RECORD, Volume 22, No. 3*

Orlando Annual Meeting
October 27–30, 1996

Session 88PD
Developments in Mortality Experience

Track: Reinsurance
Key words: Mortality, Reinsurance, Underwriting

Moderator: JAY D. BIEHL
Panelists: DIANE Z. HOBBS†
ALLEN M. KLEIN
Recorder: THERESA A. CHOKA

Summary: Information will be presented on the latest developments in underwriting and their potential impact on mortality. The most recent preferred and nonpreferred mortality statistics and an update on the SOA research activities on preferred underwriting will be covered.

Mr. Jay D. Biehl: Our first speaker is Diane Hobbs. Diane is assistant vice president of underwriting at First Colony. She is a Fellow of the Life Management Institute (FLMI) and a Fellow of the Academy of Life Underwriting (FALU). She has over 15 years of underwriting experience and manages a team of underwriters in a life brokerage operation at First Colony. Diane is active in underwriter education in the industry, and is responsible for underwriting training at First Colony. Diane is going to talk about trends in underwriting.

Al Klein is our second speaker. Al is assistant vice president and associate actuary at CNA. He is currently the pricing actuary for the life reinsurance strategic business unit (SBU). Al is also chairman of the SOA task force on preferred underwriting, and he is going to talk about the status of the Preferred Underwriting Task Force as well as some of the other trends in the industry.

I am second vice president and director of research and analysis at Lincoln National Reinsurance Companies. I am going to talk about the interpretation of mortality studies.

---

†Ms. Hobbs, not a member of the Society, is Assistant Vice President of Underwriting at First Colony Life Insurance Company in Lynchburg, VA.

Finally, Theresa Choka is our recorder. She is assistant vice president and director of retrocession for individual reinsurance products at Lincoln National Reinsurance Companies.

Ms. Diane Z. Hobbs: While preparing this presentation I asked myself, "What do I have to say about underwriting trends that this well-informed insurance group does not already know? What can I say that would be useful to you?" I want you to leave with something from me—something that you can either think about or use in your company.

I thought I could discuss medical breakthroughs, but these do not make too much of a difference in what we do. Breakthroughs make a difference maybe ten years from now, but not immediately. You probably know more about them than I do anyway. You have the statistics. Then I thought I could discuss claims experience, but you guys do that so I'm not going to touch it. Then I thought I could discuss what percentage of applicants need to go in preferred and what percentage go in residual. I thought that is not good because that is what you guys do for me. That is what you tell me. I was really in a quandary.

I decided I would definitely stick to something that I know best. That is, what I do every day. I want to tell you what I believe about my profession and what you should know about it, things that you might not know, or that you do know but just do not think about every day.

I want to talk about how the underwriting environment is more challenging than ever before. I want to give you some reasons why I believe this is important to you. Finally, I will offer some suggestions about what you should think about or implement at home, i.e., those things that you should make sure are going on in your company.

If you go away from my presentation with nothing else, I want you to remember this, because it is the most important thing that I face everyday. All the numbers underwriting offers do not make a difference unless the final product price is acceptable to an agent who is able to make the sale.

A case that is paid for is the key to the whole process because if the offer is not right, if it is not what the client expected to get, or if it is not what was quoted, then the sale is going to be made somewhere else, and it won't be with your direct company but with another company.

It does not matter if the numbers are correct or if the underwriting is right on the mark. If it is not placed, we lose. And that, in a nutshell, is underwriting today.

That is what I face every single day. I work very hard. I look at cases. I do case underwriting while managing; it helps me understand the problems that my underwriters face every day.

Perhaps you are thinking, what is so different about that? Yes, you know underwriting is a challenge. You know there is pressure. But why is underwriting more challenging than ever before?

I think it is more challenging for three simple reasons: lower premiums, multiple preferred classes, and competition. Never before has it been so important to the bottom line to accurately underwrite an application for insurance. I know actuaries think in terms of large numbers, but I also know what happens to mortality if I place just one case in the wrong class.

In the old days our loaded products had room for negotiation, underwriting negotiation, even, heaven forbid, underwriter error. Now, margins are slim to none, and there is no room. I mentioned multiple preferred classes. This trend continues as more companies are offering a finer and finer breakdown of underwriting classes.

My company made two underwriting guideline changes just in the last year. I know of others that changed their rules more than that. The driving force behind all this change is the third reason why underwriting is more challenging today: competition.

Pressure from agents in today's underwriting environment is brutal, and competition among companies is cut throat. Remember what I said earlier— if the offer is not right, the sale will be made elsewhere. Let me pause for a minute and give you a typical underwriting scenario. This is a typical case. This type of case happens to me every day.

Joe Agent sends me an application on a 45-year-old client. I take a quick review of the application because Joe needs an answer right away. An exam tells me that Joe's client has taken blood pressure medication for the past couple of years. It is controlled, of course, because the paramedic found normal BP readings, 120 over 80. In every exam I look at the readings are always 120 over 80.

The agent tells me the applicant is in perfect health except his cholesterol runs a little high. This particular applicant's cholesterol was 310. Also, his father died of a heart attack at age 47. Remember he is 45, but the father did not take care of himself as well as his son does now. So this should not be a reason not to go preferred, according to Joe Agent. Joe must have superduper select preferred class

double A from me or he will pull the case and let his other company issue it, since they have already told him over the phone they would have no problem giving him superduper select preferred class triple A.

However Joe would rather do business with my company because he likes us better. You might laugh, and it does sound funny. I told you this is a typical, everyday scenario. You and I both know this guy is not preferred. If I give him superduper select preferred class double A, I clinch the sale. But your heart stops for a minute, or my actuary's heart stops for a minute. Even if I offer just the single A, and not the double A, I lose the case. He will be able to place the case at some other company at a better class and a lower premium.

