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Underwriting Concepts for Actuaries: The Primer

Track: Product Development

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Summary: Risk selection and accurate classification are vital elements to the new business process. This session discusses ways the actuary can help the underwriter assess the value of various underwriting tools by discussing protective value theory and then demonstrating how to use cost-benefit analyses to help design efficient underwriting paradigms. Specifically, this teaching session address:

- An overview of protective value theory*
- Simplified cost benefit methods*
- The value of a "business decision"*
- The value of selective underwriting tools*

Mr. Richard L. Bergstrom: I'm with the Seattle office of Milliman & Robinson. I've been working in and around underwriters for many years now. In fact, the folks at the office tease me that maybe I should change my title from consulting actuary to "consulting actu-writer," which sounds a lot better than "consulting under-uary."

Anyway, Jeff and I dreamed up an idea for doing a presentation like this about nine months ago, and he very generously agreed to work with me on it. Jeff is from the quiet company, even though he can be rather noisy at times. He's also been around underwriting areas for many years, and he's very knowledgeable. I think we're actually going to get some good information from the otherwise silent company during his portion of the presentation.

Not knowing the basis from which all of you are coming, I thought I would start with looking at some of the basic things about underwriting, and also talk about what some of the tools that the underwriters have in their tool kit to help them make decisions that do affect how policies are classified.

The real purpose of underwriting is really twofold. One is risk selection, and this may sound rather trivial, and the other is proper rating classification. The first means, do we want to even offer insurance to an applicant at all? If somebody presents with HIV, the answer will be no. But, even if we agreed to do that, and about 95% of the applicants that come to insurance companies in North America for life insurance do get some kind of offer made back to them, it may not be the offer

that they want; because of the underwriting process, there may be reasons to modify the offer.

Second, let's assume we do want to insure this person. Now, which class does he or she go into? Back in the 1950s, there was essentially one class: standard. We didn't even have sex-distinct tables back in those days. It wasn't until the 1950s that we decided to give the females a break, by offering them rates that were the same as male rates three years younger. In the 1970s the age setback was increased to six years younger. We finally decided that we have enough statistics now to actually have sex- and gender-distinct tables, and so we have created, obviously, independent gender-distinct pricing scenarios.

Of course, we get into the 1970s and we get into smoker, non-smoker issues. We get into the 1980s, we have tobacco, non-tobacco issues. We get into the 1990s and we find ourselves in preferred-class issues. We have this litany now of classifications, and many companies are using these that don't even include the substandard issues! There's probably, a good round number of classifications that we can use right now. It really is important for the underwriter to try to put the right people into the right classification because that's how we priced it, and that's how we expect and want our mortality to perform.

What are some of the sources of information? The last one is kind of a catchall. Obviously, the applicant is a very good source of information about himself or herself. The agent, actually, is useful in providing information about the applicant. We have medical sources, I'll get into all of these in a little bit more detail later on. We have the MIB (medical information bureau). Then there are the third parties, different people who are either economically or professionally related to the applicant.

What types of factors do underwriters look at? Obviously, age and sex are the first two they are going to look at. But, clearly, they want to look at such things as build, height, and weight. They're trying to come up with an assessment of the individual's current physical condition. They look at medical histories. They need to know if the applicant's had problems in any area, have these problems been progressive, getting worse or better. They also consider a personal history, such things as driving record or family medical histories.

Ever wonder why the question is asked, like on a preferred-risk application, did you have any brothers, siblings, or parents who died of cancer under the age of 60? That's the family-history question. It's not meant to be genetically derived, but that is, in fact, what they're really looking at: is there a history here genetically? Many people will not get classified as a preferred risk if they cannot answer that question on a positive basis.

Underwriters also want to find out what kinds of work applicants do, what's the occupation. Do you have any hazardous avocations? Do you plan on any foreign travel or residence? Do you fly airplanes, and, in some cases, certain financial information is asked for as well.

There are eight underwriting tools. First is the application. The application is really made up of three parts. Part 1 is where essentially non-medical information is gathered such as, obviously, name, address, and occupation. Tobacco usage could also be on a Part 1 application.

Part 2 is more for the gathering of the medical information. Some companies do have medical questions on their Part 1. In some cases, they don't even use a Part 2, but for the companies that do have a Part 2, typically that part of the application is rather lengthy. It may contain the information or questions on 30-40 different types of diseases. It's really probing at that point.

The Part 1 also provides the underwriter with knowing what the policy is and how much insurance is applied for. It also is a place where the authorizations for getting information like from the MIB or from your physician can be placed. Of course, the applicant needs to sign that. They check to see if there any riders being added to the policy. You can see that much of it is truly non-medical.

The agent's report can actually be quite useful to companies. The agent may say, "I've known this person since childhood," or "He's my neighbor. He's a man of high integrity. He has a high standing in the community." the agent may include positive things which can give the underwriter a comfort level that he would not otherwise have. The agent could also say, "Well, he swears he's six-foot, and 165, but if he's an inch over 5'10" and a pound under 215 I'll kiss a pig." They can make comments like that. That may raise the eyebrows of an underwriter to order a paramedical. The agent's report is an important part of the whole application process. At this point, we've spent no money because the agent doesn't get their commission, of course, until the sale is made. there isn't an out-of-pocket cost yet.

Inspection reports: These are things that often tend to be non-medical in nature, depending upon the type of insurance applied for. For example, it could be a business type of insurance, key man, something like that. The company may want to do the inspection either themselves or, most usually, outsource to a vendor who is an expert at obtaining this type of information, like certain aspects of this person's non-medical world, like financial reports. They could get a credit report on him. They could go talk, for example, to his attorney. They could talk to his CPA, people like this. Again, they're building a different aspect of the profile.

The personal history interview is something that is becoming more popular these days. In some cases where companies will outsource underwriting or certain aspects of underwriting, they may also that same vendor to follow up with a personal history interview.

The personal history interview is intends to have a person, other than the agent, have direct contact with the applicant to review the questions on the application and make sure that the application is complete, but also to find out if there's anything else that wasn't disclosed on the application that should've been admitted. They'll go through the application questions to see if the person answers them correctly the second time around. If they don't, or if just in passing they mention, "Oh, well, I had this," oftentimes the software that these companies have is built to

go into a different screen specific to the comment that was made: "I have a problem with chest pain," or "I had a problem with my insulin." If that was not disclosed, they do have what they call drill-down panels where additional information then can be asked of the applicant. That's the personal history interview.

How many of you knew the MIB is almost 100 years old? The guys with MIB don't raise your hand. All right? Thank you very much. We'll get around to you later. The MIB is actually an organization that is owned by its members. There are 600 insurance company members, could be life, disability, or health insurance companies in North America and Canada that actually fund the MIB.

