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HEALTH ORGANIZATION RISK-BASED CAPITAL (HORBC)

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MR. BURTON D. JAY: This is a panel discussion on health organization risk-based capital. Our topic is a new formula for managed care organization risk-based capital (MCORBC) that will apply to managed care companies, such as HMOs and PSOs, and other kinds of health care financing organizations.

Our panelists are Bob Cumming, Darrell Knapp, and me. I am chairman of the Academy's Health Risk-Based Capital Task Force and played a part in developing the MCORBC formula. I will also talk about the changes we made to the life risk-based capital formula to make it consistent with the factors in the MCORBC formula.

Bob is going to explain what the formula is, how it works, and its impact on the organization to which it applied.

The Academy's task force began to work on the project as early as 1992 or 1993, and a couple of sets of recommendations were developed and given to the NAIC. The NAIC made certain changes to develop what is now the new MCORBC formula. Darrell is going to talk about the work of the task force, how its recommendations differed from the formula that was eventually chosen, and some of the reasons for the changes.

I spent many years of my career as the chief actuary of a life insurance company and the last several years as the financial actuary of the parent company that deals with both life and health insurance. I am therefore somewhat new to the health area of practice.

Bob is a principal with the Minneapolis office of Milliman & Robertson (M&R). His area of expertise is managed health care programs. He has assisted clients in areas of product development, network evaluation, experience analysis, health care management, actuarial cost projections, and

regulatory filings. Bob has advised Blue Cross-Blue Shield plans, HMOs, health care providers, government agencies, insurance companies, and employers.

Darrell is a partner in actuarial practice with Ernst & Young in Kansas City. He works with a wide variety of clients regarding financial reporting and risk analysis in the health care financing and delivery industry. He is currently chair of the Society's education committee, a member of the Academy's state health committee, and a member of the editorial board of the *Actuarial Digest*.

MR. ROBERT B. CUMMING: My job today is to give you an introduction and overview of the MCORBC formula. First, I'll talk about the proposed NAIC model act that would implement this formula and allow commissioners to take different levels of regulatory action, depending on the results of the formula. Then we'll go through the formula itself and compare it to existing laws for HMOs in terms of capital requirements. Finally, we'll show the formula's impact on HMOs and Blue Cross plans based on the results of a survey conducted by the NAIC.

The Risk-Based Capital for Health Organizations Model Act is expected to be adopted by the NAIC sometime in 1998. The NAIC has also developed model acts that apply to life and property and casualty (P&C) companies in terms of risk-based capital. Those model acts have been adopted in virtually all states in the United States.

The situation for health organizations may be somewhat different because, in many states, HMOs are not regulated by the insurance department, but by the health department or some other organization. As a result, we may not see the same level of success in terms of the model act being adopted. Also, as I understand, the life and P&C risk-based capital model acts were part of the insurance department accreditation requirements, which meant that all insurance departments had to adopt it.

The model act specifies the level of regulatory action required based on how a company's surplus compares to this risk-based capital requirement. But the model act itself does not specify the formula. The formula is left up to the NAIC to change on an ongoing basis year-to-year as it sees

fit. That way, if a state adopts the model act, the NAIC could still change the formula in the future; however, the state would not need to adopt formula changes since they would apply automatically.

The model act requires that health organizations put together a risk-based capital report and file it by March 1 of each year. This report compares the health organization's total adjusted capital to the risk-based capital for that company. The model act does say that the risk-based capital must be determined on the basis of certain risks, but it does not specify the formula itself.

The model act applies to health organizations defined as HMOs and hospital, medical, and dental indemnity corporations (HMDIs), such as Blue Cross-Blue Shield plans. There's also a blank in the model act so the commissioner can insert other types of managed care organizations if he or she sees fit. If provider-sponsored organizations, integrated service networks, or other types of managed care organizations are licensed in a particular state, the commissioner can insert references to those types of organizations and have them covered by this law as well.

This model act specifically says that it does not apply to life or P&C insurers, although there is a note saying that the commissioner might wish to consider whether or not some life and P&C companies should be filing the MCORBC formula. For example, a number of Blue Cross-Blue Shield plans file life or P&C annual statements. Most of the regulators and others feel that those types of organizations should be filling out the MCORBC formula rather than a P&C formula.

The risk-based capital report takes the company's total adjusted capital and divides it by the calculated risk-based capital after covariance. The total adjusted capital for an HMO would be pulled from its statutory net worth and includes various adjustments for other items that reflect affiliates. If a Blue Cross plan or an HMO plan has life insurance subsidiaries or P&C insurance company subsidiaries carried on its balance sheet, then various adjustments should be made to its statutory net worth to reflect asset valuation reserves, dividend liabilities, and discounts on claim reserves for P&C companies.