Right, wrong, or indifferent, it will happen. There is no consistency in this industry, and the rules change every day. Why is this so important to you? Because both our jobs require us to keep our eyes on the bottom line, and if we do not help the agent make this sale our company suffers. Not only have we spent time and money on this case already, but if we do not help the agent or, more importantly, if the agent does not perceive that we have helped him or that we are trying to help him, we could lose his future business, even his real superduper select preferred triple A business. You know what happens to mortality once you take out the best group of risks.

You have to depend on your underwriters to properly classify risk in a very competitive market. These are not black or white issues. There is a lot of gray area in underwriting. Underwriters are going to make exceptions. You are going to have to keep your hearts from stopping because it is going to happen. There is a lot of pressure to make exceptions.

Let us make sure that underwriters make decisions that make sense. They may not always follow the rules, but they should be prepared with tools for making common-sense decisions. So how does an underwriter do this? Competition is here to stay, so we cannot count on premiums to increase, and we cannot count on multiple preferred classes to disappear. Here is the food-for-thought part. This is what I want you to take home. I want to point out a couple of buzzwords and tell you a couple of things that are going on in my part of the industry. What I hope you will do is be sure the underwriters in your company know about or are involved with these issues.

These days it is absolutely critical that the underwriter has the knowledge and the tools to make split-second decisions, otherwise we not only lose that client of Joe Agent but we are going to lose his other good business too. I mentioned a couple of these things a few minutes ago. In my case scenario, the agent said he would

rather do business with my company because he likes us better. Maybe that is because we are nice, and that is important too. But it is probably because he likes our service over another company's service. We are always striving to improve service. Agents want fast service. It may not always be the decision that they wanted, but if they have gotten a decision, they can then go out and make the sale. If it takes longer than two weeks, or sometimes even one week, then he is probably going to lose the sale, especially if you have not given him preferred.

Service is a current buzzword. Service is a very important aspect to agents' satisfaction and can make or break a sale. The underwriter is quite involved here. I am on the phone every day. The underwriters have to be accessible to the agents. They have to be able to make instant decisions over the phone with minimal information.

The other thing I want to emphasize is that it has never been so important to the bottom line to accurately underwrite an application for insurance. Fast is good, but it also has to be right. I think you all would agree with that. Quality is of the utmost importance. That is what is stressed to me every day.

Do your underwriters have the underwriting knowledge and resources necessary to make well-informed decisions in this environment? Are they able to create alternative solutions for their agents' dilemmas? Do they have the big picture, or are they sitting in their office looking at a manual and simply subtracting debits and adding credits?

Financial underwriting is very big these days. Companies are going to banding of premiums, as you know, and so we are expecting higher face amounts. It is very easy to look at a 35-year-old for $10 million and quickly say no to the application. Are your underwriters doing that? Or are they really looking into the situation? Are they using other resources in your company? I use my advanced underwriting area. We have one underwriter there that has been terrific with us. I am not an expert in financial underwriting. I am more of a jack-of-all- trades. I know a little bit, just enough to make me dangerous in some of these areas, so I will definitely refer if I do not think the application makes sense from my background and my experience. I will take the case and discuss it with somebody else. I will take the time to do it, because it saves a lot of time in the end. The bonus is that I often learn something for the next case.

REINSURANCE SOLUTIONS

Some of the successes that I have had in placing cases were achieved by involving other companies. I know a lot of you are reinsurers, and thanks for the help that your underwriters have given me in the past. It is wonderful. Spreading the risk is

what we are all about. I really believe that. I try to get two or three reinsurers to join in on one case. That way it is not quite as bad if the decision was not right.

MEDICAL UNDERWRITING

I talked a little bit already about preferred and not preferred. The finer and finer breakdown of classes makes it so incredibly minute and difficult to classify these people. Again, I say it is not black or white. When you have all these different categories and guidelines that you have to fit your applicant into, it is very easy not to fall into that best rate.

Again, if you do not give the best rate that is advertised, you have a good chance of losing that case these days, and you cannot make these things up. It is there on paper. You have to come up with other ways to make the sale, and again I offer reinsurance solutions on that. I have been very successful with doing so. I try to get most of my underwriters to work that way too.

CLAIMS EXPERIENCE

For a long time when I first started in underwriting, the underwriters in my company never learned about their claims experience. We have started sharing this information with our underwriters and they do not run scared, as was thought before. It's a good learning experience if it is something that you are already doing well. I think that seeing the other side of the story can bring out some of the real big problems, big underwriting issues, and cases that you just really should not take. And when underwriters have a lot of pressure on them, any extra knowledge like this is very helpful. They have to be able to say no sometimes. It is not always yes.

When I train underwriters the first thing I tell them is get used to being the bad guy, because you are the bad guy. You do not get calls when you have made the sale, or when you have given the preferred. You get the calls when you have had to say no to something. Any extra knowledge is very helpful, even in a synopsis form. Even knowing that cancer is your biggest area of claims is helpful. Our medical directors are also very helpful in analyzing claims experience.

LEGISLATION

I throw legislation in just to point out that there are things beyond our control, and in certain circumstances agents do not understand. The underwriter has to be able to effectively communicate legislation to them and their clients.

GLOBAL MARKETS

Underwriting is different in other countries. Some countries are similar to ours, but in some of the newer markets, the third-world markets, it can be very dangerous because of limited medical care, lack of being able to get medical records, and lack

of being able to get inspection reports. Underwriters are going to be guessing quite often. If you are in global markets, the more knowledge you can give your underwriters, the better.

Back to competition and who wins. My purpose here is not to make you worry about your underwriters and what they are doing back home. It is rather to make sure that they are as knowledgeable and savvy as they need to be. I believe it will make a difference.

Get to know your underwriters. We socialize with our actuaries. We have a very good time with them. They know us, we know them, and it works out. They do not always like what we do, but they tend to understand what we are doing. It is more fun that way.

Professionalism in underwriting. If you are worried now about what your underwriters are doing back there, I can tell you to relax because quite a few of them are already involved. And you will find that out when you go back, if you do not already know.

We have two major organizations that have one annual meeting a year. We have the Institute of Home Office Underwriters (HOU) and the Home Office Life Underwriters (HOLU) Association. The two large meetings have many educational seminars. Your company should be sending people to these meetings.