The main purpose of the MIB is actually as fraud deterrent. Their mission statement reads: "The object of the MIB is to operate a confidential exchange of information, which is significant to the health or longevity as an alert to detect or to deter fraud." The key word in there is "alert." Companies who provide information to MIB of medical significance, this information is captured, it is kept in the bowels of MIB some place. There's billions and billions, as Carl Sagan would say, of bits of information about any applicant who's applied for life insurance and had an MIB inquiry on them in the last seven years. The data can only be kept for seven years. I'm not sure why that is. I think it has something to do with paralleling the Fair-Credit Reporting Act.

But anyway, if a negative piece of information surfaces after an inquiry has been made, it needs to be treated as an alert. The underwriter cannot make any adverse underwriting decisions or actions on that information. They have to do some kind of follow up. It could be a phone call to the applicant. It could be an attending physician's statement (APS) is requested. It could be a paramedical is requested, but no adverse action can be based just upon the information received from the MIB.

Now, the MIB has quite a search algorithm, too. They've got a process where they type a name, address, age, sex, and so forth, to see if they can match something in their files. Sometimes names are submitted in different fashions at different times. John Q. Smith could be John Quentin Smith the next time or J. Quentin Smith. Applicants could have changed addresses. Females could have gotten married. There are things that can happen that even though a person is still there, they can't necessarily find what they think is the right person.

They will send back to you up to six suspects, if you will, and for you then to try to find out who those people might be. It may be as simple as going back and saying, "Have you applied for insurance before in the past seven years?" and see what they say.

The data also comes back in an encoded form. In other words, it doesn't come back and say, "This person has HIV." It comes back with a code. You cannot tell by looking at the codes what they are unless you knew them already by heart. Each underwriter or underwriting department is given an MIB codebook, and from that they can determine what these codes mean.

The codes are not specific to such things as which company provided this information or was it term or whole life. MIB does not even know if the policy got issued, and they don't even know if it was accepted. There is just information that they have found from the feedback they got from the companies providing that information. That's another real important part of the MIB service, too; not only is it useful to the people using it, but you have to make it useful for others. If you uncover a piece of adverse information, you need to, through the coding system, send that back to the MIB so they can put it back in their data warehouse. That's how the service functions.

Currently there are about 300 codes of things that they can report on. The basic inquiry service for fraud detection has been around for many years. Since then they've also added some other tangential services, and I'll give you an example of two of those. One is the insurance activity index. This is how it works: sometimes people with known impairments will not want to take out \$150,000 of insurance in one policy, so they'll apply for six (6) \$25,000 policies, and \$25,000 may be below the testing or other underwriting limits. If there is a fair amount of activity on a potential applicant in a short period of time, this alert will tell you that there's been a number of inquiries about this person. That's all it says, and you can decide if you want to do anything about it or not.

Plan F: this is kind of interesting. If you subscribe to this service, during the first two years after you've issued a policy on a person, if any other negative information turns up, say, on someone else's application down the road, the MIB will inform you of this. Now that doesn't mean you can do anything with it, or should do anything with it. It just means that something else came back that you weren't aware of. You can translate it, find out what it is, and you may want to choose at that point to take action. You may choose to do nothing, but at least you're aware of it.

Questionnaires are also tools. Now these aren't always asked of every applicant, but when things need more enlightenment, these forms are around. There are questionnaires on avocation. "Do you like to do any extreme sports?" "Well, I rock climb and hang-glide." Those types of answers will likely not get you a preferred classification, but at least you're telling the truth. Typically, people are not denied coverage for these types of things, but they could receive a relatively heavy rating in the form of a flat extra fee, for example, if they participate in extreme sports.

There are other avocations, too. Aviation's an obvious one. It's an old one. Do you fly airplanes? Well, I'm a commercial pilot for United Airlines. That probably is not going to matter. If you're a crop duster, whoa, you know, but even private flying. Some companies will actually take private pilots standard or with no rating if they meet certain conditions of flying X hours a year, what type of plane do you fly, and is it experimental. The aviation questionnaire can be quite enlightening.

The questionnaires can also request if the person has a foreign residence or travels, same thing. If you're going over to London for six months to work on a job there probably isn't a problem with that. If you're a news reporter for CNN going over to Cambodia during the Vietnam era, there probably is a problem with that. What the

company is just trying to do is not put itself at excess risk. If you knew that something like this was going to happen, even for a brief period of time, and disclosed that, what they would likely do is simply postpone looking at your application until you got back. If you're going to be over there for a long period of time, they have other decisions to make.

There are questionnaires for medical conditions like chest pain. Remember, you're talking to the applicant, and it could be the agent talking to him. It could be a person with a personal history interview talking to him, but there's additional questions you'd like to find out to see is this something I really do want to pursue. For example, you may want a medical examination or to re-order APS, and so forth.

Finally, there's the financial questions or financial supplements that can ask more probing questions about your finances, particularly if it's a situation of business insurance.

Paramedical exam: an interesting story about paramedics. You know that in the U.S. the paramedical business didn't really get started until the issue of AIDS was raised. Companies' blood-testing limits were a \$1 million or higher until about 1985. In 1985, \$1 million of insurance was a lot of insurance. Nowadays it's not so much, but that's the way it was then. Really, the desire to collect blood because of HIV is what gave the thrust and emphasis to the paramedical business. As long as they're getting blood, we might as well look at some other stuff, too.

This is what the paramedic looks at. They obviously can take measurements for your height and weight. They do take blood pressure reading. In fact, they may take two or three, and send in the average of those results. They check your pulse. Different people have different pulse rates. Some long-distance runners have very slow heartbeats, and other people have cardiac arrhythmias, with very fast heartbeat. The company would want to know that type of information. Obviously, they do the lab stuff. They carry the kits. They do the venipuncture for blood. They have the urine kit. Some companies allow them to do the Part 2. They would have a copy of Part 2, they would then be the ones, for an extra fee of course, that would go down the list of questions for the Part 2, and send that back to the insurance company.

The paramedics in Canada started a little earlier. They started back in 1915, interesting aside here. What happened was during World War I, so many of the Canadian doctors got subscribed or volunteered to go fight in the war, there weren't any doctors left in Canada. The insurance companies needed to come up with a way to figure out how do we get some kind of information. Well, they didn't have labs and so forth, but they did have things for blood pressure. The paramedics were a brief flurry of activity in the late 1910s until the doctors got back to Canada at least.

The APS is important. The APS is your history as seen through the eyes of your physician as now reported to the underwriter. An APS is a general statement though for any kind of report that could come from a clinic, your personal primary care physician, or hospital records. It's usually ordered for one or two reasons: for

large amounts of coverage applied for and maybe because of age. An underwriter just wants to see what your APS looks like. He wants to see is there anything in the file that will be helpful to me. In some cases, it's helpful because it validates what the insured said as well.

