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**APPOINTED ACTUARY ISSUES FOR THE HEALTH ACTUARY**

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Recorder: TIMOTHY F. HARRIS

- Cash-flow testing
- Asset valuation
- Risk-based capital (RBC)

MR. TIMOTHY F. HARRIS: We have an excellent panel of individuals who have experience in this area and several of whom have written practice notes in this area. Our first speaker is going to be Karen Bender. Karen was a qualified health actuary before she became an ASA. For those of you who don't know what a qualified health actuary is, this is someone who is with a Blue Cross/Blue Shield organization and has passed a special test to become a member of the Academy. Karen has been an employee of Employers Health Insurance, a Lincoln subsidiary, for five years, and Karen and her company concentrate on small-group health insurance. Karen is on the Practice Notes Committee and has written a practice note on the material she plans to cover.

MS. KAREN BENDER: In trying to figure out exactly what we have to do and how we are supposed to do it, it was very different for small-group medical, in particular, when we talk about the standards and cash-flow testing. This is something that we didn't used to have to do at all. I hope this session will help, and you won't feel quite so overwhelmed.

I had the opportunity to help develop that practice note for the small-group medical. At present, things are still in what I would call a preliminary stage. They're undergoing the peer review process. So, if you have some strong feelings about any particular item, feel free to contact the American Academy of Actuaries.

The purpose of the practice notes was to assist the actuaries who do prepare statements of opinions for companies that have small-group medical insurance. I also wanted to give you some examples of some common approaches that can be used and identify items for consideration in developing your opinions. It's also important to know what the practice notes are not. These are not binding on any actuarial organizations. They are solely to be a support for you. They're intended to be used as a supplement. They simply do not carry the weight that the standards of practice do. Also, these notes should be considered dynamic, especially in small-group medical, for any of you who specialize in it.

The world is changing very rapidly. We tried to develop these notes in such a format that they could really adapt to this changing world.

This is just one source for the valuation actuary. Obviously, other sources are the Actuarial Standards of Practice (ASPs), which we make reference to in this practice note. It's important that we don't forget to use the source of profits (SOPs).

There are other practice notes pertaining to other specific health products, depending upon your particular situation or your particular way of rating, such as applicable laws and regulations and papers by the American Academy of Actuaries and the Society of Actuaries. There are papers right now from the American Academy of Actuaries on community rating for those of you who may be in states that are requiring community rating. Also, there is the duration study for small group that was put out by the Society of Actuaries.

Well, the scope of the practice note was to cover valuation issues specifically related to determining adequate reserve levels for asset adequacy for small-group medical insurance coverages. To make sure that everyone was on the same wavelength, we wanted to make sure that we defined what we meant by small-group medical business, and what we were limiting our scope to.

### **DEFINITIONS**

This note was to cover comprehensive medical plans that were often sold with various ancillary benefits such as term life, short-term disability, prescription drugs, dental, and vision. Essentially we were covering medical plans of a short duration. The note does not cover term life, or group term life.

The note also did not specifically address the HMO rage or implications of dual or triple option. Some of the things that we may say here may have application for those plans but were not specifically included in this practice note. Even deciding what a small group was can be a challenge. Each company may have its own definition. But we tried to limit the scope of this practice note to near what the various states are doing. So, many states have passed small-group reform law. And they have defined small group as up to 25 employees, although some had gone up to 50, and I know at least one state that has gone up to 60 employees. It's important to note that these laws refer to employees and not necessarily the number of people you have insured.

Some of the issues are going to be state specific. Some of the issues addressed are appropriate for any size case as long as the insurance company is not using experience to generate the rates for that particular case. These notes definitely are not applicable to any kind of self-funding.

Next are the definitions that we used for reserve and liability. We limited the note to statutory reserves. We do not get into GAAP or tax reserves. Most of the definitions have traditional definitions. We discuss claim reserves, essentially incurred but not reported (IBNR) claims, unearned premium reserves due, and unpaid premium assets. When we talk about health reform, we're referring to such items as health premium restrictions, minimum loss ratios that are required in some states, guarantee issues, portability of coverage, and the potential of assessments in different states.

The first item that we addressed was minimum IBNR reserve contingency margins. It's clear to us that in the ASP No. 5 that it implies an establishment of a contingency margin for the IBNR reserve. One can do this implicitly, via conservative assumptions or explicitly. If you do it explicitly, obviously you will have a little better idea of the quantity and the magnitude of the margin that was established. We felt that it was important that we establish the reserves in such a way that the probability of having

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redundant reserves was greater than the probability of having deficient reserves. Also, according to the ASP No. 5, we need to review the adequacy of the current methodology. There was really nothing new there, and all of us have probably been doing that for a long time.

### **STANDARD VALUATION LAW AND SECTION 7 OPINIONS**

In general, the Section 7 opinion calls for the actuary to perform an analysis of reserves not unlike what was done before with the introduction of the new standard valuation law. It does not require reserves to be reviewed in light of adequacy of assets. Valuation actuaries still need to comply with various ASPs, and they also have to determine that the company qualifies for a Section 7.