Not only that, but there's something that is near and dear to my heart—it is a subcommittee of those two organizations, or an educational arm, so to speak, called the Academy of Life Underwriting. That is where the designation FALU comes from. We produce, on a volunteer basis, several exams that are used for training purposes in a lot of companies.

My company has an actual training program. We have trained a little under 50% of our staff in house, from people in new business areas, claims areas, and that sort of thing. These are people who are interested in becoming underwriters. It is a great opportunity for them. Some companies do not have this program, and this is a wonderful way to begin the education process. To continue the underwriting education process this group has seminars that are given three times a year. I know the past couple of years they have included disability income seminars also.
It is a wonderful networking opportunity and a wonderful educational opportunity. It's not just because I was part of it, but it is where I started myself. It is what gave me the incentive to continue.

I would like to finish with my message for you; underwriters cannot be naive in the current environment. They have to be savvy, and they have to have full knowledge.

Mr. Allen M. Klein: As Jay mentioned I will be covering two topics. First I'll give you the current status of the SOA Task Force on Preferred Underwriting and Large Amounts, which I chair. Second I'll focus on trends. I will cover a number of diverse topics, including acquired immune deficiency syndrome (AIDS), underwriting, products, technology, and a couple of other topics. I will present what I see as the trends and, in some instances, explain what I think will be trends into the future.

I will start with the preferred underwriting task force by giving a quick summary of the original mission statement. We set out to determine the criteria and assumptions used in preferred underwriting through a survey and then publish the results.

This has been done. The report was published this summer, as most of you know, and is available on Actuaries Online. The second part of our mission was to determine the feasibility of a preferred underwriting mortality study and provide the data requirements. We are currently working on this.

After finishing the first part of the mission, we added four new members to help us tackle the next phase. We began by considering a traditional approach to mortality studies and found with the many different definitions, and constantly changing definitions of preferred, it would be difficult for us to define "preferred" for mortality study purposes. Therefore, I encouraged some out-of-the-box thinking, and we came up with the unique approach to a preferred mortality study. We questioned this at a conference call last week and again yesterday when we met. We ended up feeling that this was the best approach and would be the most valuable for the industry. As you will see the study will benefit pricing actuaries. However, we will still have to determine what can be done from a valuation standpoint.

Although we do not have agreements yet from all pertinent parties, and there are a number of open issues to resolve, I will explain our general concept. The main principles of our plan are to collect data from the laboratories on all applicants. We would receive the actual results of all blood and urine work. Second, we would collect data from paramedical companies, for example, build, blood pressure, and pulse rate. Then we would need to collect data from the participating companies, both at issue and on an ongoing basis. At issue we would want to collect data such as age, sex, and possibly personal and family history, if it is available. On an

ongoing basis we would need updates on lapses, deaths, and changes in force. We would probably request this information on an annual basis.

There are a number of open items that I would like to discuss. What data should be requested? How comprehensive should it be? I am personally leaning toward the more data collected the better. How should the data be stored? What medium should be used? This will probably change over time, but we need a starting point. Should the records be maintained on all applicants or just insureds? It would certainly be easier to just keep track of the insureds, but we could maintain data or records on all applicants, and periodically check Social Security records for deaths for noninsureds.

Should it be a calendar year or a policy year study? One open item, which may not be immediately obvious, is that we have to keep track of the cause of death. For example, if we included accidental deaths when determining whether higher levels of cholesterol had an effect on mortality, we would probably be distorting the results. On the other hand, we would need to leave the accidental deaths in the results for lower cholesterol levels and for a similar study on gamma-glutamyl transpeptidase (GGT) levels. From what I understand, those with very low cholesterol levels may be more prone to accidents.

Which companies would participate? We are leaning toward not asking all companies, at least initially. We are thinking of including the current standard, ordinary participants, the Impairment Study Capture System participants, and the large term writers. The Impairment Study Capture System is a study where some laboratory data is captured. In terms of the large term writers we have not yet defined who they are or who would fit into this group, but we do feel that they are at the forefront of preferred products.

Probably the most important open item is, how will the confidentiality be maintained? I do not have an answer for you yet on this. However, there are a number of efforts underway, and hopefully one of them will be satisfactory to meet our needs.

The last open item is how will the data be made available? The way I envision it, although I am not sure that it is doable, is that we will make all data available on a confidential basis to all participants and let them sort it in any way they want, possibly with the help of a predesigned program. This would enable the participants to fine tune their preferred criteria, possibly even eliminating some items where there does not appear to be a differentiation in mortality results.

We are in the process of trying to discuss these issues with the laboratories to determine their interest level and the potential for participation. We also want to see if they have any suggestions for improvement to our plan. The Task Force on Mortality Guarantees in Variable Products and the Mortality and Morbidity Liaison Committee has formed a subcommittee that will be looking into this for us. I welcome any additional thoughts that any of you may have. Please look me up in the *Yearbook*. If all works, we will begin collecting data in 1998 and publish the results a few years after that. A study in this manner should help us all determine what factors truly produce preferred mortality. Finally, we will try to conduct another survey on preferred criteria and assumptions next year, and we would appreciate your support on that.

My next topic is trends. I am glad I am giving this presentation because each day that I look at the newspaper, I see more trends to discuss with you and my talk keeps growing and growing!

With respect to AIDS, Bragg has recently made available AIDS data through 1993. The data shows a deterioration in results, particularly for female smokers. One thing that I found interesting in the data was the percentage of AIDS claims to total claims. The American Council of Life Insurance (ACLI) numbers show 2.3% for 1993, which is the magnitude that I am accustomed to. The Bragg data shows 7.9% for 1993. The reason for this difference is that most of the Bragg data are in the select period, while the ACLI data includes some very old lives in their totals. Which is the more appropriate number? Are we issuing business where close to 8% of it will be AIDS claims? If so, is this being priced correctly?