More often than not, though, an APS is ordered for cause, and what that means is there's something, some admitted piece of medical history on the application that I'm just not quite comfortable with unless I know more about it. Then the APS is ordered for cause. APSs are not cheap, incidentally. They can range anywhere from about \$25-30 to well over \$200 depending upon who you're ordering from. When money's up front like that, an underwriter needs to be careful with how he spends it.

Anybody ever seen your own motor vehicle report (MVR)? How many speeding tickets did you have? Just two. I didn't know this, but they'll put down speeding and excessive speeding. I found out that from my daughter. I thought speeding was speeding.

Anyway, the MVR is basically about a two- to three-year tracking of any infractions that you have or actually get convicted for. If it turns out that you didn't, the judge lets you off, for example, then nothing goes on. They also only keep it around for a couple of years. But the key things found on MVRs can be a marker for risk behavior, particularly if you've gotten convicted for DUI once or twice or more.

These are the couple types of things that underwriters use MVRs for. MVRs aren't cheap. By the time everything's processed, the cost is around \$15. You have to go through the states. They're a matter of public record so you're certainly are allowed to go to the state, but states take their time in getting it back to you in some cases, it's not all electronic at this point yet.

I don't want to say the medical examination is becoming a thing of the past, but the problem is timing on these things. Companies want business issued, and they want it issued now. By the time you set up a medical examination, maybe you've already looked at an APS, time is money to the agent, too. These things are used only, more or less, when really large amounts of insurance are applied for (\$5-10 million). Jeff may have some comments on that later, too.

What it comes down to is looking at such things as this: chest x-rays, pulmonary function tests, the treadmill, and electrocardiograms (EKGs). The chest x-ray is another one of these things that is being used less and less these days, and they're expensive as well. Pulmonary function test, how much quantity of air can you breathe, or how clear is your air pipe? Are there any impairments inside of your lungs? What they're really looking for here are such things as chronic obstructive pulmonary disease, emphysema, like that. It's not only the quantity of air you breathe, but how fast you can blow it out as well. EKGs are actually still quite common. Some paramedics can actually administer an EKG on their exams. They're typically given lying down. They cost maybe \$50-100 and what you're looking for, basically, is heart activity or a recording of heart activity. The treadmill's different. That can be a quite expensive test. It's an EKG, but it's a

stress EKG, sometimes called exercise EKG. They administer it to you before the exercise, sometimes also during the exercise, to see how your heart's actually responding to the stress of jogging or running the treadmill. Then often right after you quit exercising, they perform the test to see how quickly the heart responds, and goes back to its condition if you were sitting.

Then there are the four fun tests. The first three you're probably all aware of. You've heard of blood test, urine test, and oral fluid test. Oral fluid is not saliva, it's really more of a clear serum is what it really is. It's not spit.

The hair follicles test is interesting because, although this is rarely used, it can confirm prior drug experiences. When a cocaine positive comes back, and yet the applicant says, "I don't use cocaine.", you can say, "Well, excuse me, but you came back positive for it." Hair has memory. It doesn't forget. You can actually take a hair sample, and examine it. If you have indeed used cocaine over periods of years, it's like tree ring, it'll tell you the frequency and sometimes the severity of what you've done. But typically the insurance company doesn't pay for it because they know if they do then the applicant will walk. They say, "Okay, you don't use it, you prove it us. You do it."

There are several things that we look for in blood. the first thing is lipids. Lipids are such things as cholesterol, triglycerides, the high-density lipoprotein (HDL)/good cholesterol. There's also the low-density lipoprotein (LDL), the bad cholesterol. They also do a ratio of cholesterol to HDL ratio. There is a correlation, and a good correlation, too, with elevated, and particularly excessively elevated cholesterol levels with coronary artery disease, or heart disease, stroke. People with high cholesterol are, indeed, at an elevated risk, and would likely not qualify for at least preferred risk plans.

Liver function tests: obviously they're looking for things that affect your liver, and there are four enzymes specifically that are looked at and analyzed, and their elevations reviewed. They are: gamma-glutamyl transpeptidase (GGT), ALT, AST, and alkaline phosphatase.

Elevated liver enzymes can be associated with excessive drinking or alcohol abuse. They can also be associated with things other than drinking. Although we'd like to think we could use them as alcohol-abuse markers, we can't just do that in and of itself. You would not normally decline or rate somebody for alcohol abuse just because of an elevated GGT. There are also certain medications that would just naturally elevate GGT.

Kidney function test: obviously these tests are looking for any impairment of the kidneys in the blood sugars and blood glucose. Blood sugars tests check for such things as diabetes. They're a diabetes marker. Blood protein: if there is protein in blood, and the levels are quite elevated, this can be a marker for such things as tumors.

Prostate-specific antigen (PSA) is a blood test. It is administered only to older gentlemen, and it is a prostate tumor cancer marker. Oftentimes it is not required

or requested until maybe \$500,000 insurance policy is applied for, by or for men over 50, but that level does come down to \$100,000 for men in their late 60s and early 70s.

HIV, I don't think I need to say too much about HIV. For Hepatitis, there is a screen, a panel of tests, but there are other tests we call reflex tests that can be asked for when something abnormal turns up. For example, there is a hepatitis C blood screen. It costs about \$15 to do, so it's not cheap, so companies don't screen with it. By screening I mean they don't make every applicant take that test, but with certain liver enzymes, ALT in particular, we've noticed a strong correlation between Hepatitis C and an elevated ALT. In about 9% of these cases, they do find indeed that this person is infected with Hepatitis C.

Testing of the U.S. population, at least the insured lab-tested population, has shown over the last three years that just under 2% of the people are indeed infected with hepatitis C. In Japan, it's 10%. I don't know if it's going to be the next HIV, but Hepatitis C is one of these things that once your liver becomes fully involved, you've either got about a year to get your liver transplant or grab the bottle of anointing oil and go down to your parish priest.

What does urine test look at? Well, the urine test also looks at glucose, and again, that is a diabetic marker. It also tests for protein, albumin, and casts. A cast is a byproduct of a kidney problem. Red blood cells: if you've got blood in your urine something's definitely wrong. It may not necessarily be bad, but in a worse-case scenario, it could be indicative of some kind of tumor. More than likely it's more indicative of some inflammation of some kind. The underwriter would need to kind of sort through what do I do, try to find out what that is.

Cotinine is actually a metabolite of nicotine. Companies don't actually check for nicotine when they do a urine test, they check for cotinine. They also test for illegal drugs such as cocaine, heroin, marijuana, amphetamines, and methamphetamines. These aren't necessarily routine tests. Cocaine tends to be routine; the others are not, but you can ask for those tests if you want.