And this last one came about as a result of Valuation Actuary Symposium in San Francisco. The speakers noted that an actuary does not opine on the reserve or asset adequacy, but only to the state's minimum legal standards. When I was doing the research for my company in 1992 to do the opinion, I discovered that most states minimum reserves for accident and health lines are only the unearned premium reserves. But if the actuary is not going to opine regarding the adequacy of the IBNR for the Section 7 opinion, it's my opinion that the actuaries should make clear that they have not done an adequacy test on the IBNR reserve.

Now, in San Francisco, they also indicated that there were at least two states that had adopted verbiage requiring "adequate reserves." Section 7 opinions would require the actuary opine that reserves were adequate. We're domiciled in Wisconsin. Wisconsin happened to be one of the states that had passed that revised law. I'm not sure what the other state is. My company is not eligible for a Section 7 opinion, so I have not made as much research effort for the Section 7 opinion.

The Section 8 opinion is for cash-flow testing. ASP No. 14 refers to cash-flow testing, and it's normally applicable to interest sensitive products. Now, here's where the error occurs: the small-group medical is more vulnerable to C-2 risk, or the insurance risks due to adverse variation in claim experience, not as much to the interest rate. If cash-flow testing was performed, the opinion may be stronger. However, cash flow in the traditional sense may not be necessary for small-group medical. There may be other methods more appropriate.

ASP No.14, Section 5 does refer to the fact that cash-flow testing may not be necessary if the actuary can demonstrate that a block of business is relatively insensitive to influences such as changes in economic conditions. The practice note isolates changes in investment income from changes in general medical inflation. There's no question that small group is very sensitive to medical inflation, but it's not really as sensitive to changes in investment income.

So, how do you demonstrate that small-group medical is insensitive to investment income? Here are a couple of ways that we thought you might be able to do that. One is to show that the premium structure is sufficient without consideration of investment income to find incurred claims. Another is to do a comparison of net premium to incurred claims for the past several years. At our company, we segregate net premiums versus gross premiums, so we are able to track the net premiums. If your company does that, that would be easier to do. Consider comparison of

investment income to the total premiums for the past several years. Obviously, the lower that percentage, the less sensitive it is to investment income changes. Or demonstrate that changes in interest rate assumptions in gross premium valuation does not impact the conclusion.

If you're not going to do cash-flow testing, then what do you do? ASP No. 22 inferred you could do the following: (1) Probably the most practical approach would be to do a gross premium valuation coupled with a review of assets, but not necessarily a projection of asset cash flow, and (2) another acceptable methodology would be to do a traditional claim liability development like you always have done. You could use the loss ratio approach, or however you do your development, you still need it coupled with the review of the assets. That's extremely important. Maybe you have other analytical tests regarding the active life and premium adequacy test that would be helpful to you. It is important for you to examine the assets that are allocated to small-group medical in terms of quality, duration, and liquidity. You must ensure that all the junk assets, although I assume none of us have any junk assets, it's just in case you do have some junk assets, are not all allocated to the small group. Obviously, this is more important in multiline companies.

When should a gross premium valuation be performed to demonstrate reserve adequacy? We felt that the main reason to perform gross premium valuation was that there was reason to believe that the current premium structure may be inadequate to support future liabilities and that the current premium structure will not or cannot be changed in sufficient time or magnitude to support the future liabilities of the product. We felt both of these were important. The small-group medical historically has been able to change the magnitude of premium levels very rapidly to correct any inaccuracies in our pricing. This has cushioned us maybe from the need to do both premium valuations and some of the traditional testing.

There are considerations affecting the need to perform gross premium valuations: (1) the ability to implement changes in the current premium structure; (2) the timeliness of the implementation of changes to the current premium structure and any of your own internal system limitations, and that can be twofold; (3) statutory limitations to premium levels or loss ratios (conversions) – some states require conversion loss ratios to be in excess of 100% or 120%; (4) the ability to withdraw from a particular market; (5) the rate guarantee period, which may be contractual or by regulation; and (6) the management reports, i.e., the ability of the company to track the actual/-expected, or experience by product. The better the reports coupled with a history of reacting to the reports, the less need for a gross premium valuation.

I'm now going to discuss a list of the risk components that could be considered when doing a gross premium valuation. Many of these are obvious, and I'm not going to go through all of the items. Reforms may magnify the need for gross premium valuations.

In a gross premium valuation, you adjust many of the risk components as you develop your model. What's nice about this premium valuation is that it will enable you to test the sensitivity of any one of these components. If you're doing a gross premium valuation, there is a little idiosyncrasy about which you must be aware. For valuation purposes, reserves, and liability need to be established as if in-force business

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is a self-supporting ongoing concern. What this means is you cannot use any assumptions regarding new business when doing your gross premium valuation. Most of us, when we're doing our modeling, are doing a pricing valuation assuming that we're going to have a certain amount of new business to support the block. That is not acceptable for valuation purposes. A couple of actuaries of different insurance departments are adamant that you do not use any new business assumptions. Other considerations are that it may be appropriate to complete a gross premium valuation separately for the same types of business. We are allowed to subsidize one type of business by another. There's certainly nothing inappropriate in doing so. You must scrutinize that when you're doing so. And, a common one is conversion. I think most of us use in-force business to subsidize our conversion block of business. Even if you pulled out of the medical market, you would still have to have that conversion business. It is not self-supporting. I wanted to share that with you. If you're going to use one to subsidize the other, that the assumptions are appropriate. But the opinion is in aggregate, that's when you can bring in your profits for your other ancillary products.