Based on the comparison of a company's surplus to its risk-based capital amount, the commissioner can take, and is required to take, different levels of regulatory action. If a company has more than the risk-based capital amount, that's great. There's no regulatory action required. But as that ratio falls to lower and lower levels, the commissioner will take more drastic actions.

If the ratio is between one-half and one, company or regulatory action is required. Company action requires that the company file a plan of corrective action with the commissioner. Regulatory action requires that the company file that plan, but also allows the commissioner to examine the insurance or managed care organization. If the ratio falls below one-half, the commissioner is authorized to take control if he or she believes it's in the best interest of the policyholders. If it goes to a lower level, the commissioner is required to take control.

These ratios are for the years 2000 and later. For 1998 and 1999, there's a grade up to these levels. Four levels of regulatory action might be required based on that ratio. At the company action level requirement, the company puts together a plan of corrective action, identifies the problems that caused the capital to fall below the risk-based capital requirement, and puts together a three-year financial projection finishing out the current year plus two more years. That projection must be done both with and without the correction actions.

The next level of action is regulatory action. In that case, the commissioner can hire outside firms or consultants to look at the company's liabilities, business operations, and assets. When you get to the authorized control level, the commissioner can place the company under regulatory control. At the mandatory control level, the commissioner must take over the company.

The model act itself doesn't specify what the commissioner does with the company at that point. Usually that's outlined in some other type of statute that deals with rehabilitation or liquidation of companies.

The formula for the MCORBC consists of five components labeled H_0 through H_4, each of which stands for a different kind of risk: $= H_0 + \sqrt{H_1^2 + H_2^2 + H_3^2 + H_4^2}$.
We calculate a capital requirement for each that reflects the types of risks involved.

- H_0 = Asset Risk – Affiliates
- H_1 = Asset Risk – Other
- H_2 = Underwriting Risk: claims experience fluctuation
- H_3 = Credit Risk: reinsurance, capitations, and receivables
- H_4 = Business Risk: administrative expenses, guarantee fund, and excessive growth
- H_0 is the asset risk associated with affiliates. If an MCORBC owns a life insurance company subsidiary or if some other organization, such as an HMO, is a subsidiary, you would pick up risk-based capital for all the subsidiaries associated with that MCORBC.
- H_1 is the asset risk associated with stocks, bonds, and other investments.
- H_2, the underwriting risk, is the risk that your claims experience might be higher than projected.
- H_3 is credit risk—the risk that creditors might default. If you have receivables from reinsurance carriers, you might not be able to collect those.
- H_4 is a catch-all category, business risk. It includes the risk that administrative expenses might be higher than expected or projected. If the company has some business that's subject to assessments by a state guarantee fund—that's reflected here, as is the excessive growth risk.

In general, for most MCORBCs, the H_2 component will dominate the calculation of the risk-based capital requirement. For many plans, the other components do not significantly affect their risk-based capital. That's why there's so much focus on the underwriting risk.

There are different approaches to applying a covariance adjustment, which merely refers to which factors are under the square root sign and how they're combined. There are some differences between the life, P&C, and MCORBC formulas.

H_0 is the asset risk associated with other companies that MCORBCs own. They might own all of or just part of another company. In cases where you have an MCORBC that owns another insurance

company or other HMO, the risk-based capital requirement for that plan would be the risk-based capital of the subsidiary times the percentage of ownership. It's prorated based on the percentage of ownership.

So, in the formula, if one company owns another company, you just pull through that other company's risk-based capital based on its own calculation. It is capped at the statutory statement value of the subsidiary. For alien insurers, the risk-based capital requirement is 100% of the statement value.

H_1 is the investment asset risk. In general, for bonds, the risk-based capital requirement is between 0% and 30% of the value of those bonds. It varies by the grade or quality of the bonds. For preferred stock, the factors vary from about 2% to 30%. Common stock is 15%, and land, buildings, and property are 10%. For other affiliated investments, the factor is 30%.

Significant portions of property, furniture and equipment may be nonadmitted. The 10% factor only applies to the admitted asset value. If the values carried are not admitted, there's no risk-based capital requirement.

Another piece of this component is the asset concentration risk adjustment. A company will look at the 10 largest issuers of investments that they have and double the risk-based capital requirement for those issuers.

The main component of the capital requirement is in the underwriting risk, and that consists of two pieces. One piece is the experience fluctuation risk and the other is what we call "other" underwriting risk. Experience fluctuation risk, the major component, is generally a percentage of the claims, and the percentage will vary by type of coverage. Some minimums apply, so if you have a very low volume of premium, there is what's called the alternative risk charge, which is basically the equivalent of two large claims.

