



HEALTH SECTION NEWS

"For Professional Recognition of the Health Actuary"

Issue No. 46, June 2002

Hospital Charges Become A Significant Issue Again

by John P. Cookson

Over the past few years hospitals, through consolidation and affiliations, have gained back much of the negotiation strength they had lost to HMOs and PPOs during the late 1980s through the mid-to late 1990s. As a result of this strengthening, hospital charge levels have become a more significant issue than they were five years ago. Many out-of-area and out-of-network payments are a function of charges, many in-network contracts (especially outpatient) are still based on discount from charges, and in-network contracts based on fixed payments have increasingly added stop loss provisions that convert the payment to a percentage of charges once the case reaches a charge threshold such as \$25,000 or \$50,000. In addition to the high cost impact on hospital claims, these stop loss provisions have caused particularly high cost escalations at some



reinsurers that provide catastrophic claim stop loss protection for employers and insurers.

There are substantial differences in charge levels by hospital, and these differences are not readily available to most employers and claims payers. In order to understand and measure these

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Chairperson's Corner: Looking Back...

by Daniel L. Wolak

Twenty-five years! Wow, it's been twenty-five years since I started in the group life and health field. I remember that summer day, walking into the CNA offices in Chicago and having my desk in a pod shared with five other young, aspiring actuaries. There was Bruce Iverson (now on the SOA Staff overseeing research), Mitch Serota, Eric Smithback, Bill Sonnleiter and Kathy Manning. I remember after working that day, I attended a ball game on the "south side" to see my team back then, the White Sox, take on Reggie Jackson and the team which I now enjoy seeing with my son, the Yankees.



Dan Wolak

Twenty-five years. So what have I seen in the health insurance market from the risk taker side, that is, insurance and reinsurance side? I've seen changes in health plans (going from Base + Supp to MSAs and cafeteria plans), new ways to control claim costs (hospital utilization review in the '80s to negotiated fees for PPO's in the '90s), small group medical pricing (select and ultimate pricing to small group rating laws) and healthcare trend (rising in the '70s to... well, rising currently...some things don't change).

Experience is always the best teacher, but at times a comment or tidbit from someone else can be very helpful. Okay, as a health actuary "enjoying" my silver anniversary, the following are several of my thoughts on "lessons

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Letter from the Editor

by Jeffrey D. Miller

Greetings! If you want to stay up to speed on new developments in health actuarial work, *Health Section News* is the place for you! This edition includes another set of excellent and substantial articles on new topics in our practice.



Jeff
Miller

Our entire section owes a debt of gratitude to the authors for their contributions. We owe even more thanks to Bernie Rabinowitz and members of the Health Section Council for their continuing efforts to recruit authors and obtain their articles.

See you all in San Francisco!!
— Jeff

Letter to the Editor

Dear Editor:

In his article "ASOP No.6" in the January 2002 *HSN*, I agree with Mr. Hogue in part and am grateful to him for raising this issue for discussion in the actuarial community. I feel one key to the issue of setting per capita cost assumptions where there is insured coverage purchased from a community rated entity is the assumption in Mr. Hogue's example—the impact of pre-Medicare retirees on the community rate. As a retiree medical valuation actuary, it is quite a proposition to determine the nature and significance of an insurer's pre-Medicare retiree population. Yet I believe that would be essential to successful implementation of Mr. Hogue's suggestion. And what of

the more complex scenarios where the group is community rated by class, but the class factors include age but not retirement status? Even if a "successful" implementation is difficult to achieve, it should be attempted if the insurer is rating by class and class includes morbidity adjustment by age. Of course, if experience with any credibility is available, it should be considered, but henceforth we will consider the situation where none is.

With due respect to the anonymous FASB technical support staff member, I believe there are frequently situations where a community rated premiums can reasonably be used without adjustment for morbidity by age and/or morbidity by retirement status in retiree medical liability valuations (FAS 106, SoP 92-6, GASB, other).

In the latest incarnation of ASOP 6, appendix 2 addresses Community Rated Premiums and Section 3.4.5 and the comments and responses related to

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3.4.5 also consider the use of Premiums. This standard leaves room for use of premiums in these certain situations where there is a historical and apparently permanent ongoing subsidy by a population external to the plan sponsor. Furthermore, it does not limit this use of the community premium rate to the situation where the community rate is based on retiree, only experience as Mr. Hogue suggests it should. Appendix 2, clearly states "if the insurer appears to be committed to continuing such subsidy for the retirees, there is some justification for valuing future retiree costs for the post-retirement plan sponsor with the community rate" (p. 30).

From a theoretical standpoint, the

essence of retiree medical valuations is the valuing of a sponsor's expected liability. What is meant by expected? One clue is FAS 106 says the actuary should not "expect" or anticipate changes in the federal Medicare program. In the same vane, community rated plans may change their rating methods or stop writing new coverage. Is this a reasonable expectation? I don't think it is reasonable. In fact, some community rated plans have been around longer than Medicare. Not just a few old HMOs, but a number of small and large regional HMO and insurance companies frequently show little ability or interest in differentiating between pre-Medicare retirees and active

employees. In these cases the liability is borne by the entire insured community. There is no reason to expect this to change. Thus there is every reason to expect that the retiree medical plan sponsor's cost will be a function of the plan's community rate.

Given this is the case, I think it is appropriate that the answer to question 11 in the Implementation Guide was written as it was, regardless of intent.

Sincerely,

Wes Edwards

Chairperson's Corner

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learned" on the health insurance side of the practice.

1. "It's Good Business"

Those are words that I have learned to be cautious of. Generally when this statement is made, there is little information to support it. If all the people who said that they were "cherry-picking" the good risks were actually able to do this, health insurers would never have lost any money!

2. The Price of an Education

Being involved with a new product is always interesting, and generally significantly more challenging than pricing an inforce product. There are three challenges. First, there is a lack of data when pricing a new product...naturally since it is new. Second, underwriting guidelines and marketing techniques to write the better risk are untested. Lastly, to push a conservative organization like an insurer to venture into a new product generally involves an energetic product champion who is convinced, and convinces many others, of the success of the new product. Naturally, an education is involved and the price is a tuition which many times is accompanied by initial experience losses.

3. The Twilight Zone

The most uncomfortable aspect is being in situations where the common belief suggests sound reserves or pricing, but there is little information available to the actuary to support it. This might be related to the actuary's own lack of expertise with the product, or the quality or source of data is not defined, and/or time is limited to really focus and develop a knowledge of the product. In such situations, you as an actuary are now entering "The Twilight Zone". What should you do when asked to analyze and validate a product where you and possibly your company/client lack a core competence?

The lead article "Déjà vu all over again" published in the February edition of *The Actuary* was excellent. Towards the end of that article, one of the participants in the panel discussion states the following:

"I think the question for the actuary comes back to this: since it's the life (A&H) companies that were getting burned so badly by reinsuring this workers' comp carve-out, were their pricing actuaries equipped to handle this? Did they realize they weren't equipped to handle it, and were they trying to bring in people who did know what they were doing, or should have known what they were doing?"

Unfortunately most people agree the answer is no. Recently, workers

comp written by A&H reinsurers has surfaced as a problem, but in the past there have been losses from MEWAs and failed METs that strained the surplus of life and health insurers. Five or 10 years from now, it may be déjà vu if we are unwilling to question the questionable when we are in the "Twilight Zone".

4. Is it Priced Right?

From my experiences on the risk side, insurance company and reinsurer, I believe the fundamental responsibility of the health actuary is to be able to answer the previous "simple" question. This is naturally the challenge. Our friends on the individual life side, I suggest whimsically, have seen their costs decline at the rate of 0.5% or 1.0% a year, based on mortality improvement. We on the health side have seen health costs change from year to year in a range of 2% to 20% over the past 25 years! And the change in cost for stop loss and other high deductible programs has been a multiple of that! What a business!

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Hospital Charges Become..

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differences, a geographic, case-mix, severity adjusted relative charge index has been developed to rank each unique Medicare hospital billing ID. This covers virtually all hospitals, but is underrepresented in Children and Maternity hospitals. Medicare data charges (Medpar database) are adjusted to a common geographic area, and a relative value scale is developed by DRG and severity. As a result, each hospital can be benchmarked reflecting its overall case-mix and severity. The benchmark comparison can also be evaluated at finer levels of detail, such as admission type, Major Diagnostic Category (MDC) and DRG. This benchmark can be viewed on both a per day and per case basis. In addition, avoidable days (efficiency of LOS) can be incorporated and the per diem can be benchmarked to reflect the efficiencies of hospitals that better manage their LOS.