The other item is that we didn't feel that it was necessary for a gross valuation to be conducted annually. That statement should be qualified. I should say that it wasn't necessary to be conducted annually if additional reserves were not established. If additional reserves were established as a result of doing a gross premium valuation, then obviously you're going to have to review that exercise annually to insure that the reserves are appropriate.

And then there's other sources for the gross premium valuation. One of them is a periodic rate analysis that the pricing actuary is using or generating. It's important for the valuation actuary to talk to the pricing actuary just to see where there's a difference, especially in light of all the changes that are occurring in small-group medical. Also, models that are employed in the financial forecast of the company would be another source of gross premium valuation.

Projection periods for small-group medical are very different than for life insurance. In life insurance normally you would want to do projections for a long enough period until you deem your reserves are insignificant. As long as we have the ability to change rates very frequently, that would make a gross premium valuation over a long term academic. In group health the risk is really in the lag in recognition of an increased trend and the realization of increased premiums. It's a much shorter risk period. We felt that no more than three years should be used in the gross premium valuation otherwise it becomes an academic exercise.

The topic of durational reserves is brought up often when talking about small-group medical. We felt that pricing policies of companies need to be considered, as well as the expenses. Remember we were limiting the practice notes to the statutory reserves. The frequency of the rate changes is also important. A flatter morbidity curve will be expected in states with guaranteed issue and portability of coverage. The change in the morbidity curve will be dependent on how your company has underwritten in the past. We felt that the best way to handle this is if you did a gross premium valuation. This would demonstrate the need for any additional reserves. The durational reserves, by themselves, do not necessarily have to be established.

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Another common question is the underwriting cycle. Assumptions regarding the claim and/or underwriting cycle can be reflected. We really felt that this was more of a surplus adequacy testing. At this point in time, the opinion does not cover surplus adequacy. We are only opining on the adequacy of reserves. You could include reference to the cycle, but it was not required.

Now let's discuss the brave new world of small-group insurance. There's minimum loss ratios in some states and premium refund provisions. I believe that is in New Jersey. Assessments and participation in various state reinsurance pools vary by company. Some of the pools are voluntary. Some of the pools are mandatory. You have risk adjusters at least in one state, New York. We don't do business in New York, but I'm told that there is a mechanism to use a risk adjuster. Any kind of redistribution of premium must be taken into consideration in developing your opinion for the statement.

This is a technical subject. Valuation work for the small-group actuary has certainly changed. It is hoped we all will have a higher comfort level than we did before.

MR. HARRIS: Our next speaker is going to be John Hartnedy who is going to talk about appointed actuary issues in the individual major medical area. John is vice president and chief actuary with Golden Rule Insurance Company, and he's been there for about six years. John practices in the area of individual major medical, and he is also on the Practice Notes Committee.

MR. JOHN A. HARTNEDY: I want to give you an idea of what we did in Golden Rule when we prepared our actuarial opinion list in 1992. This is something that I kind of always objected to at actuarial meetings. You walk in and you listen to a whole series of numbers, and I probably should have learned from the last time that I did something like this. I was well into my talk and it occurred to me that maybe I could not be heard in the back of the room. I raised my voice and said, "Is there anybody who can't hear me?" And sure enough, the fellow sitting way out in the back put up his hand and said that he couldn't hear me. As soon as he did that, a gentleman sitting right here where Bob is stood up and said, "Can I change places with him?"

In our actuarial opinion, we do primarily individual and major medical business. We do a limited amount of life and annuity, and so we did cash-flow testing, but that was for our life and annuity line. By far, the major premium that we do is individual major medical. In our actuarial opinion, we commented on all the C-1 through C-4 risks. As far as the first comment on the C-1 risk, namely asset default, we said the risk for that was minimal. We have short-term or marketable long-term assets. To get that in perspective a little bit better, our actual health premium was \$576 million in 1992 out of the \$750 million of total premium that the company did. Our exhibit 9, under premium reserves was \$70 million. And keep in mind that we only sell monthly or quarterly business. We will not even sell semiannual or annual premium. But that unearned premium runs off very rapidly.

Our exhibit 11, IBNR, was \$62 million. Well, that's about a month-and-a-half worth of premium. We look at date of service for our claims. We pride ourselves in very fast claim service. Once determined the records are complete, our goal is a five-day

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turnaround. Ninety percent of our claims are paid within 90 days of incurral. So, our keys are to either have cash to cover those reserves or marketable securities, something that we can mark to market real quick. Obviously, we did not do durational studies with 30-year Treasuries. A durational study obviously would have created a mismatch, but the key thing is we're able to readily sell those products, and we do look at a mark to market. But we do not look specifically at a duration match simply because of the very short duration and if we know the marketability of the assets that we do have.

I have a comment on the C-3 risk. We do not have any noncancelable business, we have very little disability income (DI). Disintermediation risk for us is immaterial, and the investment risk is manageable. That's basically what we said to that issue. Now things get a little bit more interesting. Consider C-2 risk and premium adequacy. We did do a gross premium valuation. We are based in the state of Illinois. Larry Gorski is the actuary. His department sent out a letter and informed us that we were going to do a gross premium valuation. We didn't know whether that was on his authority, but this time we did it anyway. I think that turned out to be a very good suggestion on his part. I think it's a good idea that we do that. The key thing with premium adequacy or C-2 risk is that you have good management.