Table 1 shows the risk-based capital factors for the fluctuation risk. These factors are applied to

incurred claims, and they grade down as premium increases. The percentages drop at a couple of different points. For comprehensive major medical (CMM), the risk-based capital requirement is 15% of the claims based on revenue up to $25 million, and then it drops down to 9%.

TABLE 1
Experience Fluctuation Risk (part of H_2)

Tiered RBC Factors					
Revenue	**CMM**	**Medical Only**	**Medical Supplement**	**Dental**	**Other**
$0–3M	0.15	0.15	0.105	0.12	0.13
$3–25M	0.15	0.15	0.067	0.076	0.13
$25M+	0.09	0.09	0.067	0.076	0.13

An organization will look at how much revenue it has in total and calculate a weighted average factor. That factor is then applied against the claims, but the tier level is based on revenue. There also are lower factors applicable to Medicare supplement insurance and to dental insurance. The break point for those risks comes at a lower level.

Another key component of fluctuation risk is the managed care credit. Organizations that have controls or limits on how they reimburse providers receive some credit in the amount of capital they're measured against or required to hold. The level of credit depends on the type of managed care payment arrangement. There is no credit if there are no controls on payment arrangements. For example, if you just pay fee-for-service, or if it was a usual and customary (U&C) type of reimbursement, it would fall in the first category.

For fees subject to a fee schedule, the company receives a 15% credit or a 15% reduction in the risk-based capital requirement. There's credit for provider reimbursements subject to withholds as well, and that credit depends on the amount of withhold kept by the company and the level of withhold. It depends on how much of that withhold has been returned to providers in the past. If the company

has kept all of the withhold in the past to fund high claims, or for whatever reason, it doesn't get a credit in this calculation.

The credit increases dramatically when you go to capitation-type arrangements. There's a 60% credit in that case, and a 75% credit if you have an HMO that employs its own physicians. Some of these credits are different from those originally developed by the Academy

The other underwriting risk recognizes rate guarantees. If there are rate guarantees on the business, you're required to hold more capital. Federal Employees Health Benefits Program (FEHBP) business is not subject to the prior capital requirements. For that business, we take it out of the formula and just apply 2%

Credit risk generally reflects that you have some receivables on the balance sheet, such as assets you may or you may not receive. Again, most of these are pretty small. After you take in the covariance adjustment, they typically don't amount to much. A few examples of the capital requirement factors in the formula are:

0.5%	Reinsurance recoveries, unearned premiums
2%/4%	Unsecured capitations to providers/intermediaries
1%	Investment income receivable
5%	Health care receivables

Note that if you have capitated providers or capitated intermediaries, they fall under the credit risk calculation. If it's an unsecured arrangement, the capital requirement is 2% of the annual claims payments or capitations, and 4% for intermediaries. Unsecured means that the company does not have a letter of credit or has not been withholding funds from the providers.

H_4, the business risk, is the catch-all category. One of the business risks captured here is that your administrative expenses may be higher than you project or expect. You hold between 4% and 7% of the administrative expenses as the capital requirement for underwritten business.

It's a tiered formula, so it's 7% up to $25 million of premium, and then it goes down to the 4%. But remember, the factors apply to the administrative expenses. To get the average factor, you look at how much revenue you have above and below the $25 million.

Also included here is the excess growth of risk-based capital. This is another item that's different from what the Academy originally recommended. The calculation looks at the growth in risk-based capital that's in excess of premium growth plus 10%. So if risk-based capital grew by 50% and premium grew by 30%, you would have some excess risk-based capital growth. You would take half of that change and add it into the calculation.

Now I want to compare this formula with the current HMO requirements. In the early 1970s, the NAIC developed some minimum net worth requirements for HMOs. The model act it developed included a requirement that the HMO have $1.5 million of surplus on hand initially at startup, and thereafter the minimum net worth was the greater of four calculations: (1) $1 million, (2) 2% of premium up to a level and then grading down to 1%, (3) three months of uncovered health care expenditures, and (4) 8% of health care expenditures that are not capitated and not a managed hospital expenditure, plus 4% of annual managed hospital expenditures.

This is what's included in the HMO model act. About half of the states have adopted something similar, but there are dramatic variations in how they have written up the capital requirements. In some states, you have initial requirements as low as $300,000 of capital or less. In other states, they simply say that the HMO must demonstrate that it has adequate capital, which is not defined in the law. It's up to the discretion of the commissioner. Some states don't have minimum net worth requirements. They just require a deposit with the insurance department. New Hampshire is at the other end of the spectrum. It has one of the highest capital requirements for HMOs.