In terms of the data from the Centers for Disease Control, I will read a paragraph from its latest report, "AIDS Cases through June 1996:"

> ". . . recent trends in the number of estimated AIDS-OIs,"[that is, AIDS Opportunistic Infections], "illustrate the overall slowing in the rate of growth of the AIDS epidemic. From 1992 to 1995, the estimates of newly diagnosed AIDS-OIs suggest that AIDS cases were increasing at a rate of 5% or less per year in the U.S. as a whole compared to higher rates of increase from 1990 to 1992.
>
> "As the epidemic of human immunodeficiency virus (HIV) infection has dispersed from the cities, where AIDS cases were first recognized in 1981, different populations and geographic areas have been affected over time. Changes in the number of estimated AIDS-OIs during 1992–95 reflect these different stages in the maturation of the epidemic. These include: leveling in the West, but continued

> increases in other geographic areas; leveling among whites, but continued increases among blacks and Hispanics; a stable trend among men, largely caused by the leveling of AIDS-OIs among men who have sex with men; and an upward trend among women, reflecting increasing numbers of women who are infected with HIV through sexual contact, principally with intravenous-drug-using partners, and who are now progressing to AIDS."

I also wanted to talk about protease inhibitors, which some of you may be aware of. They are a new series of drugs that are used in various combinations to treat AIDS patients. They have not worked for all AIDS patients, but for some there has been remarkable improvement. In some cases the actual virus has been reduced to barely traceable levels. It is too early to tell if these drugs provide temporary relief or a cure. There is also a concern that the virus could mutate to a more drug-resistant strain.

The implications of this treatment for the insurance industry are tremendous. There will be more variability in the life expectancy of individuals with AIDS. Some would possibly live to a normal life expectancy. On the other hand, if the virus mutates, we could have an even more deadly variation. Developments here should be monitored closely.

One more interesting thing on the prevalence of AIDS. The July 25 *Chicago Tribune* had an article entitled, "AIDS in Elderly, AIDS is No Escape." The subtitle was "Florida Retiree, 69, Blames Wild, Unprotected Sex." The article went on to say that AIDS was increasing among the elderly and most of it was due to heterosexual contact.

How are companies responding to the home AIDS test? I did an informal survey on my recent reinsurance visits. Companies are doing a number of different things. Some companies are or will be reducing blood testing limits. Some are reducing urine or saliva testing limits, while others are going to use dry blood spot testing at lower levels. Other companies may be increasing minimum size to the current testing limits. Still others are already testing everyone or feel that they will not be selected against because their products are too expensive. Finally, some companies are going to wait and see what others do before making a change.

There are a couple of good articles on the protective value of urine and saliva or oral fluid testing. The July/September 1995 issue of *On-The-Risk* contains an article on saliva testing by Rick Bergstrom. And the July/September 1996 issue of *On-The-Risk* has an article on urine testing by Harry Woodman.

Note that saliva testing has recently been approved as a confirmatory test. What this means is that if HIV is found using the saliva test, companies can now assume that the person has HIV. In the recent past, the follow-up blood test would have been needed to confirm this.

Finally, it was just announced last week that the most comprehensive genetic test yet to predict breast cancer will be available starting tomorrow, October 30. For now, doctors will be able to order the test for their concerned patients. But is a home test far behind?

With respect to smoking, there has been a shift to nontobacco from noncigarettes. I think this is significant with the recent interest in cigar smoking. My estimate for mortality savings when using nontobacco versus nonsmoker is about 5%. There has also been a shift to a longer time since last smoked. Companies are now looking for no tobacco use for the last three years, five years, even forever, for their top class of insureds. The standard used to be 12 months. I have noticed, and a few others have noticed as well, that there seems to be a larger number of smokers on college campuses these days. Is the younger generation smoking more than its predecessor? Will this show up in our data soon?

Finally, with respect to smoking, a recent *Wall Street Journal* had an article stating that two scientific teams have proven that smoking causes cancer. That was always thought to be the case, but now they are able to show that a chemical in tobacco tar called benzopyrene, damages a gene known as P53, which otherwise prevents the haywire cell growth associated with cancer. Once this is common public knowledge, will it help reduce the number of smokers? I doubt it, but one never knows.

With respect to preferred underwriting, there has been a movement to more rate classes, three to four, four to five. When I say five rate classes I am referring to a preferred and standard smoker, preferred and standard nonsmoker, and a super preferred class. The top-rate class is becoming more and more competitive. Criteria and qualifying levels are still evolving, but the percentage expected to qualify for preferred is increasing as more pressure is placed on companies to accept applicants as preferred. Diane talked about this.

With respect to product lines, Guideline XXX versions of term have been coming out for the last few years. The products have been getting more and more competitive with each new round of pricing. For universal life and whole life, new riders, such as payment for dreaded disease and nursing care, are available. But the biggest changes right now are in trying to assure compliance with the new illustration regulations.

There are a few changes in annuities. Market-value adjusted annuities and immediate annuities are hot issues right now, as are equity-indexed products. I prefer not to get into what may be the trends within equity-indexed products here, but suffice it to say that for annuities, equity-indexed products are the hot trend right now. This topic was covered more thoroughly in the "What's New with Annuities" session.

The new survivorship products I have seen developed over the last year or two have a variable chassis. This is interesting in that the goal of survivorship products in the past was to maximize the death benefit by minimizing cash value. The variable survivorship product will have a larger cash value, but does offer the advantage of better estate protection with inflation. Finally, I anticipate that the new standard nonforfeiture law, which may be out in the next year or two, and makes cash values optional, will have some effect on product development as well.

Before I talk about technology, one other topic, in terms of trends, is competition. As you know we are facing increased competition from banks, investment bankers, and others. One question in terms of mortality is, will these different sources of distribution produce different mortality results? We are also faced with and will be facing more international competition. How does the mortality experience differ by country? I do not have answers for you here, but these are things to think about.

These days, any discussion on trends must include something on technology. Technology is a topic we could spend the whole session on, but I will spend a minute on a few issues.

