Of Special Interest

The issues presented by the possibility of "genetic testing" playing a role in life insurance underwriting have engendered an unprecedented degree of concern in many arenas. Medical directors are uniquely qualified to bring the scientific, business and ethical issues into perspective for fellow physicians and various other publics. Dr. Pokorski has much experience in explaining this context to a potentially adversarial audience, and this paper is the text of such a presentation. Perhaps his general approach and the terminology employed can serve as a model to reduce the sense of stress or enhance the effectiveness experienced by others who will find themselves in similar pursuits. Perhaps some will seek such a role as we address the educational challenge of assuring that pertinent societal actions are taken in a setting of optimal understanding. -ed.

USE OF GENETIC INFORMATION BY PRIVATE INSURERS

GENETIC ADVANCES: THE PERSPECTIVE OF AN INSURANCE MEDICAL DIRECTOR

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The opinions expressed in this article are those of the author. They are not necessarily shared by any insurer or the insurance industry in general.

Principles of Insurance

A GREAT deal of the present concern regarding future use of genetic information by insurers stems from a lack of knowledge of the basic tenets of private, voluntary insurance. For this reason, I would like to briefly overview some of the fundamental principles of private insurance before directly addressing issues associated with advances in genetic technology.

Insurance is intended to provide financial protection against unexpected or untimely events. In particular, life and health insurance are purchased not in anticipation of imminent death or illness - although it's understood that death is inevitable and serious illness is fairly common. Rather, life insurance is obtained to protect dependents or business associates from the financial disadvantages that can occur in the event of unexpected death, and health insurance is meant to provide protection in the event of a significant financial loss associated with an unanticipated illness.

How does private insurance work? Basically, policyholders pay a relatively small, affordable amount into a common "pool" and the benefits of that pool are distributed to the unfortunate few who die (life insurance), become disabled (disability insurance) or develop a serious illness (health insurance). In this way, the financial loss attendant to these events can be mitigated even through the events themselves cannot be prevented.

But not all people are alike. The likelihood of occurrence and magnitude of loss will vary. Some people will apply for large amounts of insurance and others for small amounts. Some will be young and others elderly. Occupations and avocations will modify the likelihood of unexpected death or illness, as will health enhancing activities such as exercise, proper diet, and nonsmoking. And some applicants will already be in poor health or at known significant risk of developing poor health in the future.

These different factors are evaluated by the insurance company through a process known as "risk selection and classification." The more common term for this is "underwriting." By means of this process, the insurance company determines the appropriate contribution to the risk pool by an individual policyholder.

The fundamental underlying goal of the underwriting process is equity; policyholders with the same or similar expected risk of loss are charged the same. The higher the risk, the higher the premium. The lower the risk, the lower the premium. Note the distinction between equity and equality. With equity, premiums vary by risk; with equality, everyone - young/old, healthy/ill, and with/without associated factors that significantly increase the likelihood of experiencing an early claim - would pay the same price.

During the underwriting process, risk classifications are created that recognize the many differences that exist among individuals in order to place applicants into groups with comparable expectations of longevity and health. Although the risk presented by any single
individual cannot be determined with absolute precision, if people are assigned to groups with reasonable accuracy and the total number of insured persons is large, then the estimate of the risk of the entire group of insured people is likely to be accurate.

Traditionally, characteristics of importance for risk classification have included factors such as age, gender, health history, physical condition, occupation, the use of alcohol and tobacco, family history, and serum cholesterol. These factors serve to identify individuals that have a greater or lesser likelihood of premature death or illness in the future. Because of this process, costs are held down for the great majority of insurance applicants since premiums more closely match the risks taken on by the insurance company.