The impact of this on HMOs and Blue Cross plans seems to vary significantly. The NAIC has done some preliminary analysis of results that about 280 companies have sent in. About 200 are HMOs and about 84 are HMDIs. About 25% of the HMOs generated some type of action requirement based on their surplus compared to the risk-based capital. So about 25% had a net worth that was less than the risk-based capital requirement. For the Blue Cross plans and related companies, only about 5% generated some type of action level.

In general, this reflects that HMOs tend to carry much less capital in their organizations. Many HMOs are part of a holding company, and the parent corporation holds most of the capital.

Of companies that had a premium-to-surplus ratio greater than a factor of 10, roughly half of those triggered some type of action requirement. Of companies that had a premium-to-surplus ratio of less than 10, only 3% triggered some type of action requirement.

The Blue Cross plans and related companies tend to keep much higher surplus in their organizations, about 33% of premium, on average, whereas it is much lower for the HMOs, about 12% of premium, on average.

When looking at the risk-based capital requirements, the differences between HMOs and the Blue Cross plans were slight, but not huge. When we looked at the median risk-based capital for all HMOs as a percentage of premium, it turned out to be about 8%. For the Blue Cross and related organizations, it was about 9%. Most of that is probably due to slight differences in the managed care discount.

On average, the HMOs had a managed care discount of about 25%, or about 10% higher than for Blue Cross plans. That 10% difference is what's causing the difference in the risk-based capital formula. This reflects that HMOs tended to have a higher portion of their claims being paid under capitated arrangements, where you get a 60% credit, or on a salary basis, where you got a 75% credit in the risk-based capital formula. Only about 6% of claims for the Blue Cross and related organization plans fell in the capitated or salary arrangement categories.

With that, I'm going to turn it over to Darrell. He's going to walk you through how we got to this point and how this formula differs from what the Academy recommended initially.

MR. DARRELL D. KNAPP: I'm going to discuss the history of the Academy involvement in the project and how we evolved from a recommendation on risk-based capital for all health organizations to a recommendation for managed care organizations. We'll also discuss the differences in the formulas from the Academy as opposed to MCORBC, and some of the potential impacts of those differences.

Several years ago I wrote a thought piece for the *Health Section News* discussing the need for capital standards. This was during a time when we were looking at the Clinton's Health Security Act and there was talk of several new organizations accepting insurance-type risks.

The article discussed the need for strong capital standards for those organizations to ensure that, if we transferred risk to those organizations, we didn't have solvency problems soon thereafter. The thought piece elicited reaction from Bill Bluhm, who called me up and wanted to recruit me for his committee.

Setting capital standards and making sure we've got appropriate capital requirements are two of the noblest acts an actuary can perform. It's critical to set the standard at the right level. If we set the standard too high, we're going to have expensive products in the marketplace, though not necessarily uncompetitive because everyone has to hit that same bar. These products however, would be overly burdensome for the consumer. If we set the bar too low, we're going to have problems with insolvencies, resulting in the insured losing coverage, the providers potentially in financial distress, and the loss of consumer faith in the industry. So it's very important, and it's a function that actuaries can provide a lot of guidance on in terms of setting the bar in the right place.

On November 1993, the Academy received a request from the NAIC to help propose a risk-based capital formula for health organizations. In February 1994, the Academy published an issue paper that was part of the effort to do a number of monographs addressing implications of the proposed

Health Security Act. This particular paper dealt with what sort of solvency requirements should be contemplated.

In early 1994, an interdisciplinary committee was formed, and some of the modeling was initiated. This was an historical step for the Academy. Previously, the Academy had basically worked with committees of actuaries. In this instance, the Academy ran a committee that included many representatives other than actuaries. We included several nonactuarial representatives from various HMOs and trade organizations, including the Blue Cross-Blue Shield Association and Group Health Association of America, which later became the American Association of Health Plans. The Academy was running a project charged with achieving a much broader consensus. One of the endeavors that the NAIC was hoping that it could do was deliver a formula that had already developed some broad industry consensus, as opposed to being strictly actuarial in focus.

In June 1994, the first draft report was published. This report laid the framework for a risk-based capital formula. Unfortunately, many people looked at the numbers instead of the framework, and it created quite an outcry. However, it did a good job of laying out a framework that remained relatively unchanged through the process.

