation, interested parties were encouraged to e-mail questions to a separate SOA e-mail address established for this purpose. About 30 questions were received, most of which were surprising in the detail and amount of thought behind the questions. The panelists then used these questions to tailor their presentations on issues of most relevance in the marketplace. The Webcast also is designed, time permitting, to allow participants to ask questions of the panelists during the Webcast itself. The panelists were also able to poll the Webcast participants about their approach to key health reserve topics such as amount of loss adjustment expense (LAE) provision as well as provision for adverse deviation (PAD). For example, the poll of participants' approach to PAD produced the following results:

Provision For PAD	Percentage of Participants
0%	7%
0.1%-3.5%	5%
3.5%-7.5%	46%
7.5%-12.5%	34%
>12.5%	8%

Participants were also able to post follow-up questions in the SOA's discussion forum for approximately two weeks

after the Webcast. About 20 participants took advantage of this opportunity, asking questions on issues ranging from policy grouping for contract reserves to deficiency reserves on group health conversion policies. These questions included those that were too lengthy or complex to be answered during the formal program. The panelists agreed to post their responses to questions received in the discussion forum over this two-week window. This process provided ample opportunity for members to ask questions and also provided a more "permanent" record of information for future reference.

What did this Webcast cover?

This Webcast covered NAIC Health Reserves Guidance Manual. The expert panelists were drawn from the NAIC Committee that was responsible for drafting the manual. This manual took over a year to develop and involved not only the regulatory community but also received industry input. For the purposes of the manual, "health" is considered broadly, including disability and long-term care, as well as other accident and health products outside of dental and medical.

The NAIC Health Reserves Guidance Manual is organized into the following sections:

- Introduction
- General Considerations
- Claim Reserves
- Contract Reserves
- Provider Liabilities
- Premium Deficiency Reserves
- Appendices

The main sections outlining the four general types of reserves each usually provide guidance on the following:

- Reserve type's definition
- Subtypes within the general reserve type
- Applicable lines of business
- Relationship to the other reserve types
- When the reserve should be established
- Calculation
- Groupings
- Assumptions
- Conservatism and similar adjustments
- Documentation

At the start of the Webcast, Julia Philips, chair of the NAIC's Accident & Health Working Group, covered the history and role of the manual. She relayed the regulator's as well as practitioner's need for a source of guidance material regarding calculation and documentation of health reserves for statutory financial statements. She stressed that the manual represented guidance, and not authority; rather, she pointed out that the authorities (e.g., state law, ASOPs) are listed in the manual.

Next, Darrell Knapp covered claim and policy reserves. He gave the manual's definition of both: Claim Reserves—Measurement of reporting entity's contractual obligation to pay

benefits as of a specified date; Policy Reserves—Reserve established when a portion of the premium collected in the early years of a contract is meant to help pay for higher claim costs arising in later years. Along with both definitions, he clarified various concerns the valuation should consider in each reserve's definition (e.g., in claim reserves you need to consider whether all events have occurred to establish liability). Darrell was also able to cover pertinent issues, such as calculation methods and related significant assumptions, the need for follow-up claim reserve studies, data considerations and provision for adverse deviation.

Donna Novak covered deficiency reserves and provider reserves. Donna likewise gave each reserve type's definition: Deficiency Reserve—Reserve set up where present value of future premiums and current reserves are not sufficient to cover future claim payments and expenses; Provider Liabilities—Any type of liability that may result in payments after the valuation date from an insuring entity to a provider or provider entity under some type of contractual alternative payment method where payments are not directly related to a single claim. For deficiency reserves, she covered its relationship to other reserves as well as the following issues:

1. Pooling/combining blocks of business;
2. Time period for projection;
3. Expenses: Full vs. marginal;
4. Handling a guaranteed-renewable block that a carrier may cancel;
5. Potential for range of reserve estimates.

For provider liabilities, Donna stressed the need for risk and the requirement that this reserve type must be unrelated to a single claim. The following provider liabilities calculation issues were also covered: when to calculate, seriatim versus aggregate, and alternative calculation methods.