Prescription drugs are interesting. Labs can actually check for prescription drugs in the urine specimen. If a person admits to not having high blood pressure, but they find a trace of drugs whatever the amount in the urine that does indeed indicate they are taking high blood pressure medication, which one wouldn't normally do that if you didn't have high blood pressure, something's awry.

Of course, urine can be tested for HIV as well. Incidentally, the efficacy of the HIV test, the Western Blot test for blood or urine or oral fluid is the same. It's good. It doesn't really matter, in my mind at least, which fluid to test.

Finally, there is the oral fluid test that I've included only because I do work with Epitepe. These are the people that devised, designed, and got patented the Orasure oral fluid reception device. Anybody ever had an oral fluid test? It's like a toothbrush with a little sponge on the end. Stick it in your mouth for two minutes, take it out, slap it in a tube, and send it off to the lab. The only problem they have

with doing other things with oral fluid is the amount of fluid they actually get. Obviously with blood and urine you get much more fluid.

How much do these things cost? As actuaries we should know, at least have an idea, what to use as pricing assumptions. You need to consider these as representative only. Costs vary for a lot of reasons, not the least of which is volumes. The kit costs vary a bit. The blood kit is a little over \$4 on average. The urine kit's about \$1.75, and oral fluid can vary between \$3.50-5.

Lab fees are just the lab-processing fees. They are not the fees to collect the fluids. The fees are basically what a lab will charge you to run the panels that I just showed you. Other tests are incremental to this, and these are the handling charges for them to get the fluid back from the agent, or from the paramed back to the laboratory.

Lab work takes about a day, so if they get them in on a Monday morning, by Tuesday afternoon the results are done. Usually the results are electronically sent back to the underwriter. They keep the blood on hand for about 30 days. My guess is urine gets dumped quickly. Keeping the blood is important if they need to retest for some reason.

All tools have value. The question is how do we pick what tools we want to use. I'm not going to give you the answer. I made a list of the things that you have to try to think through.

1. What is the relative cost of the tool to the benefit you expect to get? If a person applies for \$100,000 of insurance, you don't want to send out for a medical. You might learn something, but it's just not going to be cost effective in the long run.
2. What's the absolute cost? This seems to be the number the underwriter looks at. He or she has a budget, and needs to figure out how best to spend the dollars.
3. Availability and speed of the test: if it's going to take two to four weeks to get something done, your placement rate ratios could hurt. You need to factor that in some how. There's no nice equation to show you how to do that.
4. What's your distribution system like? Are you direct response? Are you a broker? Are you a captive agent company? That can actually affect the types of things that you ask for of an applicant. What market are you in? Again, if you're in a direct response type market you may have different underwriting schemes than if you're in a captive agency market.
5. Do you have prior experience on this particular applicant? If somebody comes back two years later and says, "I want some more insurance," you may not have to go back and think through the whole litany of stuff he just signed two years ago. You look at his file, and get him to sign a good

health statement, that nothing has changed, something like that, and you can probably go ahead and issue the business. You shouldn't do anything drastic without talking to your re-insurers. Particularly when they probably have 90% of your book.

I'm going to give you a very brief overview of protective value theory. Now this is one of the types of studies you could do to help you answer the questions that I just raised: which tests have better value? We consider a test has value or is considered cost-effective if all the costs to administer the test are less than the obviously estimated excess mortality it's supposed to uncover. Keep that thought in mind.

The equation would look very simple. It would need to determine if the savings is greater than cost? Now we need to define what each of those terms means. On one side of the cost equation, you have to factor in all the hard costs, such as the collection fee. If a paramedic has to collect something, there's a fee to do that. There is the cost of the kit itself. Are the handling charges involved? That's why I gave you those lists of charges earlier. There's the lab-analysis expense and there's underwriting evaluation. That is the one everybody seems to overlook. It's easy to identify the first four because you get a bill from them. The last one relates to whether you might have to add staff to add a new test because the underwriters just don't have time to evaluate it. Even if you did, you'd probably want to allocate some underwriting overhead to the evaluation of that test.

The saving's side is a little more actuarial at least. This is the way I look at how I calculate a savings: if you're looking at a certain impairment, given a certain test, you pretty much have to have a feel for how frequent this impairment show up in the population you're testing. We call that prevalence. Like I just told you, the Hepatitis C prevalence is between 1.5-2% in the U.S.

On the savings side you would need to include the sensitivity to be able to identify that impairment. How good is this test at "I got 'em"? The other side of that is, how many sneak through undetected? What happens is, if a test has a sensitivity of 90%, you can't give it 100% value because it's missing 10% of the people with the impairment? The first three numbers end up between zero and one, all of them. If they're zero, that equation goes to zero real quickly. The test has no value. You'd like to be as close to one as you can.

The exclusivity factor "T" is a bit subjective, but what it's trying to say is how good is this test at being the only way to discover this impairment. For example, take tobacco. Obviously, you can do a cotinine test with urine, right? But, if a person lists on the application "I smoke," why do the test at all? Now, if you ask them the question, "Do you have HIV?" and he says, "No." How else are you going to find out? Right? The exclusivity ratio may be 0.1 for tobacco, but maybe very close to 1 for HIV.

The last part is to actually try to calculate the mortality itself. You've got to have a standard mortality assumption, you've got to have an idea, at least, of what the

impaired mortality assumption is because we're trying to find out what the excess risk is.

You need a lapse rate because policyholders do lapse. You can't get credit for 100% persistency. Time is money. We have to do a time-value calculation, so we have to have a discount rate. I usually use 8% in my studies, and term of the studies: 10 years, 20 years, whatever you want it to be relative to the impairment in question.

Having done that actuarial calculation, our excess mortality is simply the difference between the present value of the impaired risk mortality less the present value of the standard risk mortality. I'll go through a quick example with you. These numbers in my example are made up, incidentally. Over a period of 20 years I'm looking at someone age 30, the standard mortality on a present-value basis is \$4/1,000. That's a net single premium.

The impairment is roughly 2.25 times standard, so the person will be rated a table 9, and that's \$9. The impairment is not very prevalent, only 2%. The test I'm using is quite good to detect at a 99% level and roughly half the time I can find out about this test impairment someplace else, so I can't give the test full value for doing that. The cost of the test is \$8. When you do the math, what happens is that we have what we call a break-even threshold. The break-even threshold is the division of the cost by the savings per thousand.

For this particular test at that age cell, I would say it would not behoove you financially to use that test for amounts of insurance applied for under \$160,000. That's the type of approach in looking at many of these different types of tools.

Again, what you're trying to do is look at all the tools you have, look at all your up-front costs, weigh this test versus value over this test, and build your underwriting requirements matrix. Companies who didn't test below \$100,000 may find that they can get agents to collect oral fluid and test down to \$50,000. We can make that work. In fact, we could take that to \$150,000, eliminate urine at \$100,000, don't start urine until \$150,000, at these ages. We don't do blood now until \$500,000.