In late 1994, we did a great deal of modeling and searched for and acquired available data. We did separate modeling regarding the variability in a number of product lines, including medical, stop-loss, disability, dental, accident coverages, and long-term care. For each of these, we had a separate team that spent quite a bit of time trying to develop a distribution model that showed the profitability outcomes and statistical variation through the modeling.

By the end of 1994, we submitted our first final report to the NAIC outlining what the Academy believed to be the most appropriate development of a risk-based capital formula.

At this point we entered the political process. Shortly after submitting our first report, the NAIC requested that the formula be simplified. This was after its original instruction to create a formula that focused on accuracy regardless of the ease of administration.

NAIC included instructions to simplify the calculation and to assure that everything in the formula would be auditable and verifiable, meaning that it had to be on the statutory blank. This illustrates a real difference in where a valuation actuary or even more broadly, any actuary, would have attacked the problem compared to a regulator. I would be more inclined to rely on the actuary, as part of the valuation statement, to state that the formula was calculated correctly. During the triennial exam, the details of the calculation could be reviewed. Instead, the NAIC was looking for everything to be specifically laid out on the blank. This became a very limiting factor because of concerns regarding amounts that the various insuring organizations may consider confidential, including some of the managed care credits and how provider contracts are organized.

The simplification process consisted of doing a lot of sensitivity modeling. We evaluated the sensitivity of eliminating certain steps of the formula over a range of possible outcomes. We concluded that if the results didn't change materially, we'd accept the simplification. If results did change too materially, then we would address the question again. This was a fairly lengthy process, but by May 1996, we had a simplified formula that was submitted to the NAIC.

The next stage was the evolution from a health organization risk-based capital formula to a MCORBC formula. This was an astute political move by the NAIC. I believe they recognized that there was significant difficulty in layering a health formula onto the existing risk-based capital formula. So, instead, they broke the process into two pieces.

The first piece addressed the entities that don't have a risk-based capital formula, primarily HMOs and the health and dental service corporations. Then, at a later point, we could address appropriate modifications to the life and P&C formulas.

In early 1997, the NAIC limited the scope to managed care organizations. Through the next year-and-a-half, the Academy provided comments and input to the NAIC process. At some point in this process, the NAIC expanded the scope from HMOs to include health and dental service corporations. Currently, the NAIC is addressing coordination of Academy support for all of the RBC formulas and it is moving to a coordinated formula that will adopt the same elements.

At this point I'd like to discuss the differences in the formulas. The MCORBC uses a tiered formula that is subject to a minimum, whereas the Academy uses a fixed-plus-percentage approach. In the modeling, we found that the level of risk as a percent of exposure was relatively constant after a given size level. Beneath that size level it almost didn't matter what the exposure was because there was a defined base level of risk. This gets down to the two different things that are going on in risk-based capital modeling.

One is what we call a statistical risk—the statistical variability due to the randomness of large claims. The other is what we call historical risk—variability on the projected level of aggregate expected claims. This risk is going to be based on the whole marketplace, as opposed to the statistical risk, which is going to be limited by size.

We found that the fixed-plus-percentage approach more appropriately reflected the actual underlying risk. The NAIC was concerned about what was essentially a high minimum for a carrier with one life. Therefore, it preferred a tiered approach with a greater percentage for the first $25 million of premium, and then a smaller percentage for the excess.

The second difference is a difference in the level of risk for Medicare supplement and dental compared to overall medical. Under the formula that the NAIC adopted, the risk for Medicare supplement and dental were much closer to medical. Therefore, the products were perceived to be somewhat more risky than our modeling had established.

The third difference was that the NAIC combined coverages in the MCORBC formula, whereas the Academy formula had separate factors set up for accident only, cancer/specified disease and other products.

The next difference is that the NAIC formula gave a 60% credit for capitations to providers, where the Academy had a 40% credit.

The NAIC formula also provides a credit for capitation paid to regulated and nonregulated intermediaries. In the Academy formula, there was no credit for nonregulated intermediaries, and regulated intermediaries were treated conceptually as reinsurance, as opposed to a capitation. The Academy's concern was that you could set up a nonregulated intermediary that was essentially a shell organization, put a capitation into it, and get the risk-based capital credit without really shifting the risk.

Another difference was a 75% credit for a staff model versus a 50% credit in the Academy formula. The next difference is a 50% credit for a premium stabilization reserve (PSR) as opposed to the Academy's recommendation of a 100% credit for a PSR subject to the risk capital supported by the PSR. Thus, you couldn't receive a greater credit than the risk associated with a given contract.

In the NAIC formula, there is no differential for noncancelable products whereas the Academy recommended a 25% load for such products. The NAIC included a 2% risk change for FEHBP, the federal health plan, versus 0.5%. The stop-loss was set up to be the same as medical versus a higher risk-based capital for stop-loss under the Academy recommendation. Essentially, the Academy's modeling found that stop-loss does produce some increased risk over a fully insured level.