The results of our analysis reveal a number of interesting facts. First, the range of relative geographic, case-mix, severity adjusted per diem charges is quite broad, from as low as 70% below average, to as much as 334% above average. In terms of actual charges, the highest hospital was nearly \$16,000 per day for medical/surgical cases, with several others charging over \$10,000 per day and nearly 60 charging over \$7,500 per day. The highest charging hospitals tend to be clustered in California, Texas, New Jersey and Pennsylvania. Since the charge master within a hospital is the same per service irrespective of the payer, it is logical to assume that the commercial and Medicare charge levels are related. This can be tested by comparing the Medicare and other payer charge distributions for the hospitals from 20 states that make their hospital data publicly available. If this demonstrates consistency, then this information can be used to generalize the Medicare data for all

hospitals to estimate the commercial charge levels nationally.

A similar relative value analysis was completed (as described above for the Medpar data), using the state data separately for Medicare (with at least 1000 cases) and commercial (despite this, some hospitals may have less than 200 commercial admissions) primary payer categories. The correlation between the Medicare and commercial state data per diem charges is over .95 over all admission types. Given claims volume differences within hospitals between Medicare and commercial

‘The highest charging hospitals tend to be clustered in California, Texas, New Jersey and Pennsylvania.’

this is very significant. We believe even better results can be produced by separating out routine room and board charges from ancillary charges, and medical/surgical from psychiatric/substance abuse cases. Ancillary charge per day for Commercial payers tends to be higher (all other variables held constant) because of the lower average LOS for commercial patients. Since not all of the state databases have room and board charges separately identified, this must be tested with a smaller subset of the state data. Preliminary tests on a smaller subset indicate more accurate predictions on this basis.

There are a number of uses for this analysis. The first is network selection, which in connection with the negotiated reimbursement contracts and discounts, can be used to determine the most cost effective network and hospitals. This can also be linked with quality data measures based on the same

dataset. Hospitals with stop loss reimbursement provisions can also be reviewed in terms of appropriateness of charge levels, with the understanding of the impact before such contracts are signed.

A second use could be to develop a Reasonable and Customary scale for out-of-network, out-of-area charges. A reasonable relationship to average charges, or a limit based on specified percentiles can be easily developed. This can also be used as a starting point for negotiation on individual claims.

A third use would be as a proxy for outpatient charges. Since the ancillary charge levels for specific services are the same whether done on an inpatient or outpatient basis, the ancillary relative values can be used as a proxy for outpatient charge levels. This would also reflect the impact of higher or lower utilization pattern (intensity) differences between hospitals. These ancillary charges could even be further split by type, such as lab, x-ray, etc.

Finally, recent cost to charge ratios from filed Medicare cost reports can be applied to the charge levels in order to estimate approximate costs, which can also serve as a starting point for negotiating a reasonable reimbursement level.

Extracting this kind of information from the reams of health care data and knowing more about the differences between providers is already being accomplished. The task now is to put it to good use. Clearly, managed care has been on the retreat for several years. However, employers and individuals are not readily accepting of every increasing health care costs that rise far faster than their incomes. The next evolution in controlling costs may be through widespread dissemination of useful specific information about cost and quality of healthcare providers.

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Insurers Giving Away The Store With Aggregating Specific Pricing

by Gregory L. Sullivan and Matthew L. Condos

Today, many employers are requesting quotes for aggregating specific provisions to their individual medical stop loss contracts as a means to reduce the premium outlay. While this will reduce the premium, brokers, TPAs and underwriters alike have been placing too high a value on this provision.

(Employers who self-fund their employee medical plans often arrange for stop loss reinsurance with an insurer for strictly financial reasons. It does not impact the employee's medical benefits. This article focuses on how the employer is attempting to reduce their stop loss reinsurance premium.)

Consider a specific contract with a \$50,000 individual deductible and a request for a \$50,000 aggregating deductible. This implies that the insurer only pays the excess of the total specific claims for the groups over \$50,000. Frequently, the employer (as well as the broker and the TPA) expect that such a provision will decrease the premium by close to \$50,000. The theory is that since the insurer will be paying \$50,000 less in claims, the premium should be reduced by \$50,000. Many underwriters agree and reduce the premium by the full amount.

However, without getting too technical, it is very easy to illustrate why this discount is overstated.

Consider an insurer who writes 10 policies for which the insurer collects \$100,000 each for a total of \$1 million in premium. Assume the insurer priced for a 70% permissible loss ratio, (\$700,000 in claims), and expenses, commissions and profit of 30% or \$300,000.

A typical expected claim distribution among the 10 policies may be as follows:

Policy #	Expected Claim
1	0
2	0
3	0
4	\$10,000
5	\$20,000
6	\$30,000
7	\$40,000
8	\$50,000
9	\$150,000
10	\$400,000

As mentioned above, the total is an expected \$700,000 in claims.

What happens if an aggregating specific deductible of \$50,000 is added to all ten policies and the underwriter gives discounts of 100% of the \$50,000?

First, the insurer now collects

**‘
Lasering is the practice of setting a higher deductible for one or more individuals in the group based on the known medical conditions prior to the start of the coverage period.’**

only \$500,000 in premium rather than \$1 million. Assuming the 70% permissible loss ratio is still valid, there is only \$350,000 for which to pay claims. This assumption, however, is doubtful, as the provision does not alleviate any fixed expenses in the original premium,

such as underwriting the case or reviewing the individual claims. It actually adds administrative expense as the insurer's specific claims unit must now aggregate the specific claims to determine what they should pay.

Second, the aggregating specific provision only reduces the insurer's claims by \$250,000 (\$150,000 from policies 4 through 8; \$50,000 on policies 9 and 10). This means there will be \$450,000 in claims. Hence, the insurer has collected \$350,000 of the \$500,000 in premium to pay \$450,000 in claims. In other words, they under priced the claim portion of the premium by \$100,000. That's 20% of the \$500,000 in premium collected, which will cause their loss ratio to be 90% instead of 70%.

Apparently, many in the industry have forgotten the actuary who drowned in a river that averaged two feet deep. Although the average depth was two feet, some spots were actually much deeper. While the premium reflects our "expected claim amount" statistically speaking, the "expected claim amount" is not meant to serve as a prediction of what the actual claim amount will be. (Just like the depth of the river!) Rather, the "expected claim amount" of a particular policy is only its contribution to the insured pool. Actual claims will vary considerably from the average.

Aggregating specific is also used as an alternative to lasering. Lasering is the practice of setting a higher deductible for one or more individuals in the group based on the known medical conditions prior to the start of the coverage period. (Note that this does not impact the employee's medical benefits – it only impacts the agreement between the reinsurer and the employer.) In this case, the pricing

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Insurers Giving Away the Store..

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flips from overaggressive to perhaps conservative when compared to the straight laser option. This is because the aggregating specific deductible applies to the group in total, while the laser is applied strictly to an individual.

Again, this point can be simply illustrated. Suppose a self-funded group of 200 employees with a \$50,000 specific deductible has someone awaiting a \$400,000 transplant. Instead of taking a laser on that individual for \$400,000, they opt for an aggregating specific of \$350,000 on what they assume is a guaranteed claim.

However, what if there is an unexpected death, or a cancer suddenly goes into remission, etc. and the guaranteed claim doesn't materialize? The policyholder is left with the \$350,000 aggregating specific deductible without the expected large claim. Had the policyholder bought the laser, they would collect on anyone else who exceeds \$50,000. Thus less protection was provided than under the laser scenario.

If an employer wishes to lower their premium, and is willing to take on additional risk, it might be easier to increase the specific deductible. This action, instead of adding an aggregating specific deductible, will benefit both the employer and the insurer. It will

certainly decrease the premium for the employer and make it easier for all parties to understand their obligations under the contract. In addition, it should reduce the complexity associated with administering the contract.

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Valuing Non-Traditional Health Products in the City by the Bay

Among the many health-related sessions planned for the Spring meeting (June 24 – 26) in San Francisco are several health valuation sessions. One of these, a panel Discussion, will examine valuation issues that arise in the context of such non-traditional health products as:

- Specific and Aggregate Employer Stop Loss
- Provider Excess
- Critical Illness

Liabilities for losses that have been Incurred But Not Reported (IBNR) and for losses that have been Reported But Not Paid (RBNP) will be examined. These liabilities will also be considered from the perspectives of the issuing insurer and its reinsurer.