Finally, as a wrap-up, Julia Philips discussed the NAIC Working Group's process for changing the manual (e.g., section additions or modifications), possibly as a result of changes in ASOPs or statutes as well as new or revised health products. She also relayed the manual's coordination with the statutory codification efforts, which basically will result in revisions to the manual to conform with codification. In terms of implementation of the manual, participants again heard from Julia that the manual is not intended as a "statutory authority," but more so as guidance as well as a document for practitioners to provide support for their reserve approach. However, similar to most ASOPs, the participants were informed to stand ready to explain and document an approach that was inconsistent with the manual.

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International Health Seminar, Second Communiqué

Preparations are well advanced for the first International Health Seminar to be held during the first half of the International Congress of Actuaries in Cancun on Monday, March 18 and Tuesday, March 19, 2002. The Health Seminar is the health program of ICA. Attendance is open to all ICA participants.

This is a truly international seminar. Our variety of policy and practice sessions feature speakers representing 16 nations. The Keynote speaker is Julio Frenk Mora, Health Minister of our host nation, The Republic of Mexico. Señor Frenk is a well-known international health policy expert.

Our goal in developing this program is to create a forum where health actuaries from around the world can come to interact and learn from their international colleagues. Our 12 sessions offer an international perspective on a wide range of health policy and health product-oriented topics of interest to health actuarial practitioners. We welcome your participation!

Questions about the Seminar should be addressed to Organizing Committee co-chairs, Howard Bolnick (hbolnick@nwu.edu), Ibrahim Muhanna (ibrahim@muhanna.com) or Edward Levay (ejlevay@praemium.org).

International Health Seminar Program

Opening Plenary Session

Health-Care Reform Using a Public-Private Partnership: Chairman, Howard Bolnick (USA)

Welcome and Introductory Remarks: Edward Levay, IAA President

Keynote Speaker: Julio Frenk Mora, Health Minister, Republic of Mexico (invited)

Responders:

- o Ibrahim Muhanna (Lebanon and Cyprus)
- o USA responder (to be determined)
- o European responder (to be determined)

Public Health and Policy Concurrent Sessions

Session P1: Integration of Public and Private Sectors: Chairman, Ibrahim Muhanna (Lebanon and Cyprus)

- o Howard Bolnick (USA), "Designing a World-Class Health Care Financing System" (ICA paper #44)
- o Alvaro Castro Gutiérrez (ILO) and Giovanna Ferrara (Italy), "Funding Health Care" (ICA paper #45)
- o Edward Reiche (Singapore), "Social Security and Private Health Insurance in Tandem in Singapore"

Session P2: Health Risk Adjustment: Chairman, Bernard Rabinowitz (USA)

- o Brent Walker (Australia), "Health Systems in Australia"
- o Enne Osinga (The Netherlands), "How Insurers are Compensated by Government and/or Insurance Premiums for Extra Health Risks in the Netherlands"
- o John Bertko (USA), "Health Systems in the U.S."

Session P3: Health-Care Financing Systems: Chairman, Yair Babad (Israel)

- o Yair Babad (Israel) and Tuvia Horev (Israel), "The Israeli Health Care System — From Health Funds to a National Health Insurance Law"
- o Erich Schneider (Germany), "The Main Features of the German Private Health Insurance" (ICA paper #41)
- o Rainer Fuerhaupter (Germany), "Adjustment in a Fully-Funded System"

Health Insurance Practices Concurrent Sessions

Session H1: Critical Issues in Managing Long Term Care Insurance: Chairman (to be determined)

- o Enne Osinga (The Netherlands)
- o Ermanno Pitacco (Italy)
- o Helga Riedel (Germany)

(Note: also see "Private Compulsory Long-Term Care Insurance in Germany," ICA paper #163)

Session H2: Critical Issues in Managing Income Replacement Insurance: Chairman (to be determined)

- o Jeroen Breen (The Netherlands)
- o Eric Schneider (Germany)
- o Mike Lombardi and Helene Pouliot (Canada)

Session H3: Critical Issues in Managing Critical Illness Insurance: Chairman (to be determined)

- o Peter Temple (South Africa)
- o Peter Turvey (UK)
- o Gunnar Kvan (Norway)

Note: Andres Webersinke (Singapore) to send presentation for inclusion in the Seminar record

Session H4: Critical Issues in Managing Supplemental Private Medical Indemnity Insurance: Chairman (to be determined)

- o Rainer Fuerhaupter (Germany)
- o Aisling Kennedy (Ireland/U.K.)
- o Ricardo Casares (Mexico)

Session H5: Critical Issues in Managing Full Coverage Medical Indemnity and Managed Care: Chairman (to be determined)

- o Shaun Matisonn (South Africa)
- o Volker Altenaer (Germany)
- o David Axene (USA)

Session H6: International Issues in Private Sector Health Insurance Supervision: Chairman (to be determined)

- o Norma Alicia Rosas (Mexico)
- o David Paul (UK)
- o Brent Walker (Australia)

Session H7: State-of-the-Art Modeling Techniques: Chairman (to be determined)

- o Dr. Steven Habermann, City University (U.K.)