Adverse selection, also known as antiselection, is a consideration that is of great importance to insurers. Adverse selection is a well-known phenomenon in which people with a likelihood of loss greater than what they are charged for tend to apply for or continue insurance coverage to a greater extent than do other people. It occurs when applicants withhold significant information from the insurer and/or choose amounts and types of insurance that are most beneficial to themselves. For example, someone with a history of heart disease is more likely to apply for insurance and/or apply for a greater amount of insurance coverage than he would have otherwise done because he knows that he is likely to experience a claim in the foreseeable future. If he fails to mention this important information on his insurance application, and the insurer does not otherwise become aware of it, the premium charged by the insurer will be insufficient to cover the risk involved. This premium deficit would be made up by the others in the pool who have paid their fair share.

Adverse selection also occurs if the insurer is not permitted to obtain or use information that is pertinent to the risk being considered. In the example above, the premiums charged would be insufficient to cover the risk involved if the insurer was not permitted to ask the proposed insured and his attending physician about the nature and severity of the heart disease, or if this information could not be used after it had been obtained.

What would happen if the insurance company was unaware of important unfavorable information that was known to the applicant? In these instances, serious errors in risk classification would occur. Certain individuals would receive their insurance at unreasonably low cost. More claims would be filed than were expected. And if a significant number of these risk classification errors were made, the financial status of the entire insurance pool would be adversely affected.

But couldn't premiums simply be increased across-the-board to cover the payment of these unanticipated benefits? Where permitted, an insurer could increase premiums to reflect these revised claims expectations, but this would encourage potential insurance applicants who are at lower risk to either buy from a different seller or exit the insurance market altogether. And with the exodus of the lower risk insureds who were subsidizing the individuals who had knowledge of their unfavorable risk status - individuals who had adversely selected against the insurance pool - a further escalation of premiums becomes necessary. More potential applicants then decide not to apply for insurance.

Eventually, a point is reached in this upward spiral where the desired coverage becomes unavailable on any reasonable premium basis, or the insurer becomes financially unsound. This "assessment spiral" phenomenon is not a theoretical possibility. It actually occurred in some companies during the 1880's and early 1900's because of poor risk classification practices. A more recent example of the effects of failing to properly classify risks is provided by the recent failure of a moderate-size casualty insurer located in Chicago. The company originally specialized in individual disability income policies. In the early 1970's, new management took over the company and decided to use its casualty authority to write auto insurance. They believed that people living in some of Chicago's neighborhoods were being charged auto insurance premiums that were too high. Based on this belief, management ignored the actuarial statistics and evidence, and wrote auto insurance for drivers in these neighborhoods at rates that would have been correct for a population with far fewer auto accidents. As a result, the company failed and everyone was hurt financially. All the company's lines of business were affected, including its disability income line. Many disabled individuals who had long depended on income payments lost those benefits.

The current risk classification system permits private insurers throughout the world to respond fairly to valid cost and experience-related differences among persons. To help guide actuaries in developing this system, the actuarial profession, through the Actuarial Standards Board, has adopted a risk classification standard of practice (No. 12). This standard enumerates three basic requirements for an appropriate risk classification system. First, risk classification must be fair. Secondly, it must permit economic incentives to operate, and thus encourage widespread availability of coverage in the
marketplace. Finally, risk classification must do its part to keep the insurer solvent.

To achieve these ends, a sound classification system should be based on four principles. First, risk classification should reflect cost and experience differences. For example, employers of coal miners would pay more for their unemployment insurance than employers of computer technicians because coal miners historically have much higher rates of unemployment.

Secondly, the system should be applied objectively and consistently. By this principle, males of the same age with similar health histories should be charged similar rates for life insurance.

Thirdly, the system should be practical, cost-effective, and responsive to change. This means there are limits on how much effort and money can be spent to classify a given risk, and risk classification systems are dynamic. For instance, when polio was eliminated as a public health hazard, the system changed to reflect that development.

Finally, antislection should be minimized. As noted earlier, sound risk classification systems should limit the ability of an applicant to take an unfair financial advantage at the expense of the insurance company or other policyholders already insured by the company.