Start thinking through that process because you'll find out if you use a test that costs you a heck of a lot less you can actually give up a little mortality. Remember that cost/savings equation works both directions. You might even have a preferred plan that's using testing with oral fluid. The mortality may not be as good as what it used to be, but if you save a lot more money on the back end, it's the same value equation.

Mr. Jeffrey S. Marks: I work at Northwestern Mutual in Milwaukee. I've been there about 15 years. The first 7–8 years I was the mortality actuary. I was in the actuarial department doing all the mortality studies, and then giving that information to our product development actuaries, our pricing actuaries, and our underwriters. About 5–6 years ago, I actually switched over to our underwriting department to get more directly involved with them.

What I'd like to do is share some of the information that I've come to learn about underwriters. How underwriters can talk to actuaries. Our current mortality actuary titled this talk "Actuaries from Venus, Underwriters from Mars." Then I will talk about some tools that I've developed over the last 7-8 years that underwriters have used to help themselves learn something about actuarial techniques.

Finally, to tie it up saying, why do you care? Why are we here at this session? This goes into a little bit of a list of what things Rick was talking about. I'd like to highlight some underwriting requirements, such as the treadmill test that costs about \$300. The thing you have to take into account when you ask somebody to do a treadmill is you're asking an executive who makes a lot of money, who wants to buy a lot of insurance, to take an afternoon off, drive to the doctor's office, take off his or her clothes, get hooked up to the treadmill machine, do the treadmill, cool down, change his or her clothes, and drive back. That's two or three hours depending on where they're at. They don't like to do that. Agents don't like you to do that, so they complain every time you ask for one of those.

Then you've got the chest x-rays. Again, it's fairly expensive and fairly intrusive. You have to go to a doctor's office to get it done, and a lot of people don't like to be exposed to radiation when they don't have to.

For the MVRs, as Rick says (we get a better deal than Rick does on motor vehicle reports, ours cost about \$5), we have it set up with a computer. We send off your driver's license number to the states. Boom, they check your records, and they come back with the driving information. That's fairly efficient, and quick, and invisible to the insurer.

Then you have the APSs. Again, this is something where they sign the form saying we can get their doctor's records. It doesn't really involve them a lot after they sign the form, but when Northwestern Mutual sends that form to the doctors' office it goes on the bottom of the pile. It may be a week, two weeks, two months, three months, repeated phone calls. It can really stretch out the time there to how long this will actually take.

Why are underwriting requirements so important? This really dovetails onto what Rick was talking about. The way I look at it is, who yells at me about these? Every year, several other doctors and I are in charge of our underwriting requirements. The first people who yell at me are my fellow actuaries. They want better mortality.

Our mortality has been improving about 1-2% a year over the last 20 years. A lot of this is due to the blood test and other things. They want better mortality. They want protection against HIV. We've found using tobacco also impacts your memory because a lot of times people use tobacco and forget to write that down on the application. We find that out when we do the blood test and the urine test.

From the Floor: Smoker's amnesia.

Mr. Marks: Yes, smoker's amnesia. We're finding the same thing true with hepatitis. A lot of people forget to put down that they're being treated with hepatitis. That provides better mortality. This is especially important when you're pricing the aggressive term insurance.

All right, who else yells at me? The controller. For underwriting requirements at Northwestern Mutual, we spend \$30 million a year on blood tests and medical exams, that's direct cost. That's checks that they write. That's one of the single largest, non-salaried, home-office budget items when they put up the big budget that gets a lot of people's attention. They want us to control that. They don't care what the actuary says about better mortality.

We have the actuary and the controller. We also have the agent and the underwriter. When an agent goes to make a sell, he or she goes to a client and says, "I'll tell you what, I'll sell you this insurance for a \$1,000." The client says, "Fine." The client goes through underwriting, and we find something wrong. We're going to charge the client \$1,500. The agent has to go back, and ask the person for \$500 more dollars. A lot of times they say, "Give me my \$1,000 back; I don't want to buy any insurance." You can see why agents are quite unhappy any time a policy's not issued like they thought it was going to be.

If you're in underwriting, you know when an agent's unhappy what they do is they call and yell at the underwriter. The agent and the underwriter spent a lot of time going around and around explaining this case and justifying the action. If we started doing more tests, and all of a sudden started rating a lot more people, we'd hear about it.

To balance out these things, we also hear more complaints about underwriting requirements from the agent and the client. For example, we have the treadmills. I've already told you how much of a pain those are. We have lower treadmill limits than a lot of other companies. When somebody is buying a \$5 million policy from Northwest Mutual, we will require a treadmill on that. If they buy it from Prudential, Metropolitan, or a lot of other companies, they will not require a treadmill. If the agent knows that, or if there are other agents involved, they're going to use that and say, "You should buy it from another company." We get a lot of pressure from that from the agents.

I've talked about the hassle from the clients. They don't like to spend the time to run out and do a treadmill. They don't want to get a blood test. They don't want to do this, they don't want to do that. Basically, we have four things to worry about.

When Rick was talking about underwriting requirements, Table 1 shows what most companies do when they set their underwriting requirements. They have non-medical, paramedicals, and medicals. I'm going to talk in a little bit about the super-medical there. You just look and see the age of the insured and the amount, and that tells you what requirements you're going to need. You can see the older you get, the more stringent the requirement. That's because the older you get the more disease is prevalent.

TABLE 1
EXAMPLE OF AGE & AMOUNT

Amounts Applied For	Ages 0-17	Ages 18-30	Ages 31-40	Ages 41-50	Ages 51-60	Ages 61-75
\$0 to \$50,000	Non-med	Non-med	Non-med	Non-med	Paramed	Paramed
\$50,001 to \$100,000	Non-med	Non-med	Non-med	Paramed	Paramed	Paramed
\$100,001 to \$200,000	Non-med	Non-med	Paramed	Paramed	Paramed	Paramed
\$200,001 to \$300,000	Non-med	Non-med	Paramed	Paramed	Paramed	Medical
\$300,001 to \$500,000	Non-med	Paramed	Paramed	Paramed	Paramed	Medical
\$500,001 to \$1,000,000	Medical	Paramed	Paramed	Paramed	Paramed	Medical
\$1,000,001 to \$3,000,000	Medical	Medical	Medical	Medical	Medical	Medical
\$3,000,001 & Up	Medical	Medical	Super Medical	Super Medical	Super Medical	Super Medical

We did a big study on our medical exams recently, and found out that in actuarial terms they weren't worth squat. Our doctors were not doing what they were supposed to do. It's very hard to do an abdominal exam by having somebody lie down on his or her office desk, and having the doctor probe him or her.

Most of our medical exams were done on a mobile basis. The doctor would come to the person's office. The doctor would come to the person's home. You can't do a complete skin exam in somebody's office. They usually frown upon you taking off all your clothes in your office. At least they do where I work.