Specific and Aggregate Employer Stop Loss is catastrophic protection sold to employers who choose to self-fund their employee medical benefits plan. Specific Stop Loss covers catastrophic losses incurred by any one individual, and Aggregate Stop Loss covers losses incurred by an employer group that exceed a deductible that is typically set well in excess of expected losses.

Jim Mange will examine typical Specific and Aggregate Stop Loss valuation tools and will also consider the volatility inherent in the loss development process. Jim is Chief Executive Officer of Health Reinsurance Management Partnership, a reinsurance management and third party administration firm that provides health reinsurance and outsourcing solutions in the U.S. and internationally.

Provider Excess Insurance and Reinsurance is similar in some respects to Employer Stop Loss, but the buyer is not an employer group; it is a provider of medical services. Provider Excess liabilities are often valued using tools that are similar to Employer Stop Loss, but due to the nature of the contracts the loss development process is unique.

David Wilson will examine the Provider Excess development process and illustrate how it is different than Employer

Stop Loss. David is President of the Ventures Group of NiiS/APEX, a consulting and insurance services organization that specializes in actuarial, underwriting, claims management and audit services. Its clients include organizations in the accident and health and property and casualty insurance industries as well as employers, governmental entities and other risk assumption vehicles.

Critical illness insurance provides a benefit to individuals upon diagnosis of a pre-defined illness or event. The major covered conditions include myocardial infarction, coronary artery by-pass surgery, stroke, cancer, kidney failure and major organ transplant. Many other conditions may also be covered. There does not need to be a limited life expectancy for the insured to receive the benefit. In fact, the purpose is to provide a benefit to an individual who is expected to survive. Critical illness insurance can be offered as a stand-alone product or as a rider to life, health, disability or long term care policies. It can be sold on an individual or group basis.

Critical illness products have been successful in foreign markets. Indeed, more and more people around the world are adding critical illness coverage to complement their existing life, health and disability insurance. In the United States, interest in these products is increasing. The product provides assurance that funds will be available to meet the immediate and on-going expenses not usually covered under traditional insurance products.

John Cathcart will focus on developing assumptions to calculate reserves for products such as critical illness, Cancer, and other types of individual health coverages for which there are no standard tables. Product features that should be considered in calculating both active life and claim reserves will be discussed. John is Vice President and Actuary with GeneralCologne Re, which is one of the leading reinsurers of critical illness throughout the world. As a relatively unknown product in North American markets, John's insights from around the world should be of great value to attendees.

We look forward to seeing you down by the Bay.

Population Risk Management: Identifying High-Risk Members to Reduce Costs

by Ian Duncan

All health insurers are familiar with the “80/20” rule: 80% of the costs in any given population usually come from only 20% of its members. For years, health care organizations worked to control costs on that 20% base—through network contracting, case management and utilization review and disease management programs, for example, that provide high-level interventions for high cost patients. However, these programs fail to distinguish between “high cost” and “high risk” members. “High cost” members are those who have already incurred dramatic costs—the diabetic currently in crisis, or the patient with a heart condition, or an end-stage renal disease patient. “High risk” members are the true ticking time bombs—the unseen, unrecognized, inexpensive member of today—who are going to become tomorrow’s high cost members.

In many of these cases, the most frustrating aspect to the health insurer is that those costs (and health complications) were often preventable—the diabetes patient who could have avoided the health crisis if he/she had taken insulin as prescribed, or the at-risk heart condition patient who could have benefited dramatically from using a beta blocker. The Centers for Disease Control and Prevention believes that up to half of all morbidity and mortality can be prevented with simple interventions. Until recently, there has been no way to efficiently identify these members. These are the members for whom a carefully-timed inter-

vention can make a real difference—both in health care and in health costs.

Targeting Risks: Finding “High Cost” Members Before The Problems Start

If members became “high cost” or “low cost” and stayed that way, controlling their costs would be simpler. But the truth is that a patient’s status as “high cost” or “low cost” fluctuates. High cost members become low cost when their diseases are controlled and

low cost members become high cost when conditions flare up. Focusing on “high cost” members with intervention strategies is, in many respects, similar to closing

the barn door after the horse gets out—in many cases, the cost has already been incurred. The medical intervention has begun. And, inevitably, the patient’s cost will decline—the diabetic crisis will be resolved, the heart attack patient will get bypass surgery. Sick people, in other words, get better. And the “high cost” member will subside into the “low cost” range again. Just less than one-half of high-cost members, left to themselves, will become low-cost in the following year—the concept of “Regression to the Mean.” From this statistic it follows that half of a health plan’s case-management dollars will be wasted—the trick is finding out which half.

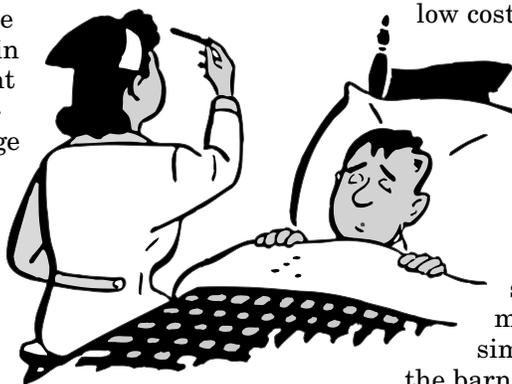
On the other hand, in any given database at any time, a substantial

percentage of members are currently “low cost” but are at risk to become high cost patients in the near future. A recent analysis of one 350,000-member regional HMO showed that 14% of “low cost” members in 1999 became high cost in 2000. This is the basis of population risk management—identifying, targeting and treating members of a health care database based not on their current disease state, but on their likelihood to incur costs. This allows population health management to identify individuals at risk before their disease develops into an acute episode(s) of care, avoiding both human suffering and accelerated health care costs.

Population Risk Management

Population-based analysis refers to members as “low cost, high risk” when they have risk markers (indicating either disease or behaviors, or both). Locating these members, and intervening before the high cost event occurs, is where health care organizations can achieve substantial savings. Although prediction includes disease markers in its algorithms, it differs in two respects: (1) not everybody has a traditional disease; there are at-risk patients who may otherwise “slip through the cracks of traditional Disease Management,” (2) not everybody who has a disease needs management, currently. There are plenty of cardiac, diabetic and asthmatic patients (the three traditional DM diseases) who are not presently at risk of becoming high-cost future consumers.

How does it work? Prediction follows a simple, four-step process:



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Population Risk Management..

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1. Find the members that represent the target population for risk management.

This population could range from “all diabetics” to “members who have disease markers but who were low-cost in the prior twelve months”. These members are found from the traditional sources of medical claims and pharmacy data, together (sometimes) with self-reported data (Health Risk Assessments). The key to the data is operationalizing it, because the database needs to be updated regularly. Disease definitions are widespread in the industry, or can be obtained from vendors.

2. Identify risk factors. Some risk factors are well-known to actuaries (age, gender, geographic region, plan of benefits, etc.). Other risk factors are behavioral—is the member who has a heart condition on the appropriate treatment regimen. For example, and does the member comply with the treatment regimen (as evidenced by prescription fills and regular physician visits)? What makes this area of analysis so exciting is the volume of transactional data collected about members (and providers) by the average health plan. To date, this data has tended to be used for risk management in aggregate, rather than granular form. Nevertheless, there is considerable scope, limited only by the creativity of the user, to link different data and variables to create a profile of the member.

3. Relate the dependent (predicted) variable to the independent variables. At its most simple, this could be an application of a technique that every actuary is familiar with—multiple regression. In a simple

model, the member’s propensity to consume resources in the following period, (paid claims) is related to independent variables age, gender, number of comorbidities and number of therapeutic classes (of prescription drugs). Standard multiple regression techniques will assign significance values, as well as coefficients, to the independent variables.

4. Apply the model to an independent data set. Based on the values of the independent variables, each member is “scored” or assigned a relative risk rank for the predicted variable (in this case, total cost in the following period). If test data sets are available, then different models can be tested against actual data and models can be optimized.

Typical Results

Consider a recent case study. For this study, we evaluated members of

‘**One objective of risk management is reducing costs, so identification must be followed by an effective intervention.**’

a 270,000-member regional HMO over a two-year period, to identify those who are currently low-cost consumers but who were at risk of becoming high cost in the future. For this HMO, we identified approximately 60% of the members who met two criteria: (1) members were continuously enrolled over the two-year period, and (2) Members were “low cost” (less than \$2,000 of expense in the base period). The result of the analytical process (similar to that above) was a ranking of

members according to their probability of experiencing high costs in the projection year. When tested against actual plan data for the target year, approximately 40% of the highest-ranked members (0.5% of the database) experienced the predicted event. The incidence of high-cost events in the entire low-cost population, by comparison, was 8%.