Beyond that, some of the key things that we kept in mind when we did this, of course, were that our liabilities, as I described to you, are very short. Our policy can be canceled on its anniversary. We study our claims by using completion practice. And, as I mentioned, this is based on date of service. We note at the end of the year any work flow changes. For example, at the end of last year, we began imaging and we had reached way behind in the processing of our claims. We watched these things and, therefore, pushed our IBNR reserves up substantially at the end of 1992. We have now basically caught up. We study those reserves as they work their way out, and our increasing reserves seem to be relatively accurate.

In analyzing our products, it was interesting we had sold a short-term product. That was a part of our business a few years ago when we paid little attention to it. We didn't bother to note or to recall when we were doing our reserves that in our short-term product our incurral date for claims is stated in the product as being the date that you first had any diagnosis or treatment for the disease, which, of course, is a very different definition than date of service. And these are the things that I think we need to watch for when we do our gross premium valuations. Fortunately, when we found this a couple of years ago, it was still a relatively small reserve, and so when we raised our reserves to cover that definition, it did not really have a noticeable impact on the profitability of the company or the reserves that we were holding. But this deep analysis, if you will, that we should do does have its benefits.

We put in a claim settlement expense of about 2-3% in our gross premium valuation. We do a comparison of average reserves to monthly premium. We take a look at average reserves that we hold to the kind of policy. These are things that we do on a running basis to see if anything strange is happening with our reserves. We use a gross unearned premium reserve, and we do it on the exact day basis. There are contract reserves that we hold. Those are our medical and some of our older guaranteed renewal business, but that is a very small proportion of our business. Our age claims are running about 1%, which we find as being fairly typical of the

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industry. It is just built into our completion factors, but we do watch the age claims just because we want to be concerned. We want to be sure that we're on top of it if something really strange seems to happen there.

I will talk more about the details in premium adequacy, but before I do, I want to talk about C-4 risk or the external influence. Again, here the key thing is the management of your company. On rate increases, which I believe are absolutely crucial in this area, historically now Golden Rule gets the needed increases with limited delays. We learned our lesson in 1988. We filed a rate increase in March 1988, and if you remember the 1988-89 year, they were very bad years for the health industry. We filed about a 30% rate increase in March 1988, and we were way ahead of where most of the rest of the companies were at. We had a heck of a time getting that rate increase approved. It took us until September when we finally had most of the states approving that rate increase and implementing it. We filed the next rate increase in October. We lost about a third of our surplus in 1988. We vowed to ourselves that was not going to happen to us again. One of the things that we did was for administrative reasons. It was much less expensive for us to implement our rate increases at basically the same time, but we were not implementing the states without approval first or states as quickly as we got approval. We changed our system for, I guess, obvious reasons. To make sure that we could implement rate increases on states without approval or those that approved as soon as that happened. In other words, we can implement rate increases on a state-by-state basis. We have also taken the position that we will approve states that do not approve rate increases. Every time we have done that we have won. We are not a favorite among the regulators. I bet that surprises you, doesn't it? We win because we want to run our loss ratios noticeably higher than the minimum required in the state. I think all that points out to you is, when we get rate increases turned down, that it probably has a lot more to do with the political process than it has to do with an actuarial process.

The other things that we have done is now only 12% of our major medical business earned premium is subject to state approval. We've done two things. We sell an association product. If you officially ask us, the major reason that we do that is that it holds down administrative costs. You could do a much more similar product state by state. That I would say is true. I can't prove it to you by the level of our expenses. The very obvious thing that we all know that it does is that it gets us out of a long drawn-out process of getting our rate increases approved.

We've had outside attorneys do a detailed analysis of which states really have legal rate approval. I would suspect that, if I told you 28 states do not have rate approval, that you would be quite surprised. We have gone to states that have insisted on approval and have beat them in court on that issue. We think it is absolutely key to the financial solvency of the company. Now, of the other 23 states, I'm counting District of Columbia, we have in nine of those states something called guaranteed loss ratio. If we guarantee to meet the loss ratio, then we are not subject to front-end approval of the rates. That leaves for us 14 states that had rate approval. One of those is New York. We do not sell in New York, and I suppose the major reason you could say that is because we're licensed there. Some companies that doesn't seem to bother. That does make a difference to us, so we don't sell in New York. Other states we do not sell in, New Jersey, Rhode Island, Vermont, North Carolina, and



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Kansas. I've narrowed it down to a very small number of states, those where we actually sell business and are subject to rate approval.

I have found it interesting, and maybe it's because of what happened to us in 1988-89, that a lot of actuaries don't seem to be that concerned about that issue. I think you need to be very aware in your gross fee and valuation. You need to be aware that a lot of times the approval process is delayed arbitrary reasons. I think you have a responsibility to your company when you do gross premium valuations to make some anticipation of the impact that arbitrary delay may have on your bottom line.

I found it interesting when we received our rating from Standard and Poor's. I think we're a AA minus. Does that sound right? It's quite a good rating for a company that does primarily accident and health. One of the reasons that we received as favorable a rating as we did was because of our ability to get rate increases. I found the flip side of that rather interesting. That when it comes to the solvency of a company, clearly Standard and Poor's feels that the regulation done in the states is detrimental. That was the only conclusion I could come to from what the people there said.