Private and Public Insurance

Many people have come to expect that private life insurance and, to a greater extent, private health insurance, is an entitlement, i.e., that all citizens have a right to expect that affordable insurance protection will be made available to them regardless of age or health. This expectation is based to a considerable degree on misconceptions regarding the nature of private and public insurance programs. A brief discussion of these two different types of insurance will help clarify their relationships.

Private (Voluntary) Insurance

Participation in a private commercial insurance plan typically is voluntary. You choose whether or not to belong and determine how much insurance protection you would like to purchase. Since all of the funds used to pay future claims against the insurance pool are derived either directly or indirectly from premium payments, risk classification is essential in order to ensure that the premium charged is proportionate to the risk assumed. The potential for adverse selection is very real and an important concern of the insurer. Finally, private insurance companies are businesses that are accountable to their policyholders and stockholders. They must generate a profit for those who have invested in the company. If insufficient premiums are collected, a private insurance company, like any other business in which liabilities exceed assets, will cease to exist.

Public (Involuntary) Insurance

American society has used private means to fulfill certain general social welfare needs such as payment for health care. But private health insurance has never been a completely adequate or universal method of providing access to the health care system, nor has it been a perfect mechanism for covering all diseases. The poor, disabled, aged, or seriously ill cannot always be covered by private means. For this reason, society has supplemented private insurance with publicly supported programs such as Social Security, Medicaid and Medicare.

Participation in a public insurance plan is typically not voluntary. You do not choose whether or not to belong nor do you determine how much insurance protection you will have. Rather, participation is mandatory and benefit amounts or entitlements are determined by the law establishing the program.

Since everyone - good risks, poor risks, even those suffering from a severe or terminal illness - is automatically insured, and there are no options regarding the amount of benefits that will be paid, adverse selection is not a concern. Premiums are charged in the form of income and social security taxes, or so-called "insurance premiums," but they are not and need not be proportionate to the risk assumed. Risk selection is not required and no profit motive exists.

These points are summarized in the table below:

<table>
<thead>
<tr>
<th>Comparisons Between Private and Public Insurance</th>
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<td><strong>Examples</strong></td>
</tr>
<tr>
<td>Participation</td>
</tr>
<tr>
<td>Amount of Insurance</td>
</tr>
<tr>
<td>Risk Classification</td>
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</tbody>
</table>
Potential for Antiselection Yes No
Profit required Yes No

Even given these fundamental differences between private commercial insurance and public insurance, couldn't legislators or regulators simply mandate that private insurers provide coverage - at rates appropriate for lower risks - to those individuals who have learned from their attending physicians or an insurer that a genetic test has identified a higher likelihood of premature death or illness? Or, in an action having the same consequences, couldn't insurers be prohibited from asking applicants and their attending physicians for the results of prior genetic tests or ordering their own tests?

There seems little chance that this would work in a private, voluntary insurance industry. This mandated subsidization of unfavorable risks by good risks would be tantamount to an indirect governmental tax levied solely against insurance policyholders and stockholders. The impact of such an action may not appear significant at the outset, but its cumulative effects would be dramatic.

Under such a scenario, many potential policyholders - primarily favorable risks who would be asked to subsidize the higher, underpriced risks, and people with other health impairments such as cancer and heart disease who pay a premium commensurate with their increased risk - would realize that they are being overcharged or treated unfairly, and choose not to buy insurance because coverage has now become unaffordable for them. Why? Wouldn't the premium increase be relatively small? Although such a plan for mandated benefits probably wouldn't result in significantly higher costs at first, premiums would gradually and progressively rise as more and more favorable risks decide not to purchase insurance. The relatively large base of good (standard) risks is progressively eroded, it becomes increasingly difficult to subsidize the poorer risks, and premiums increase again. The situation worsens even more as some companies decide to stop writing this type of insurance coverage altogether since a profit can no longer be expected.

Such a legislative or regulatory mandate would force insurers to provide coverage (because of the effects of adverse selection) for a large group of people at a price that would be insufficient to cover the claims that would occur. These additional costs would be passed directly to other policyholders with a subsequent decrease in insurance affordability and availability.