The low cost/high risk members identified in the database had a total of 160 bed days per thousand members per year in 1999—their “low cost” year. In the year 2000, the year that they were predicted to be at high risk for becoming high cost, that same patient population had a total of 1,400 bed days per thousand members, an increase of over 700%.

Of course, identification is only the first step in an effective population risk management program. One objective of risk management is reducing costs, so identification must be followed by an effective intervention. Knowing that John Doe is at high risk for a diabetes crisis in 2002 is useless, unless we can take action to prevent that crisis from occurring. The critical first step, however, is to identify those members who are at-risk for incurring high health costs. The second step in population risk management is determining effective and efficient intervention strategies to prevent the crisis and the costs—both financial and human—that such a crisis entails. We will follow up this article with a second on intervention results in a future issue.

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Footnotes

1) Example data are from a typical healthplan; all commercial members; high-cost is defined as claims incurred in excess of \$5,000 annually—approximately four times the plan average. Approximately 1% - 2% of members fit the definition.

Pricing Aggregate Stop-Loss Coverage

by Chuck Fuhrer

Overview

The January, 2002 issue of the *Health Section News* included Robert G. Mallison's article titled "A Brief Note about Pricing Aggregate Stop-Loss Coverage." Mr. Mallison has written an excellent article that covered a number of important points on this subject. I wish to briefly build on his material in a few ways.

The Extra Risk

Mr. Mallison presented these aggregate stop-loss rates (125% attachment point) as a percentage of expected claims.

Rates	Rich	Lean
200	1.222%	1.699%
500	0.382%	0.573%
1500	0.038%	0.073%

The columns refer to a rich and a lean underlying plan of benefits which he defined in his article.

The total expected claims for the underlying plan can also be calculated:

Exp. Claims	Rich	Lean
200	\$416,614	\$369,327
500	\$1,134,060	\$1,012,380
1500	\$3,495,300	\$3,129,315

These lead to the following set of net aggregate annual premiums

Agg. Prem.	Rich	Lean
200	\$5,091	\$6,275
500	\$4,332	\$5,801
1500	\$1,328	\$2,284

These premiums appear to be considerably inadequate. They are certainly well under what the market is currently charging. Furthermore, the premiums are such a small part of the underlying program costs that it is hard to believe they are at a high enough level.

When our models don't seem reasonable we have to go back and check to see if there isn't some process going on in the real world that isn't allowed for in our model. I wrestled with this problem during the 1980s and found a solution. Similar problems have been dealt with by casualty actuaries, who call it "parameter uncertainty." See for example, "Parameter Uncertainty in the Collective Risk Model" by Meyers, G. and Schenker, N. *Proceedings, Casualty Actuarial Society*, LXX (1983), 111.

See my article "A Method for the Calculation of Aggregate Stop-Loss Premiums," *Actuarial Research Clearing House*, 1988.3, page 1. In this article, I pointed out that models such as Mr. Mallison's do not allow for the fluctuation in claims costs that are not related in

variation in the number or sizes of claims. These include an unexpected trend (both national and local) and fluctuations in the true expected claims for the group from what is calculated by the experience rating process. These fluctuations will generally not affect the members of the group independently.

My article goes on to explain how this extra risk can be modeled and presents one scheme for calculating the resulting aggregate claims costs. I have been using this method, with some further improvements, since then and obtain reasonable results.

Calculation Methods

There are three methods of calculating aggregate stop-loss premiums within a model. The first one, which Mr. Mallison presents, is called the Monte Carlo method and involves using pseudo random numbers. There are two problems with this method: (1) It is difficult to perform enough trails to be sure that a correct answer is achieved, and (2) most pseudo random number generators have some bad properties such as non-zero correlations between successive values. As a test, I calculated the aggregate premiums using Mr. Mallison's assumptions with 250,000 trials. Here are my results:

	Rich	Lean
200	1.228%	1.669%
500	0.396%	0.587%

Note that the values are not the same.

The second method is to fit a curve to the group's claim distribution. This should give reasonably accurate results if a good fit is obtained. The third method is the recursive method as presented in the textbook *Actuarial Mathematics*. This is probably the best, as the answers are exact, but the size of claim table has to have equal size brackets.

Key Variables in the Calculation

Obviously, as Mr. Mallison correctly points out, the three most important are group size, attachment point and specific stop-loss level. He points out the importance of taking into account the underlying benefit richness. This is related to another important variable, the size of the expected claims, per person. This can vary considerably by the group particularly when they are in different areas. Once again, the larger the expected claims per person, the smaller the aggregate stop-loss premiums as a percent of claims.

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Health Costs Rise—Implications for Student Health

by Paul A. Cronin

Insurers, consultants, government agencies and academics are all capturing the same headline: "Health Care Costs are Rising Dramatically."

Surprising to some, student health plans are feeling much the same cost pressure as employer-sponsored plans. Student health presents a healthier risk profile because of the relative youthfulness of its insured population. Student health also provides a more rational delivery system because of the primary care role each school's Student Health Services (SHS) provides to its students on campus. But the utilization mix under student health plans falls disproportionately on prescription drugs, behavioral health and outpatient surgery, the three areas with the highest rate of inflation, thus offsetting student health's inherent economies.

To understand current trends in health costs, it is necessary to look back over the past decade. During that period across the country, inpatient hospital capacity and utilization were reduced significantly, eliminating virtually all of the excess capacity in that part of the health care delivery system. In taking out this excess inpatient capacity, three things occurred. First, costs came out of the system, off-setting increases in other areas and slowing the rate of increase in health care premiums. Second, as personnel were eliminated or redeployed, wages were held in check throughout the sector and the entry of new manpower, particularly in nursing, dermatology and radiology was reduced. Third, as hospitals sought to replace lost inpatient revenues and utilize facilities

with fixed capital costs, they developed significant outpatient programs, particularly outpatient surgery.

With no more capacity to squeeze out, and with hospitals and physicians raising fees, the cost rebound has not been subtle. Add to this several other important cost-driving features of the last five to 10 years. First, direct-to-consumer advertising of prescription drugs has been wildly successful. Further, the explosion in the use of certain newer drugs such as SSRIs (the #1 drug by therapeutic class for the student population) has added net new costs. The result: drug costs have grown substantially faster than total national health expenditures since 1993 and are projected to continue to do so in the future. Public policy regarding mental health parity has also driven up costs by causing expanded coverage and increased payments to behavioral health practitioners. And finally, underpayment by Medicare, and particularly many state Medicaid programs, have shifted costs to private payers.

While all of this has been going on, the media, consumers and politicians have villainized managed care, resulting in more open choice, expanded networks and in so doing, added costs. Rarely have we seen this kind of alignment of cost drivers in the health arena.

The insurance industry typically tries to anticipate trend by guessing (in a highly

sophisticated way) how price inflation, technology, utilization and cost-shifting will play out in the year(s) ahead. Because the basis for these methodologies is historical, significant shifts are often under-anticipated. As an industry, health insurance premiums, including larger employer-sponsored self-funded plans, lagged the increases in underlying health costs for three or four years at the end of the '90s. This is often referred to as the turning point of the underwriting cycle.

For the past four renewal years, health insurance increases (including self-funded plans) have at least doubled CPI. For last year (2001 over 2000), large employers' health insurance costs per active employee increased 12.1%. This year it is expected to rise between 13% and 20%. "Employees also can expect to pay on average 18% more in premiums next year, and it's not a temporary problem. We're going to be looking at a period of about four years of double-digit inflation."

If that is the larger picture, what about student health insurance inflation? To some degree, "the rising tide raises all ships". Cost increases are typically calculated separately for several sectors of the health care economy. Milliman, the noted actuarial firm, reports cost increases in four areas: outpatient, inpatient, prescription drugs and physician. Data through March 2001 reflecting changes from the previous year show outpatient up 11.2%, inpatient up 2.8%, prescription drugs up 14.5% and physician services up 4.8%.

Translating this to the percentage of each dollar of increase, outpatient contributed 37%, inpatient 10%, prescription drugs 27% and physician services 25%.

Because of the demographics of students and the



effectiveness of the school's SHS in managing physician care and referrals to specialists and sub-specialists, the distribution of a student health insurance claim dollar is lower than employer-sponsored plans in the categories of inpatient care and physician services, but higher in the more inflation prone categories of outpatient and prescription drugs.