Genetics is a rapidly changing field and one that we, as an industry, have to stay on top of. What new tests are becoming available? Will we be able to use the results in evaluating an individual applicant? The recent Kennedy-Kassebaum bill prevents insurance companies from discriminating against family history or genetic susceptibility. As I understand it, the bill does not allow declinations, but ratings can be applied if applicable. This bill deals with health insurance more than life insurance.

I have not had a chance to read it yet, but the last copy of *The Actuary* mentioned that Dr. Donald Chambers of Lincoln National has written a paper that discusses how genetic testing is defined and the implications for legislation activity.

Another topic is medicine. In the October 25, 1996 *Chicago Tribune* I saw an article that said that tests are being conducted on using an ordinary cold virus to attack and kill human cancer cells that have a defective P53 gene. Remember this is the gene that protects cells from cancer. In the October 25, 1996 *Wall Street*

Journal there was an article about looking at using the protease protein as a cure for hepatitis C.

Imaging is the process of converting what is on paper to something that is readable and viewable on the computer. A number of companies are attempting to go paper-less and have used imaging to get there. I expect more companies to move in this direction; however, this is not the final solution.

If we input all data into the computer, all data can be transferred as needed and when needed. All underwriting requirements would be available immediately, allowing what I am calling immediate quotes to be made. There is an article in the September *Product Development Newsletter,* entitled "The Electronic Paramedical: The New Revolution in Underwriting," which may be of interest to some of you.

I have heard of one doctor who has his patients send him their symptoms over the Internet before they come in for treatment. He has a computer in each treatment room and inputs all data on the spot. Diagnosis and the attending physician statement are available almost immediately. I expect this to become more common in the future, especially in rural areas where a 50-minute drive could be saved or, if the patient must still see the doctor, diagnosis has already been made and treatment can begin almost immediately upon arrival. The doctor I am referring to is David Voren, who gave a presentation to the American Academy of Insurance Medicine earlier this month.

What is new on the Internet? I happened to sit next to a software expert on my flight down here, and I asked him that question. He said that there are two things that are happening in the near term and beyond that, who knows!

The first item is call centers. If there is ever a dispute on a transaction or someone just has a question on an Internet transaction, there is no live body to talk to. These call centers will start to provide one. This is something to think about from an insurance company standpoint, as more and more of us get on the Internet.

Second, there is new technology coming that will transfer and read the data much more efficiently and effectively. I do not know when that will happen, but it is coming. How will the Internet affect mortality? It may change the way that we underwrite policies, ultimately affecting mortality results. If we sell more on the Internet, we may have to change the way we underwrite.

With respect to insurance companies in general, there are a number of companies on the Internet today in various forms. I believe that in time the majority of

business, including insurance activities, and that may or may not include selling, will be conducted over the Internet or its successor.

Mr. Biehl: I want to talk about the interpretation of mortality studies. Specifically, I will be discussing how the slightest study flaw can lead to erroneous conclusions in studying the differences between smoker and nonsmoker mortality, preferred product mortality, and secular improvements in mortality. These are three areas where the pricing actuary has to carefully interpret historical information and the intersection of pricing and underwriting so that they are able to appropriately price new business.

The difference between nonsmoker and smoker mortality is really the simplest area to think about. My point here is that when studying smoker/nonsmoker differences, there is more than just the obvious fact that smokers have worse mortality simply because they smoke. There are at least two other factors that create a gap between smoker and nonsmoker insured mortality experience.

The first is that, on average, smokers buy smaller policies than do nonsmokers. They do this typically because people want to spent X dollars of money for insurance coverage and because smoker rates are so much higher than nonsmoker rates, smokers end up with smaller policies. That is important, but what is even more important is that smokers then tend to have less stringent underwriting requirements than do the nonsmoker group. There are fewer blood tests, less stringent medical exams, fewer attending physician statements, and fewer treadmills, etc., than in the nonsmoker class.

Second is that the mix of socioeconomic classes among smokers is generally lower than nonsmokers. In addition to contributing to smaller policy size it also leads to higher occupational risk, lack of preventive health care, and so on that puts much more risk on the smoker population than on the nonsmokers.

Mortality results are obviously very dependent on the combination of many variables. To make the most of a study process, it must be limited to, as I like to say, one moving part or one variable at a time or we must introduce multivariate techniques. In the instance of smoking, though we cannot completely remove such things as the effect of socioeconomic differences, we could somewhat neutralize it by looking at homogenous companies that target a certain segment of the population.

More realistically, however, within your own company you could focus on only like-policy amounts between nonsmokers and smokers to at least eliminate the differences between underwriting requirements, and in effect, you will also

eliminate the differences, or at least most of the differences, of the socioeconomic classes as well.

The effect of ignoring these differences, or these other factors that go into smoker/nonsmoker mortality, is to assume that the relationship between nonsmoker and smoker mortality is much wider than what it really is. So you would assume that nonsmoker mortality is lower than what it is in reality, and smoker mortality is higher than what it is in reality.

You may still say, so what, as long as I get back to the aggregate level of mortality that I am looking for, that is OK. In fact that really is true, but what you have done is subsidized the nonsmokers with the smokers. If you have a different distribution going forward, then you are obviously going to end up in a situation where you have less mortality covered or more mortality covered than expected. Considering there are generally more nonsmokers as we go along, the tendency would be that you would have less mortality covered than what you will actually experience.

As an industry, when studying smoker/nonsmoker mortality, we tend to put the majority of explanatory weight for the differences on the overall act of smoking. Why? Because we know that smoking has an effect on mortality. However, we must remember that there are other significant factors that play an integral part. To validate such an assumption again, we need to try to isolate key variables in the studies that we use.

The second area I want to talk about is preferred product mortality. Let's expand the concept of comparing groups with different risk characteristics. A natural outgrowth of this concept would be with preferred products. We should start by thinking about how many categories are influencing mortality endpoints within these products. An illustrative set of such categories include blood pressure, cholesterol, total cholesterol to HDL, family history, certain disease exclusions, avocations, motor vehicle reports, build underwriting debits, and tobacco use exclusions.