We instituted something that we call the super-medical exam. This is where we're requiring them to go to a doctor's office, and we're requiring them to do a complete exam. They're doing a complete skin exam. They're checking the lymph nodes. They're doing an abdominal exam, and they're shutting off the lights and doing eye exams on certain things on their eyes.

Now, why are we doing that? If we found just one person that had something wrong by doing those exams, you had a 55-year-old male buying \$10 million of

insurance, and he was going to get our best rate. Now we rate him because of something we found out on the super-medical, that's \$3 million in mortality costs we've saved by just having one hit. That's why we're starting to do those.

Every year we have four people, and they say, "I want you to change the chart so you have lower expenses, better mortality, better cases approved, and fewer hassles." Obviously, you can't do that, but every year we're asked to do that. Each year it's a different person yelling the hardest.

What do we do? We do what Rick talked about, a protective value study, but we call them benefit cost studies. Basically, that says, if we took a particular cell, age and amount, and we did more medicals or fewer medical exams in there, what would be the impact on those four things. Now, benefit cost studies aren't real cheap, although we don't have to hire a consultant to do them. We can do them a little more cost efficient. It usually takes about four months of a team of an underwriter, an actuary, and a doctor working together to do those. Rick says he can do it quicker, faster, and cheaper.

Mr. Bergstrom: Not cheaper.

Mr. Marks: Not cheaper, okay. I should have guessed that. What we do is we pull off a sample of cases that were rated that had this requirement, like medical exams. Then we have a doctor and an underwriter look through them and say, "Are any of these where you would not have rated them if you hadn't gotten the medical exam?" If that's true, we call it a hit. That's when we value it, like Rick talked about. You look at the value of the mortality of the class it would have been and the class it was, and you take the difference. You take into account expenses. You take into account mortality, lapses.

We actually put a little anti-selection in there, too. We assume that if we declined the applicant, and they would have been issued our best class, that they knew something about their health, or they would have learned about it the next few years. We assume they are going to have the best persistency ever. The client is going to last around until they die. We take that into account, into our formula, and it has a significant impact.

We calculate the benefit; we calculate the cost. Like Rick said, it's awful hard to figure out what the cost is going to be for underwriter time. Our answer? We ignore it. We just look at the direct cost of it. It's not that we say that underwriters are useless; we just ignore that.

What we do is when we look at our benefit-cost ratio, we say we have this much benefit and this much cost. If it's one-to-one, then we say we're not going to do it. We want two-to-one, three-to-one, or five-to-one to take into account the underwriter's time.

Let's go back to Table 1. A few years ago, we changed this. A lot of the green was blue with non-medical exams. We did a study and found out that our medical

exams, like I said previously, were a little under value. What we decided is we're going to change a bunch of our medical exams into paramed.

What was the impact on that? Well, we lost mortality dollars. The actuaries were mad. We saved expense savings. Parameds were cheaper than medical exams. There were fewer cases that were rated, so we got a positive there, and there were fewer hassles. To offset this we came up with the super-medical category. What did that do? That got us our mortality back by just looking at a few very large policies on older individuals we saved a lot of mortality there. They cost more, yes, but overall it was a benefit. We had an overall expense savings.

What about how many cases were issued best class? Overall we came out positive there because we gave up a lot more medical exams. How do we determine the hassle factor? This one's hard to discuss because if you happen to be one of those people in the super-medicals, our agents have told us that the hassles there is greatly increased, but we gave up 30,000-40,000 medical exams. We thought the trade-off was okay.

When you do benefit cost studies, they're just one tool in figuring out where to set the limits. There are some things to do when you look at that to try and figure out where you should set your limits. First, see if you can find a subset where things have a high-benefit cost ratio or a low-benefit cost ratio.

Going back to Table 1. You see we have a category from \$1-3 million, the last category was \$3 million and up. By creating that other category, we were able to order requirements more efficiently.

Tobacco use. We found that treadmill exams were much more valuable on people who smoked than people who didn't. Our limits for treadmills for tobacco users are much lower than non-tobacco users. Obviously, if we find out that a non-smoker did use tobacco, we're going to require a treadmill later on.

Prior business. Rick talked about the personal history interview. This is where somebody from Milwaukee calls up the insured, and asks them a lot of questions over the phone. It is amazing what people will tell an anonymous person from Milwaukee about their health and financial situation. We learn about drug use, we learn about smoking, we learn about bankruptcy, divorce, and financial. We gather a lot of useful information from that. What we've found is, if we underwrote you four years ago, and found out this information, and we call you this year, we're not going to find that much more new about you. We set the limits. If you're the first-time guy, your limit's here. If you're a repeat buyer, your limit's up here. It's all about trying to find the most efficient model to order requirements.

I talked about packages. We packaged giving up medical exam, and changing them to parameds. With the super-medicals, we always try and put something good with something bad together. One way to look at it is we try and make everybody happy. Another way to look at it is we always make somebody unhappy by each action we take.

Now I want to switch gears a little bit and talk about actuaries and underwriters, how they work together. I've worked with underwriters for over 10 years, and they look at themselves and their jobs a little bit differently than actuaries look at themselves. Let's look at how actuaries view actuaries.

This is how I view myself as an actuary. I am the protector of the financial integrity of Northwestern Mutual. Actuaries are the best people to do that. We're really the only people qualified to do it. We are the ones who can determine really what is truth, and then exercise that and tell people to do that. We're the best ones to say what's right and what's wrong. Now I know I might be going a little bit over the edge here, but every time I give this speech in my company I see a lot of actuaries smiling and saying, "Yeah, that's how I view myself."

How do actuaries look at underwriters? Underwriting is black and white. Underwriters are just complex pigeon-holders. They get in all the information, they look at the rules that doctors, actuaries, and re-insurers set up for them. They just have the three trays on their desk. They just put it in best class, second-best class, or declined. It's a complex job, but there's no judgment involved.

The other thing we as actuaries know about underwriters is all an agent has to do is whine at them a little bit, and they'll give up. They are what I like to call cavemen. They cave at the least bit of pressure. We have a case where an agent calls up and says, "I know this person is a little overweight, 5'5", 400 pounds, but if you can get him into your best class, do you know he is the biggest shrimp farmer in Idaho, and if I can get him, then I can get all of the shrimp farmers in Idaho." Underwriters say, "Okay, we'll do that."

Now let's put the shoe on the other foot. How do underwriters see actuaries? Does the term "Ivory Tower" ever come up? When I talk to my underwriters about this, they're shaking their heads, yes, on this. You think about an actuary's job: pricing a product. Not a lot of judgment involved. Think about mortality table. Boy, talk about black and white, dead or alive. How can there be any judgment involved in a mortality table? There can't!