Let's discuss our gross premium valuation on some of the assumptions now. This is the exciting part. I get to do actuary stuff. I'm going to tell you some numbers. We started with Schedule H. We did a ten-year projection. Discounts had an interest rate of 5.5%. We took a look very specifically in our statement and looked at our 1992 experience and studied our durational between 1991-92, our durational lapse rates in that given calendar year. Our major medical new business had dropped off on a calendar-year basis; first-year business dropped off at a rate of about 27%. Our really old business varied between 25% and 17.5%. Most of it was down in the 17.5% range. We found our Medicare-supplement business in the 1993 calendar year. Again, this was at a first-year lapse rate of 18.5%. Five-year old business was as low as 12.5%. For the older business, we found that the lapse rates or termination rates began to increase after the fifth duration. Small group was 25%, then 20%, and rating down by 100 basis points a year to 15 points. Concerning our 1992 expenses, admissions averaged 12%. That's first-year renewal. By the way, our top expense with admission was 25%. Our renewal is 5%. Our expenses are at 14.5%. Again, that includes first year and renewal. So, we came out to 29%. We assumed inflation in our expenses at 4% a year, but generally since this is a closed block, we found that the average commissions kept decreasing and offset each other. We assumed inflation of 8%. We'll go to the scenarios. The first scenario that we ran was all rate increases take place as planned. Our gross premium valuation showed our business was worth about a \$130 million.

In scenario two, we assumed in year two that we only obtained half the rate increase, but we were able to make it up in the third year out. By third year, I don't mean duration. I mean third year from 1992. That block value of our business was \$130-115 million.

Our third scenario was that we only got half the rate increase in year two, but we were not ever able to catch up. That dropped the value of the business to \$61 million.

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Our fourth scenario and last was the claims increased at 1.5 times the rate of the gross premium increase. We were behind every year. We still had a positive value of \$60 million to our business. Our true group line is small at Golden Rule. It's the only line with losses in two of the scenarios. We were not that concerned because it can be nonrenewed or we could get more aggressive in our rate increases. We felt good about our gross premium valuation. We felt that we had learned something in the process of having to do that, and I haven't told Larry Gorski that his insistence that we do it I think was very well-founded. One of these times, I will build up the nerve to tell him that he was right, and as far as my argument about doing it, I must concede I don't think we were accurate.

One of the things that I think we need to keep in mind as actuaries is the fact that there is RBC out there now. In other words, surplus requirements for our companies, particularly if we're in the health line, have been noticeably increased. There are guarantee funds out there. We should get active and promote things like portability, and what I mean by that is once you enter the system you can stay in the system. In other words, there is great protection among those three ideas for the consumer. We're really reducing the risk to the consumer when he purchases our product. I just want you to keep those things in the back of your mind.

The responsibility of the actuary then becomes one that I believe is communication: communication with our investment officers, with our management. I found it somewhat embarrassing when our president walked out that he was real impressed we bought the task system. We're running this thing. We have people involved with it. We're modeling our assets. I mean we're doing just a wonderful job. Larry Gorski found no criticisms of our actuarial opinion, and he really looks at these things. And I thought that was a great accomplishment right there. And particularly Golden Rule is notable as being aggressive with regulators. I assume that if anybody is looked at carefully, it will be us. And we have no criticism of our actuarial opinion. So, in my own humble and unbiased opinion, I was very proud of the work that we have done. And our president walks up to me and he says, I know you got this thing done, so you didn't break the law, but what good is this to management? I realized I was missing the major point.

Really the major point of why we ought to be doing what we're doing has to do with communication, and I think that is a professional responsibility of ours as actuaries to educate our management, educate the regulators to let them know what is really happening with the business that exists in our company. That expertise can be hired. It's not just an issue of how equipped we are in our own companies. When we do these projections, I think there is a very professional obligation. This is not in the practice notes. We ought to be testing actual experience against the projections that we make. For our future projections, we can become more reliable. We can look at it ourselves and see how good a job that we really did and maybe spot some of those things that we missed. It will lend credence to what we do over the years.

I'm one of the people who does believe that the actuary should be required eventually to speak to surplus adequacy. I don't think that puts me in the majority of the opinion. I do think a number of things would have to be changed before we take that responsibility on and can act more like the actuaries of Canada. Real professionals bring something to the table as to the value of our business and the value of our

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companies. Right now, we are advocating that responsibility to regulators. Anything that they see that goes wrong, they're going to produce a law or a regulation to limit what we do and to limit product availability. Here is a simple example. It sounds good to say, raise loss ratios. Now, think about that. Why isn't it left to competition what people can buy? I'll grant you there's a problem, in my opinion, of proper disclosure out there, about the history of the rates we charge, the history of our rate increases. Our consumers ought to know that.