If you have started to think about the nonsmoker/smoker example and could see how that could get a little bit involved in figuring out which piece is what, consider what has to happen with preferred products. Not only did I list ten different categories here; the categories I listed are generally not of the yes/no variety. There are many different levels of risk within each category with corresponding specific values that could be set.

So when you look at two specific groups encompassing several of these characteristics, how do you determine the mortality to expect? Well, at Lincoln

National Reinsurance Companies, we are regularly presented with opportunities to consider these issues. We must be able to tailor mortality expectations to different companies with a variety of different preferred criteria.

How much difference in price would there be simply from the differences in criteria? To determine preferred distributions, we have created a system that utilized data from SOA experience studies, reinsurance mortality studies, epidemiological studies, protective value studies, 80 years of underwriting research, and a large database of standard nonsmokers.

From all of these data we are able to conduct studies that look at variables independently and, much more importantly, in combination to understand those that are most pertinent and how they interrelate. Our system has the ability to set mortality assumptions for any combination of criteria that I have mentioned. It also allows us to estimate the change in mortality anticipated based on changes in criteria or changes in a number of criteria capitalizing on the benefits of multivariate techniques. Multivariate techniques are useful because they look at many different variables simultaneously and determine the most likely outcome for the combination of criteria being studied, in this case, death.

They also allow us to determine the correlation between variables and, as I mentioned earlier, this is probably the most critical piece. For instance, there may be two variables that are important independently but are highly, but probably not perfectly, correlated. I will give you a simple example: systolic and diastolic blood pressure. You may understand the mortality implications associated with systolic blood pressure. You may know the mortality implication of diastolic blood pressure. If you know both measures you cannot just add that together. There are significant overlaps. Will you get more than if you just have one piece of the puzzle? Certainly. Will you get as much if you just add them together? Certainly not.

So capturing additional information will provide less value if we have already determined the mortality implications through a similar variable. As we gather data on preferred products, the use of multivariate study techniques will be very important and will help us to continually reinforce, update, and improve our system. But also keep in mind that the mortality implications of criteria for any given preferred product continually change and evolve in the marketplace. There are market conditions that act upon that. There are advances in medical technology that act upon that. So it is a continual shifting of sand. Therefore, when you choose a study method you need to be certain that you will have the ability, on an ongoing basis, to evaluate, update, and enhance your process.

The last thing I want to touch upon regarding preferred products is that of the self-selection process, frequently done by brokers, that occurs between companies. That is, if a company's preferred criteria is out of line with the marketplace, borderline risks may be attracted and the resulting mortality will be higher than the criteria would indicate as there will not be a normal distribution of risk. Self-selection causes the mortality to be centered at the high end of the risk spectrum as there will be a preponderance of people who do not qualify for another company's criteria but do qualify for the company that has a more aggressive or forgiving criteria.

If we think about that a little more, I do not care whether it's a substandard class, a standard class, or a preferred class; it really doesn't matter what class. If there are no market conditions working on these risks, you are going to have some risk spectrum, and you are going to have hopefully some normal distribution of risk.

If you have some other forces working on who gets into the pool of risk, you are not going to have a normal distribution of risk. You are going to have risk at one end or the other of the risk spectrum. Does that mean that Diane, as an underwriter, has misclassified these people? Certainly not, she has classified these people correctly, but you still end up with more people at one end of the spectrum than what you anticipated.

It can work in the opposite direction as well. It can be at the high end of the risk spectrum, it can be at the low end of the risk spectrum, and to a certain degree, it does not really matter.

What really is important is that you understand that you are going to have a shift in your distribution. Your underwriting requirements, your preferred criteria and, most importantly, your pricing assumption must all hang together. If they all hang together, then you are going to be fine, but if one of them is out of line with the others, then you are obviously going to have problems.

The third and final area I want to touch upon is that of secular improvements. The industry sometimes puts too much weight on the effect secular improvement has on mortality experience over time, when in fact there are factors in addition to the continual secular improvement that can affect our results. Therefore, we need to accurately account for the impact these factors have. Here is this repetitive theme that I have going on. This can be a difficult task given the other items that I have talked about so far, but let me give you some examples of factors that are easily attributed to secular improvement when studying the mortality of two groups over different periods of time.

The first one is the obvious one: there has been a decrease in the number of smokers, particularly since the 1960s. So if you are not looking at nonsmoker/smoker distinct data, or if you're only looking at aggregate data, it is obvious that the older block of business that you are looking at is going to look far worse than the newer block simply because of the fact that you are going to have more smokers in the older block than you are going to have in the newer block.

Also, changes have taken place in underwriting. I think there was a session yesterday titled something like "We Came for AIDS, we Stayed for Liver" or something like that. Consider how much additional information we get out of blood testing because of the AIDS epidemic that started ten years ago or so. We not only find out about things like HIV, but also cocaine, nicotine, liver enzymes, alcohol markers, blood lipids, and hepatitis. And there have been various other underwriting tools that have improved and changed over time.

So even though there has been secular improvement, the changes in underwriting requirements have produced mortality improvements greater than that created by secular improvement by itself. Let's think about it another way, and let's throw out HIV altogether because I don't want that to get in the way of what I am talking about here.

Let's assume we have two different groups of applicants. The first group we are going to underwrite using today's standards. Again I'll give an illustrative example here. The second group is going to be underwritten using the standards of 20 or 25 years ago. Will the mortality of these two groups going forward be the same? Obviously not. Does secular improvement have anything to do with the differences? Probably some, but not the majority.

Another example is the reduced concentration of preferred risk in the in-force block of business that was written in the mid-1980s or so. This occurs because very healthy risks can lapse their old policies and migrate to new preferred products at a much lower premium. The impact this has when studying those two time periods of mortality obviously is that you have taken the best risk out of the older block of business. Therefore, it is going to look like the improvement in mortality has been much greater than what it actually has.