The other thing that actuaries do, is spout off all these things. You should do this, you should do that, but they never have to deal with the real world which is 1,000 miles away from them. When I gave this talk to a group of underwriters and actuaries about a week ago, the underwriters said, "You underestimated the distance to the real world."

How do underwriters see themselves? Color, not black and white. A couple things you have to remember about underwriters. They have production pressure. They have to crank out 5, 10, and 40 cases a day. Their deadlines are an hour, an afternoon, two days, or three days. They like to argue that actuary's deadlines are 1 month, 6 months, 3 years, 5 years, or 10 years. They're dealing with the immediate.

They are on the front line. Every time they rate a case, they view themselves as being the one standing between the agent and his paycheck. They have to call up

the agent and say, "It's going to be \$1,500 this time." In essence, they're calling up the agent and saying, "Hey, I hope you didn't spend that money already because the client might not take the case." You can imagine how the agent feels about those types of phone calls.

As for black and white, rarely do you find a person who only has one thing wrong with him or her. If they have something wrong with them, they usually have several things wrong with them, even something as simple as blood pressure. Well, what if you had three ratings, and one was high and two were low, what do you take? What medication were they on? Did they have a stressful day they had the blood pressure taken. It's purely not black and white. A lot of judgment is involved.

I know I made a lot of stereotype things here, but there's a lot of truth in this, and if you take this knowledge, and when you're developing products and you're on your product development teams, if you think about that when you're working with your underwriters, I think things will go a little bit smoother next time.

Let's examine our entry-level underwriters' job description. Two things jumped out at me. First, communication is 40%. Underwriters are trained to be communicators. Who do they talk to? A lot of times, they talk to the agents. In the home office, they also talk to underwriters, doctors, and CPAs. You notice I didn't include actuaries there.

Sometimes they have to talk to the insurers. I'll give you some examples of how they answer questions from the insurers. Sometimes they have to talk to the insured's doctor. The insured's doctor says, "I'm perfectly healthy, but you're rating me, you're doubling the premium. Why is that?" They talk to the insured's CPAs. Sometimes they talk to the insurance commissioners. Sometimes they talk to reinsurers. Communication is an important part of their life, and they're very good at it.

Risk assessment is 60%. I would have thought it would be 95% risk assessment. It's only 60%. There's a lot of different things there they have to worry about. I just lumped medical into one small category within risk assessment. Now they don't see all these other things like drugs and alcohol or foreign travel every day, but they're going to see one a month or one every two months, and they have to know how to handle it. They have to have a very wide knowledge base.

Let's switch gears now a little bit, and talk about different tools that I've developed over time. These are tools that I've been working with our underwriters, coming up with helping them explain things, helping them understand things and, making my job easier because I get a lot fewer questions, and they get a lot fewer questions.

I've worked on the first one for 7–8 years to try and understand and describe this classification theory. This is used throughout our company in training our underwriters, and also our agents. Now, if I get a little technical just raise your hand.

Risk classification: you have a group of about 20 people. Sixteen of them are super-healthy. They have a mortality rate of about one. Three are just regular healthy, and one is unhealthy. They have a mortality rate of about five. So, what are you going to do when you have this group of 20 apply? Well, there's different ways you can handle it.

Let's look at an example. I won't use any names, but this is Northwestern Mutual. Basically, what we try and do is we put the 16 super-healthy people together and charge them \$1. The three regular healthy people are charged \$2, and the one unhealthy person is charged \$5. This looks great. Except, remember, the agent showed all these people that they'd only have to pay a dollar. You've got three unhappy people and one very unhappy person.

When I give this talk to the agents, they say, "Well, can't you just slide those three people in there and make them best class? What would that hurt? Nobody will notice." I say, "Sure, I can slide those three in there if you give me the name of 16 of your existing clients, I'll call them up and say, 'Will you pay more so that these three new guys get a great deal?'" I've never had an agent take me up on this.

This is one way to demonstrate how letting cases slide into your best class does eventually impact the pricing on everybody. I know everybody's company is going to be a little different, but the principals still apply.

Then you have the last case where you don't have any underwriter. You throw everybody in there. You've got 16 people who, if they're not informed consumers, may go ahead and pay the \$1.35. You got three people getting a good deal, and one guy getting a really good deal. But everybody knows what's going to happen. Eventually, the 16 healthy people are going to move onto better pastures, your rates are going to go up, and you have the classic mortality spiral.

Let's switch to the next tool. This is something that I discovered in a conversation with all levels of underwriters. From our beginning underwriters to 20-year veterans to the person who headed our underwriting department to the person who was the boss of that person to the number 10 person in our company, they said, "Okay, here's the situation. You've got a 40-year-old, they're applying for insurance. Fine. You find something a little wrong with their heart. You don't know what it is, but if you don't get any more clarification on it you probably will have to rate them."

You say, "Hey, let's do a treadmill. The treadmill will either say they're perfectly healthy, or there's something really wrong with them." The treadmill costs \$300. Everybody's shaking their heads so far.

Our underwriters say, "If it's a permanent case, then we've got a really big premium, we'll order the treadmill, no thoughts about it. If it's term insurance, term insurance, you know, the premium's only \$1,000. You're asking me to spend \$300? How can you make money on a \$1,000 term premium if I'm going to spend \$300 more on it?"

Every time I talk about this with somebody you see the actuaries go, "How could you not do that? They're priced exactly the same? Where are you from?" The underwriters are saying, "I don't know what kind of magic you actuaries do, with \$300 extra, how can that \$1,000 support that?" It would be a worthwhile discussion talking to your underwriting department about actually how we price things, how we amortize things, how we spread it over a lot of people.

Life expectancies. Has anyone ever used life expectancies in their actuarial job? Really? You have? Other than explaining something to a non-actuary? I have never used them, but in explaining things, it's very powerful. For example, you have the 25-year-old who applied for insurance. He turned out not to be in our best class, so he has a life expectancy of 52 years. He's yelling and screaming. His doctor calls up and says, "Hey, this guy is perfectly healthy. Why are you charging him more?" What do we do? The underwriter whips out this table and says, "You're absolutely right. He's perfectly healthy. In fact, he's healthier than the average person off the street. He's going to live three years longer on the average than the average general population. It's just that to get our best rate, you have to live 56 years."

The other place this comes in handy, and I had this as a personal example, my father-in-law applied for insurance. He is a 50-year-old man. He's not the healthiest man in the world. We declined him. My mother-in-law called, in tears, "He's gonna die, he's gonna die! I don't look good in black, I don't have time to lose weight to fit in the black dress, when do I set up the funeral?"

I said, "Well, that's not exactly what's going to happen. All that means is on the average, we don't think he's going to live 17 years. He might live 16, he might live 15." She said, "Okay, fine." Hung up. It's useful in cases where you have to decline a case.