Because of variations in plan designs school by school, it is not possible to generalize with

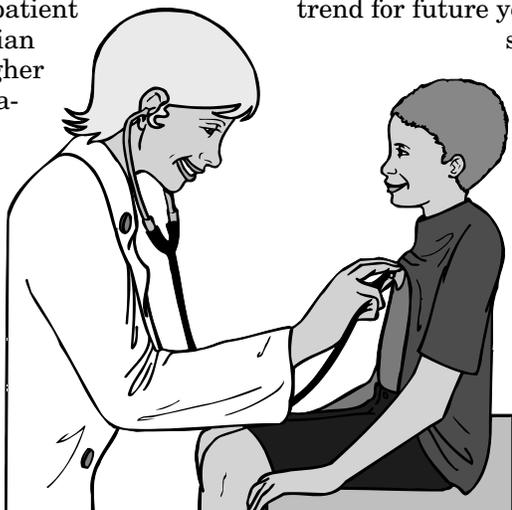
any specificity, but it is safe to say that in student plans, inpatient care, as a proportion of the health insurance claim dollar, is often close to one half of what it would be in an employed population. (A high degree of the variability in inpatient care in student plans is maternity admissions, which are less predictable in student populations because of the relatively low number of dependents covered under the plan.)

While the student population has relatively greater exposure to the higher trend components of health care, the impact is somewhat offset by its better morbidity profile relative to the employed population. Medical conditions for students tend to be more acute than chronic and are often of a lower severity level. Because of their relative young age, students are simply not exposed to certain medical conditions (e.g. multiple organ system disease) that require invasive, expensive medical treatment.

Putting this all together, the projected trend for student plans for the 2002 – 2003 school year is anticipated to be comparable to employer-sponsored plans in the same geographic area unless plan

design features are already in place to control prescription drug costs and outpatient care. Without these kinds of limits, trend for many schools is likely to be in the mid-teens.

What can be done to moderate trend for future years? Employer-sponsored plans are taking four approaches: first, substantially greater cost-shifting to employees through increased premiums, deductibles, copayments and benefit caps, particularly on prescription drugs. Second, more selective physician networks, particularly specialists. Third, enhanced disease and demand management through nurse "800" phone systems, computer information systems and one-to-one case management. Finally, some are considering bold plan redesigns where the first \$1000 to \$2000 in expenses is the employee's responsibility through



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‘ Because of their relative young age, students are simply not exposed to certain medical conditions that require invasive, expensive medical treatment. ’

funded medical spending accounts (MSA's).

Unfortunately, most of these strategies have little applicability to student plans. The student, or more

likely, their parents, already pay 100% of the premium. Schools' SHS currently are quite disciplined about specialist referrals. There is relatively little serious or chronic morbidity for assignment to case management. And, it is an open question as to whether the medical spending account model would be an appropriate choice for students, many of whom are just learning how to manage their own finances.

What, then, is left? Three opportunities should be considered. First, schools should revisit all aspects of plan design to ensure that appropriate cost sharing and plan limits are in place. We do not recommend those benefit caps which would leave the truly ill and injured exposed, but we do suggest, for example, a prescription drug program with strong incentives to use generics.

Second, Student Health Services should consider bringing some specialty and subspecialty care into the Student Health Service on a salaried or "sessions" basis and negotiate with their insurers to pay for this through capitation, or direct cost reimbursement. Third, Student Health Services might consider more careful oversight over outpatient care, particularly outpatient surgery.

Conclusion

Trend in health costs and insurance premiums is likely to continue to be in double digits for the next three to four years. This is a national issue and one that will be difficult for an individual program to moderate substantially. Despite that, rationalizing the delivery system, having plan designs which encourage appropriate utilization and continuing to enhance the role of the SHS as the care manager will make sense even if the results are only measured in a percentage point or two.

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All Aboard the Critical Illness Insurance Express!

by Loretta J. Jacobs

After witnessing strong sales of similar products in Japan and the United Kingdom, a number of U.S. insurers have recently jumped aboard the “critical illness” insurance express and are developing this product for sale in the United States. While the critical illness (CI) insurance concept is not new to the U.S., the current products being sold introduce new wrinkles that pose interesting issues for insurers in pricing, underwriting and marketing. As can be expected, insurers thus far have struggled to find the right balance of the three P’s (product design, positioning and price) to address these wrinkles, but now with the kinks worked out, market indications suggest that critical illness insurance is ready to take off in the United States. What is critical illness insurance and why is now the time for insurers to enter the CI marketplace?

Product Design

In the simplest terms, critical illness insurance pays benefits when the insured person becomes ill with one or more specified conditions. This concept is not new to the U.S. market. For many years, direct and affinity marketers have sold indemnity hospital benefit policies for cancer, heart attack and/or heart disease, stroke and other conditions. Some insurers even offered products or riders that paid relatively modest (up to \$5,000 or \$10,000) lump sum benefits upon diagnosis of serious cancer, coma or paralysis. The stand-alone policies of this type went by

several names, including “dread disease” insurance, “cancer” insurance and “limited benefit” insurance. While they are still commonly sold today in the direct marketing arena, these policies have not typically been viewed favorably by regulators and have not sold well in more traditional insurance sales distribution channels.

Most of the stand-alone critical illness products being designed for sale in the USA today are



similar to the stand-alone CI products being marketed heavily in Great Britain and Japan. These policies are funded by level premiums from issue age (or age band) and pay out a substantial lump sum benefit of

\$10,000 to \$50,000 upon diagnosis of one or more critical diseases or conditions. They may also offer riders that reimburse insureds for certain extraordinary medical expenses incurred for treatment of these conditions. In addition, a number of insurers are also now offering critical illness riders for sale with annuity and life insurance policies. There are even critical illness riders being added to other health insurance products, including disability and accidental death and dismemberment insurance. The list of disorders covered under a critical illness policy or rider varies by insurer, but following are some of the more commonly covered conditions:

- Cancer, other than skin cancer
- Heart attack and/or heart surgery

- Multiple sclerosis
- Stroke
- Paralysis
- Major organ transplant
- Renal failure
- Coma
- Loss of limb(s)
- Blindness
- Alzheimer’s disease
- “Terminal” illness

The conditions covered and the benefits payable for each covered condition have significant ramifications for the product’s marketing strategy/positioning, target buyer profile and of course, pricing. For example, an insurer offering a \$50,000 lump sum critical illness benefit upon diagnosis of Alzheimer’s disease, multiple sclerosis, stroke and paralysis may have unintentionally created a high-end supplemental insurance product that competes with Long-Term Care (LTC) insurance. On the other hand, an insurer offering a \$10,000 lump sum benefit upon diagnosis of cancer should expect its product to compete with the mass marketers for the lower-end consumer buyers. A CI rider to a life insurance policy that advances a portion of the death benefit upon diagnosis of “terminal illness” is not anything new to the market; these accelerated benefit riders have been available for years. However, a CI rider to a life insurance policy that advances a portion of the death benefit upon a paralyzing accident is a new twist on an old concept and may be viewed favorably in the market.

Another important aspect of CI policy or rider product design is whether to include a survival waiting period requirement after a critical illness diagnosis has been made. In order to prevent consumers from viewing a CI policy as a life insurance policy, some carriers require that the insured must survive at least 14 – 30 days

after diagnosis of the covered critical illness to be eligible for benefit payment. If the individual dies before the 14 – 30 day waiting period, no benefit is paid. Such a requirement reinforces the premise that critical illness insurance is designed to cover the plethora of expenses associated with diagnosis of a serious illness not covered by other insurance products, and is not a substitute for, among others, life insurance (see positioning). This requirement also reduces the policy's cost. On the other hand, the carrier risks serious dissatisfaction and perhaps even a lawsuit if a policyholder dies from complications of a covered critical illness during the waiting period. The carriers who do not require a survival waiting period generally cite legal, regulatory and policyholder / beneficiary dissatisfaction concerns as their reasons for their decision.

Another product design consideration for stand-alone CI products is how much up-front medical underwriting will be performed, and how to limit adverse selection risk through product design specifications. Until now, most carriers have designed their stand-alone CI products for sale in markets that do not view long-form medical underwriting favorably (small employer work-site marketing, direct and affinity marketing, true large group marketing), so the products utilize a simplified underwriting screen. This is, of course, dangerous since many critical illnesses are hereditary in nature and applicant adverse selection can present a serious problem. Using such a simplified underwriting approach means that claims risk must also be controlled through product design limitations and marketing approach. The most common product design limitations in use are pre-existing exclusion clauses, graded benefit provisions and attained age benefit limitations. When a pre-existing condition exclusion is included in the policy, benefits are not payable for critical illness claims incurred within the

first two policy years that resulted from conditions which existed before the policy was issued. A graded benefit provision limits the benefits payable for covered critical illnesses diagnosed or treated within the first two years of policy issuance to only a small amount, such as two times the premiums paid-to-date. An attained age benefit limitation reduces the amount of benefit that will be paid (typically 50% of face amount) when a critical

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illness diagnosis is made after the insured has reached a certain age (typically 70 or 75). The pre-existing condition clause and graded benefit provisions are designed to reduce up-front insured adverse selection while the attained age benefit limitation is designed primarily to reduce ultimate claims exposure, and thus premiums, to more marketable and manageable levels.