This actually leads me to my final example, which is the opposite. There is an increased concentration of preferred risk in the in-force of recently issued business. This not only comes from the people that have replaced older policies, but it also has attracted people who have been sitting on the sidelines to get in and purchase policies because of the low rates they can get.

I'll illustrate my point here regarding secular improvement. The most recent SOA data published, which covers experience from 1983 to 1988 versus previous data from 1980–85, would lead one to believe there is about a 2.5–3% improvement per year in medical select lives. Remember that I am focusing on medically examined select lives.

We believe that about half of this improvement is really due to the other factors that I talked about, and half of it is truly due to secular improvement. Going forward then, we expect virtually no secular improvement at the youngest ages, as advancements in medical technology have little to do with the current primary causes of death. Again remember I am talking about medically examined lives, so the impact of HIV and home testing is at least minimized with medically examined select lives.

If we think about the types of causes of death that happen at the youngest ages, they tend to be violent deaths, accidents, suicides, homicides, etc., where advances in medical technology is not going to have much of an impact. In turn, we expect the secular improvement to peak out at around issue age 55, as medical advances will continue to help these ages the most. Finally, we expect the mortality improvement to decrease for older issue ages.

Now it is a fact that there has been improvement in mortality and secular mortality for the last several hundred years, and this is likely to continue. My point though is to make sure that when you extrapolate past experience to future expectations, we account for factors that can easily be viewed as secular improvement and separate them from factors that reflect changes in the underwriting process.

I hope I have illustrated the subtleties that go into correctly interpreting mortality studies. Because good mortality management is such an important part of a company's profitability, it is really easy to see why a careful analysis is so vital. That leads us to the end of our prepared remarks.

From the Floor: My question is directed towards the preferred study that Mr. Klein was referring to and the process that they are developing, specifically preferred tobacco categories. I have seen things where a preferred tobacco was somebody who was characterized as a light smoker. I am not sure how they go about determining that in the process of underwriting versus somebody who could smoke four packs a day, but would otherwise qualify for preferred underwriting because his cholesterol is 300 and blood pressure is 120 over 80. I am curious how you handle that in your studies. Are you going to have separate preferred breakdowns on the tobacco groups? Certainly a mortality differential would be substantial with that.

Mr. Klein: Your question is based on the mortality study we are looking at?

From the Floor: Correct. I have seen very few preferred mortality studies. Obviously there has not been much done to date and I am just curious on how you are going about developing that on a preferred tobacco side?

Mr. Klein: In terms of the survey that we did, we have a range of criteria that companies are using, and it is all over the place. In terms of the preferred mortality study, we really would look at the different nicotine levels and keep track of that. We could check the mortality at various nicotine levels. The big thing with the mortality study is that we are trying to leave it as wide open as possible--let companies decide where preferred should be. Where should cut-offs be? And it could be used to compare tobacco versus nontobacco. Maybe minimal levels of tobacco are not that bad. I tend to doubt it, but we may find that in the results. I hope that answered your questions.

From the Floor: I was just trying to get a feeling for where preferred tobacco falls in the industry. I have one more quick question for Diane. We all know that there is a certain percentage of exceptions made in underwriting and the preferred category. In your experience, of the preferred policies that get issued, are perhaps 10% exception cases?

Ms. Hobbs: I am really not a numbers person. I do not think it's as much as 10%. I really do not think it's that high. I think it's perhaps more towards 5%, if that. I would just bring up the discussion in your company and find out what they are doing. You know there is a lot of pressure to do that, and you know good underwriters are not going to fall under that pressure all the time. But I keep a little chalkboard in my mind with certain agents that I have, and we put little marks, one for you and one for me. We try to scratch each other's back. And I certainly do not do anything that is way out of line. There is just no way that we will do that, especially with today's pricing.

Mr. Klein: One thing that I want to add to that is some companies do have built-in exceptions to their preferred criteria, and as long as they are known up front and priced for, you will be fine.

You can make some exceptions. One typical exception is if you cut off cholesterol at 240. Some will allow up to 250 as long as the total cholesterol to HDL is within a certain range. So there are some built-in exceptions.

Mr. Jaymes Hubbell: This question is probably best directed to Jay. The simple question is, how do you handle in your mortality studies smokers who then qualify for nonsmoker status and make a switch over to a new dividend scale or policy?

I'll give you a little background here. The thing that hit me between the eyes was that it was brought to my attention that we had a smoker qualify for a nonsmoker rates. The reason was because the person was suffering from emphysema, has not been smoking for the required period, so he qualified and then died two months later.

And the way we are handling our mortality studies, this person went into our nonsmoker mortality class, in the past exposure, and in everything. Obviously, that is tainting the nonsmoker mortality. I am just wondering, in the industry, are our whole industry mortality studies suffering from the same deficiency?

Mr. Biehl: If the premium classification was changed to nonsmoker we would use the nonsmoker class. We count the exposure as smoker while getting smoking rates and nonsmoker when getting nonsmoker rates. In this case, it is unlikely that the underwriter would change the classification to nonsmoker.

From the Floor: Does anyone keep mortality statistics by agent, by underwriter, or even by product, line, policy, or form? Diane, I was wondering if you did that in your operation?

Ms. Hobbs: Not that I know of. Not mortality statistics. Certainly claims are looked at. We have audits. Most companies have an audit program, and I am sure you can get a copy of the audit. Proper management should take care of any trends that they see that are not good. As far as mortality statistics per agent or per underwriter, not with my company that I know about.

Mr. Klein: I have heard of claim studies by agency. I believe some companies are doing that. I am not aware of anything by underwriter.

From the Floor: There is a second comment that somebody made that said that the price has to be acceptable to the agent. Because the insured is the one who is forking over the money, and not the agent, I am wondering if there could be a discussion about why a price that is acceptable to the insured seems to have a lower priority than a price that is acceptable to the agent?

Ms. Hobbs: I think that was my comment. I did not mean to rule out the proposed insured. In my company the agent is my customer. That does not mean that we do

not pay attention to the proposed insured. But the agent is the one that controls the sale, and that is who we usually direct any of our programs toward.