Individual and Group Insurance

The use of genetic tests by employers is an important topic that will be vigorously debated in the future. Although this is yet another issue not directly related to the use of genetic tests by insurers, it has nonetheless raised concerns that people who are insured through their place of employment (commercial group insurance) may find their coverage jeopardized. A brief overview of the differences between individual and group insurance is provided below in order to address this issue.

For individual life, disability, and health insurance, an applicant applies for whatever amount of insurance coverage that he or she feels is needed (within broad guidelines established by the insurance company). An application form is completed, medical questions are asked, tests may be ordered, and an attending physician's statement may be requested. The premium charged is based on factors such as age, gender, health history, general physical condition, and occupation.

Group life and health insurance is generally divided into two categories: medium to large size groups containing 10-25 or more employees, and small groups.

Under a medium to large size group life and health insurance plan, an employer buys a single policy for his employees. All employees can elect to receive coverage if they so choose. Benefit amounts are fixed by formula and individuals are normally not subjected to the underwriting process described above with the possible exception of those who choose not to participate in the program when they first become eligible and those who withdraw from the plan and later request reinstatement. Rather, the entire group is underwritten according to factors such as the number of employees, age and gender distribution, area of the country, and prior health care costs for the entire group. Once a rate is established, it is typically adjusted ("experienced rated") on a yearly basis depending on claims experience. If claims exceed expectations, rates increase and vice versa. With such a large group, it is expected that some workers will be poor insurance risks. But the majority who are good risks tend to offset these few, thus allowing the insurer to offer coverage to the entire group at an affordable rate. Typically, payment by the employer of part of the cost provides adequate incentive for the good risks to join the insured group.

Small group life and health insurance is different. Since these groups do not have the benefit of a large number of employees among whom the less healthy risks can be shared, claims experience is strongly dependent on
the health of the small number of individuals within the group. For example, if one individual in the group was already ill or at significant risk of becoming ill in the near future, and the insurer was not aware of this information, then the claims submitted by this one individual could far exceed the claims expected from the entire group. To guard against this possibility, in the absence of underwriting, the insurer would have to increase the premium rates for all small groups. The increased premium rates would induce groups with more good risks not to buy coverage. An assessment spiral much like that described earlier for individual insurance would develop. And if such a practice occurred with any regularity, the cost of insurance to small groups would soon become unaffordable. For this reason, the underwriting of small groups shares many similarities with that used for individual insurance, e.g., the need for application forms, medical questions, and sometimes tests and attending physician’s statements.

The principle differences between individual and group insurance are summarized in the table below. The column headed “Group” refers to medium to large size group plans.

Comparisons Between Individual and Group Insurance

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<thead>
<tr>
<th>Participation</th>
<th>Individual</th>
<th>Group</th>
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<tbody>
<tr>
<td></td>
<td>Optional at discretion of the individual</td>
<td>Generally guaranteed as a benefit of employment and high participation common</td>
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<table>
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<tr>
<th>Amount of Insurance</th>
<th>Individual</th>
<th>Controlled</th>
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<tbody>
<tr>
<td>Individual risk</td>
<td>Essential</td>
<td>Generally not done</td>
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<tr>
<td>Classification</td>
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<thead>
<tr>
<th>Potential for Adverse Selection</th>
<th>Individual</th>
<th>Group</th>
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<tbody>
<tr>
<td></td>
<td>Significant</td>
<td>Minimal</td>
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What will be the possible effect of genetic advances on group insurance? Approximately 90% of commercial group health insurance and perhaps a similar percent of group life insurance is sold to medium to large sized groups. The employees within these groups are eligible for insurance coverage as a benefit of their employment. There is no individual underwriting or testing of those who sign up for the program when the group plan goes into effect or when new employees begin work. For this reason, the overall impact will probably be minimal. For small groups, the ramifications are less certain. The effects may be more similar to those experienced in individual life and health insurance.