I'm still trying to talk our company into doing it, and the major reason we haven't is we figure, at this point, we'd be at a tremendous competitive disadvantage because nobody else does it. And I'm sure that that's a good enough reason that I haven't been able to sell the idea yet. I would like to try it, and let's just say I'm probably not the most popular actuary among marketing people. I would like to see that kind of disclosure rather than regulators. For example, when you raise the loss ratios, you sell primarily in a transitional market, short termers. If you push up that loss ratio, then what I probably ought to do is financial underwriting and cut out the short payments, but that's our marketplace. Who are the uninsured out there? They are those 30 million people whom we hear about; 70% of those are uninsured for 12 months or less. That's our market in individual major medical. When you start pushing up loss ratios, which sounds good, you're basically going to be telling us, don't write very short termers.

Just a small point to make the point. The solution is not more regulation. The solution, I think, is in a more professional responsibility on our part. The regulators did things like attack the junk-bond market. They did this in the thrift market. I don't have to tell you what happened in the savings and loan market. Do I think it was solely because of what regulators did? No, I don't think that. I don't think that was an insignificant thing that they did. They caused that market to drop out. That market is coming back now. You let the regulators run our business. Maybe it will make life easier for us, but I don't think it's doing our consumers the least bit of a favor. We have a responsibility. We're professionals. We are not politicians. We should not sit down and be at the table to cut the nice deals that make the politicians happy. We are professionals. I think we all have a greater responsibility in the area that goes beyond what's showing up in current practice notes: To educate our management, educate our agents in what we can, and educate our public on the insurance business on the solvency of our company.

MR. HARRIS: As you've heard, you have a choice of valuation methods, not just cash-flow testing when opining on the adequacy of health insurance reserves. However, you do need to look at the assets. As Karen said, you have to take a look to make sure that the annuity people didn't allocate all the foreclosed real estate to the health insurance plan. And John may not realize it, but he's actually using one of the more advanced asset/liability techniques, which is market-value analysis. He's looking at the market value of his assets compared to the market value of his liabilities.

Our next speaker is going to be Art Wilmes. Art is going to talk about a line of health insurance that does require some type of cash-flow testing. Art's going to talk about disability insurance. Art is a Milliman and Robinson employee. He's been with M&R for 13 years. He's a consulting actuary with the Indianapolis office, and he has

experience in the health insurance line with concentration in managed care products and DI.

MR. ARTHUR L. WILMES: The issue of cash-flow testing for individual DI insurance is still in relative infancy. Much literature has been published on cash-flow testing for life insurance products particularly as it relates to interest sensitive insurance products. Compared to the attention this class of insurance has received, very little individual disability literature has been written.

#### **GUIDELINES AND STANDARDS**

The cash-flow-testing process for individual DI insurance is based upon traditional actuarial techniques and processes. As the valuation actuary, you will be responsible for producing an analysis and documentation that reflects these techniques. As such, you will need to be cognizant of the various practice standards and guidelines that will affect the valuation process.

#### **Health Insurance Practice Notes – Individual DI (Draft Form).**

Health insurance practice notes have recently been promulgated by the State Health-care Issues Committee of the American Academy of Actuaries. The Individual Disability Income Insurance Note, like its nondisability counterparts, has been developed to address issues related to the valuation actuary. In particular, the note provides guidance regarding compliance with the Standard Valuation Law (SVL) and Model Regulation and the Actuarial Standards Board (ASB) ASPs as it relates to determining adequate statutory reserve levels for individual DI insurance.

A comprehensive discussion of this practice note is contained in an adjoining article. That article delineates specific details of the note. Primarily, the note addresses key considerations for developing Section 7 and Section 8 statements of opinion. Section 7 and Section 8 opinions are defined in the SVL. The key difference in these two types of opinion is that a Section 8 opinion addresses asset adequacy issues in addition to an opinion as to reserve adequacy.

#### **ASP No. 5 – Incurred Health Claim Liabilities**

ASP No. 5 sets forth the areas of analysis that valuation actuaries should consider when developing opinions as to incurred health claim liabilities. Key areas related to individual DI discussed in this ASP are (1) conservatism, (2) components to include in incurred health claim liabilities, (3) recognition of the time value of money, (4) recognition of claim settlement expenses, and (5) importance of follow-up studies.

#### **ASP No. 7 – Performing Cash-Flow Testing For Insurers**

ASP No. 7 sets forth the areas of analysis that valuation actuaries should consider in conducting cash-flow testing or cash-flow analysis for an insurer. Key areas related to individual DI discussed in this ASP are (1) cash-flow-testing practices and alternatives, (2) development of scenarios, (3) projection of asset cash flows, (4) projection of liability or obligation cash flows, and (5) development of assumptions.

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### **ASP No. 14 – When to Do Cash-Flow Testing for Life and Health Insurance Companies**

ASP No. 14 provides guidance to the valuation actuary regarding the appropriateness of cash-flow testing as part of a professional opinion for a life or health insurance company. Key areas related to individual DI discussed in this ASP are (1) the appropriateness of cash-flow testing, (2) reasons for cash-flow testing, and (3) communications and disclosures (i.e., actuarial report) related to cash-flow testing.

### **ASP No. 22 – Statutory Statements of Opinion Based on Asset Adequacy Analysis by Appointed Actuaries for Life or Health Insurers**

ASP No. 22 provides guidance to the valuation actuary regarding the statement of actuarial opinion relating to reserves and other actuarial items when the opinion is prepared in accordance with the SVL and Section 8 of the model regulation. Key areas related to individual DI discussed in this ASP are (1) technical requirements and professional qualifications for the actuarial opinion, (2) form, content, and recommended language of the Section 8 opinion, and (3) communications and disclosures.