Let's go to the next example. Again, this is just our company, Northwestern Mutual, but the same principals will apply. With our term insurance, we have a big gap between our best class and our second-best class. An agent applies on a 35-year-old male, and has a premium of \$650. We find a few things wrong with this guy, so we stick him in our second-best class. The premium jumps 80% to \$1,180. These are real-life numbers. Agent is screaming. He said, "You just showed me that stupid chart that said the second-best class guy is better than the general population. Why do I have to pay 80% more?"

We came up with a one-page explanation. We showed them a mortality table. We said, "You take 1,000 males, age 35. You look at them over 10 years. We expect six to die in our best class. The death rate in our second-best class is 11. That's 80% higher mortality. It's not coincidence that the premium is 80% higher mortality. Oh, and by the way, your second-best class person, if you just look over a 10-year horizon, is more than twice as good as the average general population at 23 deaths."

Since we came up with this one-page thing, our mortality actuary got 10 phone calls from our agents. He faxed out this sheet. They didn't call back. He saved probably 5, 10 hours on the phone by giving this information.

There are just a couple other things that might be worthwhile talking with your underwriters about. They have a vast, broad knowledge that they have to gain on underwriting. They don't understand a lot about products. Giving them a little information about products will be very useful. Other than knowing that they need to have the NAIC basics in a few instances, they don't know anything about sales illustrations. On a particular case, a sales illustration will tell you how the agent sold the case. This will be helpful sometimes in underwriting.

Experience studies. If you ever have good mortality, schedule a meeting with your underwriters. Tell them, "Thank you, you are the reason for having good mortality." What they're hearing right now is the agents yelling at them for rating cases. If you tell them, give them a party, give them a pencil, and give them anything they'll remember that. Pat them on the back for good mortality, they'll remember that, and they'll say, "Wow, I want to have good mortality because that makes Jeff happy."

A little bit about pending regulation, NAIC things that impact them, and the competition. I just want to touch real briefly on a couple cases that I've actually worked on. Again, these are just examples. It just shows how general actuarial knowledge that we have can actually help in placing a case. The first one is product design. We have a regular whole-life product where you have whole-life, term insurance and then additions. You can mix it up and come up with any premium you want.

We had a case where a guy applied for one with a premium of \$200,000, we rated him, and the premium was more than \$250,000. He called the number-five guy in the company and said, "How can you charge this guy \$50,000 more?" I got the phone call, I re-mixed the policy, got the premium back to \$200,000. It cut the agent's commission a lot, but the agent couldn't complain that you couldn't sell that case anymore. It also had a little impact on the death-benefit pattern, and then the cash-value pattern. He said, "The client won't pay a dime more than \$200,000. We have an answer."

I was walking one day by one of our underwriters, and they were complaining about a case with the reinsurance. They said they called up the reinsurer, and said this person is applying for this, he has this health problem with this product, and here's his net-amount-at-risk pattern. The reinsurance underwriter said, "Fine." Our underwriter went back to the agent, and said, "Oh, he wants to change to a different product and a different amount." The reinsurance underwriter said, "No, we only said this amount. We don't want to take any more risk."

By just looking at the illustration, I was able to draw the line and show that the net-amount-at-risk patterns weren't that different. I faxed that off to the re-insurance underwriter, they took it to their actuary. The actuary said, "Well, that's obvious." Case closed.

Again, stuff we take for granted that they're so busy with everything else, that they don't have time to think about. Flat extras and class extras, there's ways to design those so that you actually come up different rating classes than you have today. For quantifying mortality loss, occasionally we have a case where some reason or another the client thinks that they're going to get our best-class rate, when actually we believe he should get the second-best class rate. But the client believes he's been communicated, he's been promised this. There's some legal risk there. There's some public relation risk.

Again, 99 times out of 100, the agent will say, "No, we have to stick with what we really believe the underwriting action is." But once or twice a year they have to say, "Let's look at all the circumstances and see what the ramifications are." Telling them how much the mortality loss is just one extra piece of information that helps them make a better decision.

Why does all this matter for you? Underwriters can really tell you what's going on with your company. A few years ago I was in charge of our tobacco rules. I thought everything was fine and dandy, had lunch with our underwriters, and they said, "You know, our rule only says cigarettes. If you come up with a positive test, and you say you smoke cigars, chew tobacco, or something like that, we give you non-smoker rates." I said, "Okay." They said, "Do you know how many 35-year-old female attorneys in the state of New York chew tobacco according to our records?" We changed the rule the next year.

They can also tell you what's going on with the field. What the field is interested in, what they're yelling about. What products they like, what products they don't. Underwriters spend 40% of their time communicating. They are great at it. If you give them the proper information, they'll convince people about it. It can save you a lot of time.

Last, the Casualty Actuarial Society did a survey, I think in 1999, of CEOs of insurance organizations. They said a lot of great things about actuaries. But they also said this: actuaries can team up well among themselves, but may not mix well with non-actuaries. There may be an arrogance of the profession. Actuaries tend to be arrogant and lack respect for some of the other disciplines such as underwriting and claims. They need to be able to learn from others and to respect contributions and expertise of others. These are CEOs talking.

All I hope to do is share a little bit of insight of how underwriters and actuaries work well together. I believe over the last 7–8 years, I've been able to improve some sales opportunities, improve our mortality overall, improve some of our service things, and save myself a lot of work.

Mr. Robert A. Gabriel: For healthy people there seemed to be a lot of different classes. Is that going away, and was there any science or was it all art to come up with those.

Mr. Marks: For term insurance, I don't believe it's going away. We're doing some research into that. Where we have one class, they have five, as far as healthy people were.

As far as the science, we sell 200,000-300,000 policies a year, healthy people, on our records, and we don't have enough information to determine that. I think other people when they're looking at their information are not using their actual experience for it. It's probably too small, but there's probably a lot of logic behind it.

Mr. Bergstrom: There's still a proliferation going on. Most of the work that I do is to help put a super-preferred on top of a preferred, not help us collapse the super-preferred and the preferred into one plan. I've not seen it go that direction either.

I have a question. I wonder if anybody's ever died of a heart attack being forced to take a stress test on a treadmill. It's a legitimate question. Is there a risk there?

Mr. Marks: Our company actually does not allow or require treadmills over the age of 65 because we are actually worried about that. We did do some studies of that and found out that that was greatly overrated. The risk was not there. But I believe some people will say that, but there are certainly no incidents that I know of where somebody died.

Mr. Michael J. Villa: When you talked about the agent report as part of the application, does that actually get attached to the policy as well?

Mr. Bergstrom: No. If the things that do get attached to the policy are those things that are made a part of the policy from the standpoint of anything comes up during, like the contestable period that you as a company would want to fall back on, the insured has to have a copy of that.