Closing Plenary Session

Concurrent Session Reports and Discussion: Seminar Co-Chairmen Howard Bolnick (USA), Ibrahim Muhanna (Lebanon and Cyprus) and Edward Levay (ASTIN)

- o Chairmen provide short reports on their concurrent sessions.
- o A summary of National Reports on the current state and future of health actuarial practice will be prepared and presented.
- o Discussion of future plans for international health actuarial activities
- o The Seminar Co-Chairmen will make their closing remarks

Seminar Time Schedule

Monday, March 18 13:45 - 15:15

Opening Plenary Session

Tuesday, March 19 8:30 - 10:00

Concurrent Sessions:

P2, H2, H3, H4

Monday, March 18 15:30 - 17:00

Concurrent Sessions:

P1, H1, H2, H3

Tuesday, March 19 10:15 - 11:45

Concurrent Sessions:

P3, H1, H5, H6

Tuesday, March 19 12:00 - 13:30

Concurrent Sessions:

H7, H4, H5, H6

Tuesday, March 19 15:00 - 16:30

Closing Plenary Session

Important Administrative Notes:

1. If you are registered for ICA 2002 and plan to attend Health Seminar session, please visit our International Health Seminar Web site at www.ihas.org to register for the Seminar and sign-up to attend sessions. To register for ICA 2002, please visit the Congress Web site at www.ica2002.com.
2. Presentations, papers and National Reports will be available on the Seminar web site. Health papers that are submitted to the ICA Scientific Committee and not presented during the Health Seminar will be presented in a separate ICA session at a time to be determined.

Health Section Photos from the 2001 Annual Meeting in New Orleans



(Above) Retiring Health Section Chairperson, Leigh Wachenheim, speaks at the Health Section breakfast at the Annual Meeting in New Orleans.

(Right) Dan Wolak, incoming Chairperson, speaks at the Health Section breakfast at the Annual Meeting in New Orleans.



Casualty Actuarial Society

Society of Actuaries



\$10,000 Ph.D. Grants



PURPOSE

To encourage graduate students to complete research in topics related to actuarial science and to pursue an academic actuarial career in North America upon completion of the Ph.D. degree program.

The grant is to be used at the discretion of the Ph.D. candidate for appropriate expenses related to the completion of the Ph.D., including tuition, living expenses, purchase of equipment or software, expenses associated with attendance at conferences related to the thesis topic, and expenses associated with literature searches, typing, photocopying, mailing.

ELIGIBILITY

Individuals who have been admitted to Ph.D. candidacy by their institution and who have a thesis topic in actuarial science or a related area.

Thesis topics of individuals who have received Ph.D. Grants include:

- “Informed Trading and Option Pricing”
- “Stochastic Models of Interest Rates in Actuarial Science”
- “Modern Statistical Methods in Credibility Theory”

AMOUNT OF AWARDS

The grant is generally \$10,000 per academic year, renewable up to two times upon evidence of satisfactory progress and available funds.

SELECTION

Grants are awarded on the basis of individual merit. Candidates must intend to pursue an academic actuarial career in North America. Relevance of thesis topic to actuarial science is a primary consideration in the evaluation process. Preference is also given to candidates who are members, or working toward becoming members, of the Casualty Actuarial Society or the Society of Actuaries.

APPLICATION

Available on the SOA web site at www.soa.org/academic , or contact:

Judy Yore tel 847-706-3573 fax 847-706-3599 jyore@soa.org
 Society of Actuaries
 475 N. Martingale Road, Suite 800
 Schaumburg, IL 60173-2226 U.S.A.

Completed application forms and supporting materials must be received at the Society of Actuaries no later than March 1, 2002. Recipients will be notified by May 15, 2002.

The Casualty Actuarial Society and the Society of Actuaries are international research, education and membership organizations that promote the advancement of actuarial science.