The NAIC formula includes a risk charge of 2% of administrative expenses for self-insured contracts versus a 0.5% of equivalent under the Academy formula. There is also a risk-based capital charge for other administrative expenses whereas the Academy's formula recommended no specific risk-based capital charge for such expenses. The Academy's formula operated under an assumption that there was capable management with the products priced correctly and no known losses through underpricing administrative expenses.

The NAIC formula has no valuation adjustment versus a 1.2 multiplier if you didn't have an actuarial opinion under the Academy formula. This was not intended to create additional risk-based capital as much as it was to encourage some validation that the claim reserves were adequate.

The NAIC formula includes no rate filing adjustment but the Academy has a multiplier for premium subject to prior regulatory approval. This multiplier came out of some modeling that addressed the implementation time required for a rate correction. Inadequate prices during an increased implementation time can result in continued losses and, therefore, increased risk.

I did understand the NAIC's difficulty with a position of tying prior approval to increased carrier risk. However, in the Academy formula, this load elegantly addressed the difference between individual and group coverages by focusing on risk characteristics instead of legal contract forms.

The NAIC formula charged 0.5% of premiums that are subject to guarantee funds. Compare this with the Academy's proposal that recommended evaluation of the risk position of the carriers in a state's guarantee fund pool. Further, it included the development of an assessment of the expected level of guaranteed funds based on the various risk-based capital levels of those insurers in the pool.

If anything, this is where the Academy formula became way too complicated. This provision would be almost unadministerable, but it did attempt to address real risk rather than applying an overall charge.

The next difference was credit risk for reinsurance, unearned premium, and capitation. The NAIC was very focused on the credit risk and the Academy ignored it, assuming that the debts were reasonable or that the balance sheet reflected an allowance for credit risk.

On the asset side, the NAIC's MCORBC formula basically matched the P&C formula. In the Academy's recommendation, the asset risk matched the life formula because the original proposal was intended to be a layer on top of the life formula. This was also influenced by the fact that there are more life insurance companies selling health business than there are P&C companies.

An element reflecting an additional charge for growth is included in both formulas. Under the NAIC formula, the growth is based on the excess over the premium growth. If RBC grew faster than premium, then there would be an additional growth charge. For that to happen, there would have

to be some change in the managed care credit or some basic change in the risk characteristics. In the Academy's recommendation, there was a growth charge based on a risk-based capital growth of more than 20%.

This focused on the fact that a risk-based capital calculation for the 1998 statutory financial statement is based on calendar year 1998. This is used as a guide all the way through February 28, 2000 when the next financial statements are done. If there is significant growth, the formula will always be trying to catch up to the current risk level.

For business risk, the NAIC assumed that it was independent. In the Academy's formula, it was assumed to be dependent.

There is no credit for affiliate cross guarantee in the NAIC formula, as opposed to the Academy's recommendation that allows consolidation with affiliate guarantees. If you have a parent company with unlimited cross-guarantees that don't rely on the corporate veil to let one company fail while others survive, the Academy recommended allowing the company to consolidate everything when developing a risk-based capital. The NAIC requires each legal entity to meet the capital requirements. Refusing to recognize these cross-guarantees will likely result in a lot of shifting of money and more work for the accountants. This was seen to be an administrative process, as opposed to dealing with the risk.

The last difference is that the subsidiaries were considered outside the covariance formula for the NAIC and within it under the Academy recommendation. A company is required to hold the entire risk-based capital for an affiliate under the NAIC model, scope (going from health organization risk-based capital (HORBC) to an MCORBC) as opposed to the Academy's proposal to allow diversified risks in affiliates to offset each other.

If you have two affiliates with roughly the same distribution of risk, it's somewhat irrelevant. Alternatively, if your medical risk is large and you have a large life insurance company affiliate with a large asset risk, those risks would cancel each other out somewhat in a covariance formula. Under

the NAIC formula, because you have two separate legal organizations, you will need much more risk-based capital. In the Academy's work, we tried to focus on the underlying risk and not necessarily on the corporate structure.

The next thing I'd like to discuss is the potential impact on some of the differences we've mentioned. There are four categories of differences:

- Areas with limited impact because of the reduced scope (going from a health organization risk-based capital formula (HORBC) to an MCORBC).
- Areas where the MCORBC actually increased risks.
- Areas where the Academy's formula had a higher risk factor.
- Situational changes (which formula comes out higher) depends on the specifics of the situation.