From the Floor: I know that some companies will not allow agents to illustrate their very lowest rate, to avoid disappointments if the lowest rate cannot be offered. Do you have a practice in that area?

Ms. Hobbs: Well our agents are independent brokers. So they do what they want to do. Some of them do. I do know very few will automatically illustrate standard rates. You know that is just not going to work today if they are in the term market right now. They will not even get past that illustration. So they more or less have to illustrate their best rates.

Obviously we would prefer it if they would be educated enough to know that if this person has a treated high blood pressure preferred is not going to be available. By educated I mean knowing our company rules, our guidelines, and at his first point of sale he should say, "Here is the best rate you are going to get from this company." But that is the part of the marketing and the pressure that I was referring to. That is not being done, and that is what we have to address. That is why we had to say no quite a bit.

Mr. Robert Jay Thiessen: It seems as though a lot of the price competitive pressure assumes that the people who are buying the policy are constantly scanning the insurance marketplace to see what prices are being offered. That seems to me to be excessive. Does that really happen?

Ms. Hobbs: It really does happen. The Internet that Al was talking about is out there. Anybody that has access to the Internet can log on right now and see the list of the premiums, and they go for the cheapest one. We try to come through for them. Sometimes we can and sometimes we can't.

Mr. James B. Keller: The question I have is for Diane. I believe most companies require more than just a statement of stopping smoking for the required period of time to qualify for nonsmoking, and that there actually must be a statement of good health or a requirement of going through some type of medical exam. Am I mistaken on that? For instance, the gentleman that had emphysema. I think most companies would not allow the change to nonsmoker premiums.

Ms. Hobbs: Exactly, if he had originally been issued prior to the diagnosis of emphysema. Is that what your example was? Or was the emphysema current on his application? There is a big difference there.

Mr. Keller: I think that in that case there was no medical evidence requirement.

Ms. Hobbs: OK, so it was current, and he admitted to current emphysema. OK, well that is totally different. Say I had already placed a smoker who was healthy, other than being a smoker at the time, and he came in two or three years later, whatever our criteria is, to get nonsmoker rates. If, in that time, he had developed an adverse impairment such as emphysema, I certainly would not make the rate reduction, and that is our rule. And I would imagine most companies are following that rule also.

From the Floor: This is sort of an observation and a question for Diane. It seems to me, in the business situation you described, the broker had another company lined up. Therefore, the problem that you might have can partly be solved by giving the broker a rapid response, and he should appreciate that. In other words, if you tell him "no" but you tell him "no" quickly, that is a lot better than trying to string him along. Then he can give good service to the client. Unless you have a huge preponderance of your business in these incredibly difficult categories with multiple impairments, and unless these people are in their 50s or 60s, you should probably only be getting 5–10% or less of your business in this problematic category, unless there is something I am missing in terms of your marketplace or your overall environment.

The gist of what I am saying is, if you can handle a broker quickly, this can probably get you away from taking borderline risks and improve your overall portfolio. Perhaps there is something I am not understanding about your market.

Ms. Hobbs: I think you are quite accurate about the 5–10%. In my little world that 5–10% takes up my entire day. That is what I spend my time doing, and I still say that there are those brokers that will take all their business somewhere else, based entirely on how I react to his particular problem. So you are accurate. There certainly is a lot of other good business coming in, but I am addressing those problem areas. It may be a small percentage. But you know small percentages can mean big stuff.

Mr. Carl Herman Rosenbush, Jr.: When the preferred mortality study is being worked on, will there also be an update to the 1975/1980 mortality study?

Mr. Klein: I believe the update to the 1975/1980 mortality study is currently being worked on. Jack Luff is nodding his head in the back; he can probably address it better than I can. I believe there have been some delays in that study due to data problems, but we should have an update to the 1975/1980 table in about one year, according to Jack.

Mr. Bruce J. Holmes: Two things, one just to expand. There was an individual life experience committee meeting, and there was a subcommittee formed to construct new 1985/1990 basic tables. There will be an update.

Second, this question is directed at Al. On the preferred mortality study, I was wondering how you were going to overcome what I see as the chief difficulty and that is, with varying companies having different definitions of preferred. Are you going to have different groups that will have more liberal versus more conservative definitions of preferred?

Mr. Klein: What we are trying to do is eliminate all definitions of preferred by taking a look at the laboratory data on each and every applicant or insured, and monitoring each of those criteria. We would not study the preferred criteria, but rather each of the lab results at varying levels. As I envision it, we would send the raw data, if we can, on a confidential basis to all participating companies to sort any way they want to determine what truly is preferred mortality.

This is the way that I see getting around all of the different definitions of preferred. I am not sure we can rely on a specific criteria being "preferred" just because one company says that it is, nor do I think that we should rely on it. So, I am trying to give everyone data that I hope will be useful.

From the Floor: Al, to follow up on the last question. Does this mean you will be relying mainly or will the preferred mortality study be relying mainly on lab test results and other things like that? Will items like family history and avocations not play as large a part as things that can be tested numerically through lab values?

Mr. Klein: Yes, the lab data will be the main criteria that we collect. However, I would like to get personal and family history information if we can. I am not sure if these data would be available. It is still an open issue as to how much data we can collect from the companies. But we would like, as I said before, to collect as much data as possible and monitor as many things as we can.

Mr. Mark D. J. Evans: On our mortality, when we analyze it we find that our excess mortality from smoking is less than what the Society observes. However, when we do those studies we do first control for policy size and other similar factors. When you have controlled for these factors in your studies, are you finding that your results then show that smoking has less excess mortality than what has been shown in some of the other literature? And what excess mortality, roughly, on a percentage basis, are you coming up with?

Mr. Biehl: Well I do not know off the top of my head what the excess percentage is. I can't really answer that. But I would agree that as you increase the amounts, the effect of the smoking decreases. The smoking mortality decrease is probably driven for a couple reasons. One is the additional underwriting requirement. Second, you tend to have people taking better care of themselves, even if they are smoking, as they buy increased amounts of coverage.