### **ASP No. 23 – Data Quality**

The inclusion of this standard may at first seem unusual, however, it is an important guideline for the valuation actuary since reliance upon data prepared by others is likely in forming an opinion. ASP No. 23 provides guidance to the valuation actuary regarding data selection, data review, and appropriate disclosures. Key areas related to individual DI discussed in this ASP are (1) selection of appropriate data, (2) use of imperfect data, (3) reliance upon data supplied by others, and (4) communications and disclosures.

### **DEVELOPMENT OF THE GENERAL MODEL**

The primary step in the cash-flow-testing process is the development of the general model. In other words, this means the grouping of the in force policies for the purposes of cash-flow testing.

During the 1992 Presidential campaign, a familiar slogan that quickly became cliché was, "It's the economy, stupid." An analogous slogan for cash-flow testing could be, "It's a model, stupid." The model that the actuary develops for purposes of cash-flow testing is as it is stated, a model. It is not, nor should it be viewed as, an exact duplication of the individual DI line of business. A sure process killer for cash-flow testing is the need or desire to reproduce every single policy record. A sense of perspective is very helpful. There are numerous assumptions used in the modeling process. Since those assumptions are best estimates only, they are likely to vary from actual experience emerging in future years for which the projection is prepared. Since variances from assumptions are likely to occur, variances in actual-to-projected results are also likely to occur. The perspective lesson, therefore, tells us that the generalized model is only one in a myriad of cash-flow elements that is subject to variance.

There needs to be a certain level of constraint in the modeling process. The constraint is dictated by the sophistication of the projection system (computing efficiency) and the level of fit. At a minimum, the model should reproduce at least 90% of the in-force business. The model should be critically reviewed if the level of fit is below 90%.

Grouping techniques are acceptable and are certainly used in the development of the general model. The level of grouping is contingent upon a review of the policies in force. Policy in-force reviews are based upon various sorts of the in-force policy listing. The types of sorts should be based upon the various ratebook characteristics of the in force. Sort routines should be developed to determine the amount of in force for various age cells, policy durations, occupational classes, policy series, elimination periods, benefit periods, and riders. Policy series grouping is important since it is very likely that key assumptions will vary by series due to differences in morbidity, distribution sources, product design or contract language variations, and underwriting.

Models for large blocks of individual DI lines can become very complicated, very quickly. For example, a model based upon five policy series, five benefit periods, four occupational classes, five age cells, two sexes, three sales channels, and three riders can amount to 36,000 cells. When you compound that with the different policy durations that will be reflected, it can quickly be seen that the model will become quite large. This example of a model may not be unreasonable for most individual DI insurers that have been in business for a number of years.

#### **DEVELOPMENT OF THE LIABILITY MODEL**

The liability model is composed of two parts: the active life model and the model for lives on claim. There are variations in practice as to whether these submodels are actually done separately or in combination. If feasible, it is probably preferable to develop two separate liability submodels since the modeling approach and assumptions will vary for each submodel.

##### **Active Life Model**

The active life model is used to project cash-flow items such as premiums, benefit payments, and expenses. Also included would be reserve balances and net investment income earned on such reserves. Grouping techniques are used in the development of the active life model. The key assumptions used in the active life model include morbidity, expenses, lapses or persistency, and net investment income.

The morbidity assumption is based upon the ongoing morbidity analysis conducted by the company. Those companies subject to GAAP accounting periodically conduct morbidity studies. Upon review of the recent morbidity analysis, the valuation actuary sets the base assumption and trends as to future directions in morbidity.

Morbidity studies commonly take two forms: development studies and actual-to-expected studies that review claim frequency and claim termination rates. Actual-to-expected studies of claim frequency and termination rates are preferable to development studies since claim development has a very long tail and preliminary results are leveraged by claim reserve estimates that are based upon undeveloped or outdated information. It is very important to analyze variances in morbidity by policy series since resulting morbidity will be impacted by sales practices, policy benefits, and underwriting employed when a certain policy series went to market.

Expense assumptions include commissions; claim settlement expenses; policy maintenance expenses; taxes, licenses, and fees; and other appropriate expenses.

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These assumptions should reflect current expense studies, commission contracts, and taxes, licenses, and fees ratios.

The lapse assumption is based upon the ongoing lapse analysis conducted by the company. Similar to morbidity, such studies are periodically conducted as part of GAAP. A key concern in conducting lapse studies is the appropriate measurement of exposure. Generally, premiums are used to measure exposure since they are a better indicator of the amount of benefit risk that is exposed. Some companies have, for a number of years, used a conservation technique called rewrites or makeovers. These result when an in force policy is adjusted to a larger face amount. The lapse study must be carefully constructed to account for the impact of makeovers. Lapse results, if not done properly, can be distorted by years in which heavy makeovers have occurred.

The interest assumption is based upon the composite net returns projected for future policy durations. The development of this assumption is discussed more fully in a later section.

### **Model for Lives on Claim**

The model for lives on claim is used to project cash flows for those claims in claim status at the projection's valuation date. Projected items include benefit payments, claim termination, and claim settlement expenses. Grouping techniques are rarely used in the development of the model for lives on claim. A seriatim projection is almost always done. The key assumptions used in this model include claim terminations, required interest, and expenses.