As a means to reduce up-front insured adverse selection, both the pre-existing condition clause and the graded benefit provision can be effective, but not without downsides. Pre-existing condition clauses are difficult to administer, particularly in determining the scope and definition of a pre-existing condition, and often result in policyholder dissatisfaction and perhaps litigation when a claim is denied. On the other hand, graded benefit provisions can essentially

eliminate all critical illness claims in the first two policy years, even ones that are clearly not related to any pre-existing condition (such as when an automobile accident leaves an insured paralyzed). Many insurers would prefer to use more comprehensive up-front medical underwriting to combat adverse selection, but thus far, the market has not moved this way. Including attained age benefit reduction provisions in the policy will keep premiums lower, and should appeal to the typical middle market insurance buyer attempting to provide for a family. Such provisions also fit neatly into positioning CI for sale in the work-site, where the focus is on insuring against contingencies that impact the working, as opposed to retired, population. However, these provisions also make the policy less appealing to individuals in their later working years (50+) and can lead to serious dissatisfaction from claimants who develop a critical illness in their sunset years.

A significant advantage of selling a CI rider rather than a stand-alone CI policy is that the medical underwriting process used for the base policy may be used for the CI rider, perhaps without significant modification (obviously depending on the type of base policy being sold and the covered conditions of the CI rider). When long-form medical underwriting is used, pre-existing condition exclusions and graded benefit provisions may not be needed for risk control purposes and the rider may be viewed more positively in the marketplace and by regulators.

Positioning

Since critical illness insurance has enjoyed strong sales in the traditional middle-class insurance markets of Japan and the United Kingdom, many U.S. insurers have focused their recent critical illness product design efforts on this market as well. If this is the market that U.S. insurers intend to pursue, they must be very clear in their

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marketing materials as to why critical illness insurance makes sense for an individual to purchase in light of other insurance the individual may already have. As demonstrated by somewhat disappointing sales results to date, this is where most insurers have fallen short. They have not effectively communicated the need for, and utility of, the CI product to the U.S. consumer insurance buying population.

It must be very clear that critical illness insurance is *not a substitute* for, but rather is a *supplement to*, major medical insurance, life insurance, disability insurance and LTC insurance (although there are arguably instances where critical illness insurance may be a substitute for LTC insurance). This may be an awkward message for some insurers to relate to consumers since they may have little experience touting the benefits of "supplemental" coverage as opposed to "primary" coverage. Similar to the marketing of Group LTC insurance, given the newness of the critical illness insurance concept to most Americans, a significant amount of the marketing effort must actually focus on educating consumers on the utility and flexibility of CI coverage. The education process needs to focus on all the miscellaneous hidden costs associated with the serious illness of a family member and how useful a large lump sum payment can be to tide the family over until the infirm person recovers.

In marketing critical illness as a supplemental benefit, some key messages need to be made. As a supplement to major medical insurance, critical illness coverage can pay the cost of deductibles, co-payments/co-insurance, prescription drugs, experimental, custodial/convalescent or non-traditional treatment options not typically covered by the medical plan. The CI benefit might enable an insured in an HMO to receive

necessary care completely out-of-network.

Comprehensive LTC policies do cover the cost of custodial care mentioned above, as long as the ill individual meets certain benefit eligibility criteria related to functional and/or cognitive capacity. So, in certain instances, a CI policy might be considered a substitute for LTC insurance rather than a supplement to it. This should be helpful to insurers who do not offer LTC insurance currently, as they can position CI as a lower cost, more readily understandable substitute for it. For insurers who do offer LTC today, there may be some advantage to cross-selling CI to the younger LTC insureds, assuming the CI policy does not

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contain an attained age benefit reduction provision, since the LTC buyers have already shown a commitment to buying supplementary insurance and are probably financially suitable for the coverage. LTC insurers may suffer cannibalization, however, if the LTC insureds lapse in order to buy CI rather than keeping both policies in-force. Another option for LTC writers to consider may be to develop a combination CI/LTC product for sale in the middle market.

As a supplement to disability insurance, critical illness insurance provides additional family income needed because the infirm person only collects a portion (usually 50% or 60%) of his or her salary while on long-term disability. In addition, CI supplements the family's diminished income resulting when a healthy family member(s) needs to either take extended leave from work to care for the infirm person, or needs to hire someone else to provide this care so he/she can go to work.

CI benefits can also be used to defray the additional child-care costs incurred when healthy adult family members visit the ill family member in a hospital, rehabilitation center or nursing facility. CI benefits may be used to pay the travel and hotel accommodation costs incurred when relatives come to town on short notice to visit with a sick relative or when infirm individuals and their family members travel out-of-town to receive medical treatment. Finally, the CI benefit can serve as a supplement to life insurance if the claimant dies before his lump sum benefit has been exhausted paying for any of the other above-mentioned costs. When framed this way, it is easy to see how a family could easily incur \$20,000 or more in illness related expenses, not covered by primary insurance, due to a serious illness befalling a close family member.

Until now, the most successful marketing of stand-alone CI insurance has taken place in the small employer work-site arena. This is understandable when you consider that the work-site marketing channel appears to have all the ingredients necessary for the CI insurance sale. First, the on-site insurance agent or benefits specialist probably can gain a basic understanding of the overall benefits package offered by the employer, and can speak to, and thus market CI to cover the gaps in these other coverages. In addition, the all-important marketing education process that is needed can be accomplished through face-to-face

contact with the on-site insurance agent and/or human resource benefits specialist. Finally, an on-site agent should be able to efficiently determine an employee's financial suitability for CI insurance, and thus direct the CI sales process effectively. In contrast, standard group and direct marketing channels offer neither the personalized sales approach nor the product education effort needed to successfully market the merits of CI insurance. These channels will become more viable when consumers become more aware of the benefits of and need for CI insurance. Traditional individual agent marketing should also become more prevalent and successful when consumer awareness is heightened, although the availability of high commissions from insurers who want to remain in the individual health insurance market place with a product that is less subject to the adverse selection of individual disability income insurance and the trend costs of major medical insurance could speed along the process.

Positioning of CI riders is less problematic than positioning CI policies. By definition, riders are supplementary to the base policy being sold, so the insurer doesn't need to apologize for the supplementary nature of the CI coverage. CI riders, particularly ones covering coma and paralysis, are growing in popularity in the life insurance market, where marketing of other riders such as waiver of premium, AD&D and terminal illness accelerated benefit has been accomplished successfully for years. In addition, more and more annuity writers are including a lump sum Alzheimer's disease benefit rider on retirement annuities to compete with LTC insurance. Also, disability carriers have recently

started offering CI (and LTC) riders on their individual disability income policies, where the covered conditions range from coma and paralysis to stroke and heart disease. Thus far, most insurers have developed CI riders to help distinguish their product offerings from those of their competitors and showcase their product development innovations while touting the flexibility and utility of the CI benefit rider to the consumer. As CI riders become more commonplace in the market, they will obviously no longer be considered innovative, so insurers will need to adjust their positioning to focus primarily on the flexibility and value of the CI benefit to the consumer.