First I'd like to digress on covariance. Basically, the concept of the covariance assumes a normal distribution. This implies that the key statistical variability is standard deviation. If two variables are independent, the standard deviation is the sum of the squares of the standard deviation for each of those variables. The standard deviation is the square root of the variance. If they're dependent, the standard deviation is the sum of the standard deviations. So, if they're independent, they fall under the radical, and if they're considered dependent, they fall outside the radical. Unfortunately, life isn't either dependent or independent, but the mathematics get more complicated if you don't make that assumption.

My favorite way to illustrate this is to think about triangles and the Pythagorean theorem. The length of the hypotenuse is the square root of the length of the two sides of a right triangle. If you have a very long triangle with a short side, the length of the hypotenuse is very close to the length of that longest leg. In the MCORBC formula, it's always going to be the H_2, the underwriting cell, that is that long leg. In the life formula, for a traditional life insurance company with a lot of assets, it's the C_1 cell that's that long leg. We typically have those long legs with everything else being somewhat immaterial. Even if we have a triangle with the sides being the same, the length of the hypotenuse is 1.41 ($\sqrt{2}$). Adding that whole one of additional risk really only increases your risk-based capital by about 40%.

If we go to where we have three elements instead of two, an equal leg only adds another 30% to the two legs.

With that said, we have a number of areas of limited impact, specifically because of this covariance adjustment. First of all, the differential with noncancelable probably doesn't have much impact because noncancelable is not considered a significant product for the companies applying MCORBC.

Administrative expenses become the very short leg. It becomes almost insignificant in the administrative expense load that's set up in the formula. Likewise, the minimal asset differences, when adjusted by the co-insurance, won't likely have a significant impact anywhere.

Combining the factors for the other products doesn't have a big impact because these aren't significant products for the organizations the MCORBC formula addresses. The credit risk pretty much goes away because of the covariance impact. The valuation adjustment was not intended by the Academy committee to create risk-based capital; it was intended to force behavioral changes.

There are a number of areas where the NAIC formula increased risk, such as the higher factor for the dental and Medicare supplement. A heavy Medicare supplement carrier will have a bit higher risk-based capital under the NAIC's formula than the Academy's. Also, the credit for affiliate guarantees results, at least for some of those affiliates, in a much higher level of capital requirements than would have been recommended under the Academy formula.

The treatment of subsidiaries also produces greater capital requirements under the NAIC formula. And charging an extra 1.5% of the FEHBP premium is pretty significant in the overall analysis, especially for some Blue Cross and Blue Shield plans.

The areas where the Academy would have had higher risks were in the managed care credits for capitations and the staff model and the rate filing adjustment that primarily addresses individual products. Income statements over the years would pretty clearly show a lot more volatility on the individual products than on the group products. So there is a gap there.

The Academy would also have had higher risks in the growth adjustment that we talked about: the business risk, including both the covariance and the variability in assessments; the stop-loss difference, where the Academy formula had a much higher factor for stop-loss; and the self-insured products, where there was a higher adjustment in the Academy formula than in the NAIC formula.

A couple of differences have situational impact. One is the tiered versus the fixed-plus-percentage approach. For very small carriers, the NAIC formula resulted in a lower capital requirement. For the medium-sized carriers, you really have a materially higher requirement under the Academy formula. As carriers get very large, the two formulas converge.

The other difference that had a situational impact is the PSR credit. To get the PSR credit, it depends on whether you have a PSR that is greater than the risk that's reported or whether the 50% is a more appropriate reflection of the risk reduction from the PSR. It's hard to determine without identifying the specifics of the PSR.

In terms of an overall evaluation, the NAIC formula creates a much higher standard for HMOs than what currently exists. This standard will result in a lot of HMOs having to address capital problems. Also, there is no risk difference on the individual products, and I believe a very real difference exists between individual and group products. If I had to pick one thing that really bothers me about the NAIC formula, this would probably be it.

We also see some opportunity for gaming under the formula, with a possibility of creating a fictitious intermediary to capitate without any funding and, therefore, receiving the managed care credit for capitation.

There's also some opportunity for creating a low attachment aggregate stop-loss product; a minimum premium type of product with virtually no margin in the attachment point where you report premium 10% of the claims. So you have risk-based capital on a small premium, but you don't change any of the risk characteristics.

The third possible area for gaming is with the PSRs. Under the Academy formula, where the credit is 50% of the PSR, a company could go to their largest policyholder and request a large deposit on which interest could be credited. This will give the company a capital credit regardless of whether that policyholder contributed any risk or not.