As with the active life model, morbidity studies will be essential in setting assumptions. If credible termination studies are not performed, the actuary will need to rely upon termination assumptions developed from pricing work.

### **DEVELOPMENT OF THE ASSET MODEL**

The first step in developing the asset model is the allocation of assets to the individual DI line of business. Generally the asset portfolio will include investments such as bonds, mortgages, collateralized mortgage obligations (CMOs), real estate, and other miscellaneous asset types. During the allocation process, it may be advantageous to seek surplus trading opportunities. Some assets are inherently difficult to model, for example, real estate or exotic CMOs. If feasible, it may be beneficial to trade some of these assets with surplus to eliminate asset modeling complications.

The assets are generally projected on a seriatim basis. If grouping needs to be done, assets with similar cash-flow characteristics should be combined. Examples of similar characteristics include, but are not limited to, coupon rates, market rates, yield rates, maturity and call structure, sector type (e.g., government groups, corporate groups), and quality groups.

Normal bonds are generally projected based upon the coupon rate, yield rate, and call provisions. Call provisions are modeled by means of call triggers, which assume that a bond will be called if current interest rates drop a certain number of interest basis points, generally 100-300 basis points.

Mortgages are modeled based upon the interest rate and prepayment provisions. Commercial mortgages may include yield maintenance provisions, which assure a certain yield level if a prepayment is made. Some mortgages can add additional sophistication such as variable interest and scheduled balloon payments. Mortgage prepayments are generally modeled by means of prepayment assumptions conditioned upon the spread between the mortgage interest rate and current interest rates. The prevalent approach is to base prepayments upon multiples of public securities association (PSA) ratios or formulas that reflect the current interest spread.

CMOs are very difficult to project. A CMO in its very basic form may be projected like a mortgage, however, it is unlikely that you will have a very basic CMO in your portfolio. A CMO is basically a section of a mortgage pool that is dependent upon the activities of the other segments in the pool. Payment schedules and the rules for when payments will occur are variable and very complex. There are several services that project CMOs. It is generally more feasible to have these assets projected by such services.

Like CMOs, real estate is also difficult to project. Generally these asset types are handled by the corporate investment department or outside experts.

In modeling assets, assumptions need to be made for reinvestment strategies and/or disinvestment strategies. In other words, methods to deal with positive and/or negative cash flows. These strategies are generally developed with heavy reliance placed upon the corporate investment department.

#### **MODEL RECONCILIATION**

The model, when developed, needs to be validated to ensure that the results projected by the model are reasonable. Overall results can be compared with internal business plans or projections if the business plan is developed outside of the valuation area. Since these two functions are consistent and likely handled by the same actuaries, this comparison may not be valid. It is also important to compare results for various model subcells with recent pricing studies. Differences that occur should be reconciled.

Morbidity is a key area for model reconciliation. Aggregate loss ratios (both interest adjusted and noninterest adjusted) produced by the model should be calculated and compared to historic experience near the valuation date. Trends in future loss ratios should be reviewed in order to determine whether reasonable patterns are projected. Projected gains/losses in the model for lives on claim should be reviewed and compared to the results of recent claim development studies.

Recast reconciliations should also be performed. In a recast reconciliation, the model is shifted backward and compared to recent actual cash-flow results.

#### **TESTING SCENARIOS**

Unlike life insurance cash-flow testing, there are no generally accepted scenarios to use in conducting cash-flow testing for individual DI insurance. The scenarios developed should be based upon both the characteristics of your company and your business line. The practice notes and ASPs provide some general guidance for



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developing scenarios. In developing scenarios, it is important to reflect various key factors such as economic outlook, morbidity, lapses, expenses, and interest rates.

Currently, economic scenarios form the rationale for variations in other assumptions such as morbidity and lapses.

The morbidity scenarios that are tested tend to be very basic with flat multipliers or flat/variable additions to projected loss ratios. In developing these simple tests you should review prior experience and historic variations in loss ratio results to determine the cause of the variation. In doing so, you can develop a rationale and some basis for alternative morbidity scenarios. In the future, methods will likely be developed that include dynamic morbidity models much like the dynamic models used for interest sensitive life insurance products. These models will provide for confidence intervals with respect to morbidity so that the results at various levels of confidence can be determined.

The New York Regulation 127 interest rates are generally used for interest rate scenarios. Although these scenarios are used in life insurance cash-flow testing, it is not necessarily obvious that these scenarios are appropriate for the assets backing the DI line of business. If the New York Regulation 126 rates are used, you will need to be careful to assess the reasonableness of some of the cash-flow-testing results when adverse interest rates and adverse morbidity sensitivities are run. These scenarios will likely be the areas in which test failure occurs. As the valuation actuary, you will need to form an opinion as to whether the rationale supporting such scenarios is realistic within the context of the individual DI line of business.

### **FUTURE DIRECTIONS**

This discussion has attempted to summarize the current process of cash-flow testing for individual DI insurance. Some techniques and standards have been developed borrowing from the techniques used for life insurance cash-flow testing. Modifications to existing techniques, however, will continue to evolve reflecting the characteristics of the individual DI line of business. Individual DI actuaries look forward to continuing the dialogue and advancing the development of cash-flow testing for individual DI insurance.