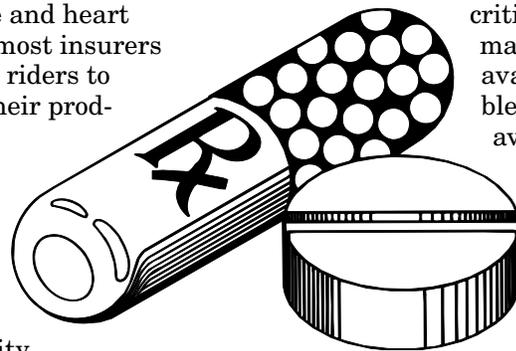
Price

As with any new product, pricing is a challenge. As mentioned earlier, most of the newer stand-alone CI products are being funded with level premiums from issue age (or age band). Thus, to establish premium rates, the pricing actuary must project product line income, benefits and expenses over a fairly long period of time, such as 20 or 30 years. Assumptions must be made as to morbidity, mortality, voluntary lapse, investment earnings and product line expenses. Morbidity assumptions are clearly a challenge. Where can the pricing actuary obtain reliable, credible critical illness incidence data? Since CI policies and riders pay large benefits upon very low incidence rate events, such as organ transplants, it could take 10 years or more for even insured claims experience data to be considered credible. Even insurers who have access to substantial amounts of major medical claims experience

are not necessarily at an advantage over carriers who do not offer health coverage since the incidence rate data for covered critical illnesses may not be readily available, or credible even if available. Health insurers must not only have incurred a substantial number of CI claims, they must also have good exposure data

to determine their experienced incidence rates for these claims. Since the claims themselves are rare, and the exposure data may not be collected or validated if collected, it is quite possible that the insurer's medical claims experience, while voluminous, may be inappropriate or useless for CI product or rider pricing. Pricing actuaries will probably need to turn to government population data and statistics (which, in turn, needs to be adjusted to an insured environment) to develop a baseline morbidity scale, and validate it against the pricing data warehouses of major consulting firms and re-insurers to gain a stronger measure of confidence in their pricing morbidity projections.

In addition, pricing actuaries will need to adjust durational morbidity for the impact of medical underwriting (long-form or short-form), the product's limitations and exclusions, applicant adverse selection, and the marketing distribution method. As discussed earlier, since most stand-alone CI products utilize a simplified underwriting screen, the potential for applicant adverse selection based on adverse family medical history is substantial. On the other hand, the use of simplified underwriting in conjunction with product design limitations and exclusions and possibly re-insurance, should enable the insurer to manage the stand-alone



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CI product risk to acceptable levels. Applicant adverse selection is more of a concern in some distribution channels than others, and the pricing actuary must consider this in pricing the CI product.

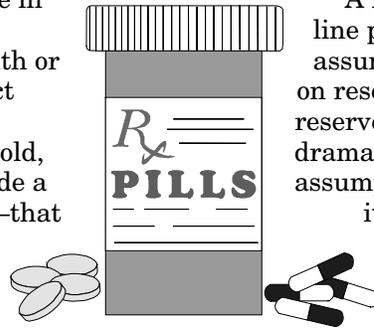
Claims experience on CI products sold through the small or large employer work-site should develop at least as favorably, if not more favorably, than claims experience on these products sold through direct response methods or career agent channels, since marketing efforts can be limited to actively-at-work, full time employees during standard benefit enrollment periods for new hires and existing employees. Selling a CI policy on the Internet, for example, using simplified underwriting is more risky than selling the same policy in the workplace since actively-at-work employees, by virtue of their working status, demonstrate a measure of good health that is not known for the on-line applicant at the time of application. The effect of insurance agent adverse selection must also be considered, including that of on-site sales representatives at small employers. The impact of applicant and distribution channel adverse selection is significantly mitigated on CI riders so CI riders are considered less risky than stand-alone CI products.

CI, like LTC insurance, is a product that builds large reserves for future claims, especially if attained age benefit reductions are not included in the policy. When sold in primarily variable cost distribution channels (such as career agent distribution channels where commissions are the primary marketing expense), low lapse and mortality rates in later durations can have an unfavorable impact on financial results. Most insurers currently assume that CI product lapse and

mortality will emerge in a manner consistent with their other health or life insurance product offerings. When LTC insurance was first sold, many companies made a similar assumption—that LTC lapse rates would be similar to individual major medical or life insurance lapse rates—and were unpleasantly surprised to find that LTC lapse rates were much lower than they expected, which in turn led to concerns about the adequacy of their LTC insurance premium rates. If CI is to avoid the same pitfall, CI pricing actuaries need to carefully test the impact of both high and low lapse and mortality decrement rates on their ultimate premium rate levels. Specific margin for adverse experience is desirable.

An advantage of selling in fixed cost distribution channels, such as direct or employer group marketing, is that the concerns about the impact of low decrement rates on profitability are less applicable, or applicable only within certain threshold tolerances. This is because the present value of marketing costs as a percent of the present value of premium may decrease more than the lifetime loss ratio increases when decrement rates decrease. For example, for direct-marketed CI, if the early duration lapse rates decrease from the 30% to 40% range to the 20% to 30% range, overall returns will increase dramatically. Similarly, if the product experiences 5% or

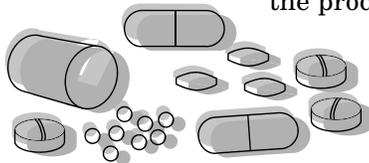
10% level lapse rates, returns would also be much higher, but the level 5% lapse rate financials may not be as favorable as the level 10% lapse financials. This is because the increase in the lifetime loss ratio resulting when lapses decrease beyond a certain point (say from 10% to 5%) outweighs the benefit of the further reduction in marketing cost.



A related issue to product line persistency is the assumed excess earnings rate on reserves. The higher the reserves get, the more dramatic an effect this assumption has on profitability. One percentage point change in the overall earnings rate (i.e. from 6% to 7%) can change lifetime GAAP

ROE or Statutory ROI by 1% to 5% depending on the persistency of the business and the morbidity margins built into the reserves. The pricing actuary may want to test the impact of various combinations of interest earnings rates and product persistency assumptions on profitability before settling on final assumptions for either.

Finally, pricing expense factors must be developed for the line. CI insurance is not a particularly labor intensive product to administer, so estimating policy maintenance expenses should be fairly straightforward for the pricing actuary. Claims adjudication expenses as a percent of claims should be low since the CI benefit is a large, single payment. Some minor adjustments may need to be made in the insurer's administrative system to handle CI, but these modifications will probably not be extensive. Perhaps the most significant additional expenses an insurer will incur to develop, market and administer CI will be in the area of compliance. As mentioned earlier, regulators viewed some of the early generation CI-type policies unfavorably due to the limited benefits and poor overall consumer value proposition they offered. Because of this past experience, insurers may need to put a bit more effort into the CI policy form and rate-filing approval process than they are used to for other products. Insurers should also expect to encounter state variations in terms of permissible coverage features (for example, some states do not allow cancer coverage) and



minimum loss ratio, or other, pricing requirements. The additional compliance support and the potential systems enhancements needed to support state variations in product design may have cost implications the actuary should consider in establishing pricing expense factors for the CI policy. However, it is unlikely that any of these issues would be serious enough to prevent the CI insurance line from going forward to market from purely a product administration perspective.

Why Now?

Why should insurers enter the CI marketplace now? What is the future growth potential of the CI market, and would insurers be at a disadvantage if they waited to enter it? First, let's consider the future of the stand-alone CI product market. Undoubtedly the stand-alone CI insurance market will grow—the only question is how large. While managed care health insurance products have recently received bad press, it is still safe to assume that HMOs, PPOs and other primary health insurance coverages that limit access to certain medical providers or treatment options are here to stay. In this case, CI's flexible lump sum benefit offers Americans a way to circumvent access constraints at a time when access is crucial—when a critical illness has occurred. Already the CI product has enjoyed some limited success in the work-site sales distribution channel, perhaps because workers at small employers are likely to have, and recognize the gaps in, their primary managed care health insurance.

The work-site distribution channel is well positioned for growth in the 21st century as the trend of U.S. employment at small companies with less than 100 employees, the prime work-site distribution channel segment, continues. The CI product can be efficiently and effectively sold through this channel and since many insurers are seeking to diversify their distribution systems, selling a product like CI that lends

itself to alternative distribution may be a good fit. On the flip side, CI insurance may be a good option for employers to consider making available to their employees and dependents on an employee-pay-all basis since it will not add to their benefit costs and may result in increased employee productivity and lower absenteeism when critical illnesses strike workers or their families.

The barriers to enter the CI marketplace are not large. CI is not a labor-intensive product to administer so very large in-force volumes are probably not needed to drive an efficient operation. Insurers can enter the CI market without offering major medical since simply having access to major medical experience data does not necessarily provide an insurer an advantage in pricing CI. Even if some carriers can use their major medical experience in their CI pricing, carriers without such access are not out-of-luck. They can obtain whatever pricing and product design guidance they need from consulting firms and re-insurers. Reinsurance can also be purchased to help the direct writer manage the CI risk to an acceptable level. Thus, developing a stand-alone CI product should enable an insurer to diversify and expand its health product portfolio without subjecting the insurer to unacceptable business risks.

Entering the CI market earlier rather than later, and developing a reputation for being a market leader and innovator in CI, may give an insurer an edge over its competitors, particularly in the group distribution channel, where reputation in the market is sometimes the most important criterion used in the vendor selection process. Reputation and name recognition are also important sales factors in the career agent and broker distribution channels.