My final overall comment is that we expect that many of the problems with HMOs found in the survey really were part of affiliate HMOs that were reported as separate legal organizations when capital is held by the parent. As such, many problems can be resolved by moving money back and forth. Therefore, I think that the survey results aren't as disastrous as they would appear for HMOs. However, it's going to be a significant job between now and the end of the year for the accountants to figure out how to get the money in the right spots.

MR. JAY: I am going to talk briefly about the changes made to the life risk-based capital formula by the NAIC at the September meeting. The revisions incorporate factors for health products into the life formula that are consistent with the MCORBC formula. The P&C formula will follow in short order, probably one year later. A P&C company that writes more than 5% of its business in health insurance will use the life factors for those health products. But the NAIC can't install the new factors into the computer early enough to implement it in 1998. So, for P&C, the new life factors for health products will be effective for 1999.

I'll describe the major changes. For major medical, the MCORBC factors used are 15% and 25%, and they break at $25 million of earned premium. There is an extra 20% surcharge added to the individual factor. The result is multiplied by one minus the managed care credit. These are the same credits in the MCORBC formula that you were shown. They range from 15% for a PPO-type of organization up to 75% when a salary is paid to providers. Finally, this result is multiplied by the average loss ratio of all the medical business. In effect, the factors are multiplied by claims instead of premiums, which differs from the current life formula. The new factors produce a substantial reduction in risk-based capital for most life insurance companies that write health insurance. The changes were made to create a level playing field, so that two kinds of companies that sell the same

products have essentially the same capital requirements. It has the impact of reducing the capital requirement for life companies and increasing it for many HMOs and other types of managed care organizations.

The only products that changed in the life formula are major medical, Medicare supplement, and dental. These are the only products that are specifically covered in the MCORBC formula. Stop-loss is not specified in the life formula or MCORBC formula. Medicare supplement is in both and has the same structure in the life formula that it does in the health formula.

Dental is the only other product included in the MCORBC formula and changed in the life formula. The factor is 12% of the first $3 million of earned premium and 7.6% of the next $3 million times the loss ratio. It is, in effect, now times claims, times the same managed care credit that applied to other health products. This is now consistent with the MCORBC formula.

Some other fairly insignificant changes were made to provide parallel structure. The first of these is the credit risk. In the life formula, a C-3 risk represents the interest rate risk.

Now it will be called the C-3A risk, and the credit risk will be the C-3B term. The C-3B factors are applied to capitations paid to providers. For nonintermediaries, the factor is 2% of the amount paid less any security such as a line of credit. The factor for amounts paid to intermediaries is 4%.

The business risk for expenses is H_4 in the MCORBC formula. It is now C-4B in the life formula. The current life business risk will be C-4A. The factors are 7% of premium up to $25,000 and 4% of the excess divided by total premium times the administrative expenses for health insurance or claim administrative expenses.

This is what the life risk-based capital formula looks like now. C-0+C-4a+Square Root of $[(C\text{-}1+C\text{-}3a)^2+(C\text{-}2)^2+(C\text{-}3b)^2+(C\text{-}4b)^2]$.

The new terms are C-3B and C-4B, and they are included inside the radical, which greatly diminishes their impact.

Various Academy groups are now working hard to provide the NAIC with some recommendations for the other health products that have not been addressed yet: disability income, long-term care, stop-loss, and what we call limited benefit plans, which include cancer, accidental death and disability benefit, and hospital indemnity.

We will go back to the work that was done originally by the Academy dealing with those products to determine whether those recommendations are still valid. We may have to do some additional gathering of data and model building. Simulations were made such that enough capital for each component could be determined to produce a 95% chance of surviving over a five-year period. For consistency, the current work will adopt the same confidence level. Because time is short, we may have to make some compromises and use our judgment to produce something as quickly as they would like.

The first urgent need is to develop a factor for long-term care for the MCORBC formula. With more and more Medicare-type MCORBCs, it's thought that some form of that long-term care insurance soon will be provided through these organizations, and they will need a way to measure the required capital for that.

The HMO formula will be effective for 1998. Companies will have to fill out that formula. The individual states will have to pass a related model law to have enforcement power with regard to the various action levels.

MR. WILLIAM F. BLUHM: I want to mention the political element of the NAIC's desire to split up the health products. You were talking about it being an astute political move to split it. I'm not sure it was as astute as it was political. What was really going on in the background was that the feds were planning to begin licensing provider-sponsored organizations (PSOs), which were going to come up with their own capital formula. The NAIC desperately wanted to have a formula in place that would apply to PSOs to prove what great regulators they were for this sort of business. My perception was that that had a lot more to do with it than did a desire to get things done quickly.