It may even be easier to conclude that developing and marketing a CI rider to life insurance, annuity or other health insurance products makes sense. Already, these riders are becoming more and more



prevalent, particularly in the life insurance market. Insurers are using them to distinguish their products from those of their competitors, which may enable them to maintain or increase their market share in their other core lines of business, whatever they may be. Not having a CI rider available may shortly become a detriment to the underlying product's sales prospects. CI riders are less risky from a claims perspective, since the underlying product's underwriting process can be used to underwrite the CI rider, and reinsurance may also be used to manage the claim risk. Both rider design and positioning is simpler, since it is not necessary to utilize product design limitations to control claims risk, and the supplemental nature of the CI benefit lends itself well to sale as a rider to a primary insurance product. So, with this in mind, it is easy to see why so many insurers are boarding the critical illness express. The train is about to pull out—don't be left at the station!

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NAIC Health Update

by Rowen B. Bell

Author's Note: This article focuses on items of interest to health actuaries from the recent NAIC meetings in Chicago (December 2001) and Reno (March 2002).

Accident & Health Working Group Consistency in Health Reserving

One of the current charges of the Accident & Health Working Group is to investigate ways of achieving greater consistency in reserving requirements and standards among all types of entities authorized to write health insurance (e.g., HMOs, Blue Cross/Blue Shield plans, life/A&H insurers, etc.). As an initial step, in early 2002 the working group commissioned a report from the Academy's Health Practice Financial Reporting Committee (HPFRC) to identify areas of inconsistency between post-codification statutory accounting, existing model laws and regulations and current actuarial practice.

In its report, the HPFRC focused on three areas: definitional issues involving premium deficiency reserve and gross premium valuation requirements; accounting requirements that require certain items to be included in, or excluded from, the unpaid claim liability; and differences between the Health Insurance Reserves Model Regulation (which applies only to life/A&H insurers) and the corresponding accounting guidance on minimum reserve standards (which applies to all entities). The working group will use the Academy report as a guide in assessing areas for proposed change to the Accounting Practices & Procedures Manual, the Health Reserves Guidance Manual and/or appropriate model laws or regulations.

Actuarial Certification Standards for Health Entities

As part of the same project, the Accident & Health Working Group will consider whether the current actuarial opinion instructions for health blank filers (e.g., HMOs, most Blue Cross/Blue Shield plans) should be revised.

To this end, the working group has asked the HPFRC to prepare a report comparing and contrasting the health actuarial opinion requirements with the requirements of the Actuarial Opinion and Memorandum Model Regulation, which pertains to companies filing the life/A&H blank. (Recall that last year, the Life & Health Actuarial Task Force approved revisions to this model regulation which eliminated the "Section 7" exemption and thereby subjected all life/A&H companies, regardless of size, to an opinion requirement based on asset adequacy analysis.)

At the same time, it is worth keeping an eye on developments at the Casualty Actuarial Task Force, who is working on revisions to the actuarial opinion instructions for P&C blank filers. They anticipate completing their work by June 2002, for implementation in 2004, and it is quite possible that their efforts will attract the attention of the Accident & Health Working Group as they contemplate changes to the health opinion.

Two aspects of the proposed P&C revisions are of particular note. First, the current draft would require the opining actuary to disclose his/her best estimate for the reserve and his/her full range of reasonable reserve estimates, in addition to opining on the booked reserve ("management's best estimate").

Second, the opining actuary would need to explicitly indicate that his/her opinion falls into one of five categories: reserves are reasonable; reserves are redundant/excessive;

reserves are deficient/inadequate; qualified opinion; no opinion.

Reserves for Group Disability Insurance

The Health Insurance Reserves Model Regulation allows a group LTD insurer to use its own experience (if credible) in setting the claim reserve for claims of duration less than two years, and has a similar provision for claims of duration between two and five years. Some confusion has recently arisen within the regulatory community as to whether company experience is allowed for all future claim payments or only for those claim payments lying within the credible period. The perceived problem with the former interpretation is that it can lead to "cliffs" in the reserve for a given claim; the progression (for example) from the 24th month to the 25th month could result in a dramatic change in the reserve as the calculation shifts from full reliance on company experience to full reliance on a prescribed morbidity table. The latter interpretation would create a smoother gradation into the tabular reserve.

The working group has agreed to study this issue further and ascertain the nature of current company practice, with assistance from the relevant trade associations (HIAA and ACLI).

Reserves for Long-Term Care Insurance

The working group received a letter from a prominent actuary arguing that existing reserve standards for long-term care insurance are overly conservative and represent a barrier to entry, unnecessarily dampening the growth of the LTC market. The working group decided against reopening the topic of minimum reserve standards for LTC insurance.

Long-Term Care Guidance Manual

In recent months, the working group has made significant progress toward completing a new Guidance Manual on the Long-Term Care Insurance Model Regulation adopted in 2000, which requires that the actuary certify that new business rates for long-term care insurance are adequate in the absence of any future rate increases. The guidance manual may be completed as early as June.

Statutory Accounting Principles Working Group Cost Containment Expenses

In the modern world, health insurers spend considerable sums of money on items that are neither a necessary administrative cost nor a contractual benefit, but rather are expenditures designed to reduce the amounts ultimately spent on contractual benefits.

The financial reporting of these types of expenditures—which include such items as utilization review, case management and network access fees—is at the present time inconsistent; some carriers designate some or all of these costs as incurred claims while others categorize them as administrative expenses. As a result, the comparability of different carriers' financial statements is lessened.

In response to this, in 2001 the Accident & Health Working Group proposed that these types of expenditures—christened “cost containment expenses”—should be separately presented on health and life/A&H insurers' statement blanks, thus providing regulators with a clear distinction between incurred claims, cost containment expenses and “pure” claim administrative expenses.

The relevant accounting guidance on cost containment expenses for health contracts, SSAP 85, was exposed for comment in December and is expected to be finalized in June. Once the accounting guidance is in place, modifications to the annual statements are expected to be considered by the Blanks Task

Force in October, for potential implementation in 2004.

Health Reserves Guidance Manual

The working group has decided to add to SSAP 54 (health policy & claim reserves) and SSAP 55 (claim liabilities) a reference to the Health Reserves Guidance Manual, which was developed by the Accident & Health Working Group in 2000. The final wording will not be adopted until June but is expected to include language from the introduction of the manual explaining its intended purpose and status as guidance material.

Policyholder Dividend Obligations

The working group is in the process of finalizing Issue Paper 117, which would constitute new accounting guidance for those insurers that have either demutualized or formed mutual holding companies. The current draft would introduce to statutory accounting the GAAP notion of a “policyholder dividend obligation” liability relating to the closed block of policyholders that were issued participating policies while the insurer was a mutual. Actuaries from the large demutualized life insurers have argued, to date without success, that while this obligation is an appropriate GAAP liability since it detracts from the equity available to shareholders, it is not an appropriate liability under statutory accounting since its function more closely resembles an earmarked portion of surplus.

Emerging Accounting Issues Working Group

Premiums Due Prior to the Coverage Period. The reader is likely familiar with the concept that if a premium installment that covers a period of time commencing after the valuation date is received by the insurer prior to the valuation date, a liability for advance premium needs to be established. What if such a premium installment is due to the insurer prior to the valuation date but not received

by the insurer until after the valuation date? (For example, suppose the January premium bills indicate “pay by December 29th”). The working group clarified that, in this case, the insurer should not record either an advance premium liability or an offsetting premium receivable asset, since regardless of the “due date” on the bill, the insurer does not have a right to the premium installment as of the valuation date.

Risk-Based Capital Task Force

Recalibration? In late 2001, regulators from Wisconsin wrote a letter to the task force suggesting that it should study the issue of whether the “RBC bar”—that is, the relationship of Company Action Level RBC to the underlying metric known as “RBC After Covariance”—is appropriately set. Arguments in favor of such a recalibration of the RBC formula might include the fact that only about 3% of life and P&C insurers fall below the Company Action Level in any given year, compounded with the fact that the cumulative effect of the many changes made to the RBC formulas in recent years may be perceived to have been liberal rather than conservative.

In response to the Wisconsin letter, both the Life RBC and P&C RBC Working Groups have formed subgroups to contemplate the need for recalibration. The Health RBC Working Group, on the other hand, does not plan on studying the issue at this time; not only is the health formula newer than the others, but the proportion of health companies falling below the Company Action Level is substantially higher than is the case for either life or P&C companies.

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