Types of Genetic Disorders

Conceptually, genetic disorders can be divided into two broad groups: (1) diseases with a genetic predisposition, and (2) genetic diseases.

Diseases with a genetic predisposition (or a genetic component) are those in which the presence of a gene confers an increased tendency to develop a certain disorder. The disorder may or may not develop depending on a variety of associated personal and environmental factors such as geographic location, diet, exposure to harmful chemicals or toxins, exercise, obesity, tobacco use, heavy alcohol ingestion, and so on. A genetic predisposition is often a factor in the development of common impairments such as cancer, coronary heart disease, hypertension, diabetes mellitus, and epilepsy. Together these disorders are responsible for much of the morbidity and/or mortality that is experienced by the insurance pool.

Genetic diseases are disorders in which the genetic component is so overwhelming that it is expressed in a predictable manner without a requirement for environmental interaction. For example, an individual who inherits the gene for Huntington’s disease, cystic fibrosis, or Duchenne muscular dystrophy will eventually develop the disorder regardless of other socioeconomic factors or preventive health measures. Individual genetic diseases are rare compared to diseases with a genetic predisposition, but collectively they are an important cause of morbidity and mortality.

Attending physicians will probably begin to use new diagnostic tests that can identify genetic diseases and diseases with a genetic predisposition shortly after they are developed. Some of this information may be important to private insurers. Why? If this information were unavailable at the time of underwriting, then applicants who knew they were likely to experience early death or illness could buy large amounts of insurance coverage at prices that failed to reflect this increased risk. In the aggregate, this could involve disproportionately large numbers of applicants and/or very significant amounts of insurance. The ensuing claims would markedly exceed projected losses, and everyone within the insurance pool would suffer.

Consider the following scenario:

Suppose that a man who applies for an individual life or noncancelable disability insurance policy has had a
genetic test performed in the past by his attending physician. The results are unfavorable, i.e., the test suggests a significant likelihood of premature death or disability, and the insurance company does not learn about this result. If no other unfavorable risk factors are known in this case, the policy is issued on a standard class basis.

What has happened? Essentially, the principle of equity has been violated. This applicant, with an above average claim risk, has obtained insurance at standard rates. This situation is very analogous to that of an older person who misrepresents his true age and obtains insurance at the rates of a much younger person. It is important to note that he has not suddenly become a standard insurance risk because he was issued standard insurance. Rather, he is a substandard risk who has nonetheless obtained insurance at standard rates because of a failure of the underwriting process.

Although the applicant would be pleased with this arrangement, the other policyholders would be very unhappy with this sequence of events. True, he currently seems in good health, but his unfavorable genetic test clearly identified a significantly increased risk. And since his insurance coverage cannot be canceled once it has been purchased, nor can the premium be increased relative to other policies issued to individuals with similar coverage, it is likely that he will be paid benefits from the pool that are disproportionate to the premiums he has paid.

Issues of Greatest Concern

Genetic advances are forcing society to confront unexpected medical, ethical, and social dilemmas. There are four concerns of particular interest with respect to insurers' use of this information.

How Will Genetic Information Be Used by Insurers?

Genetic information would be used by insurers much like other data that is developed during the underwriting process.

Current tests that may be evaluated include electrocardiograms, liver and renal function tests, blood sugar and cholesterol values, lung function tests and a urinalysis. Related data of interest are age, past medical history, geographic location, occupation, avocation, cigarette smoking, history of drug abuse or heavy alcohol ingestion, hypertension, family history, exercise, weight and data from a physical examination. All of these factors are evaluated, and their potential impact on longevity and health is estimated. The great majority of applicants will be found to present an average risk. Some will be at lower risk, and the risk will be higher for a smaller number or applicants.

Genetic information would be one additional factor that is evaluated during underwriting. For example, suppose a genetic test could identify those at lower or higher risk of coronary heart disease. Favorable genetic information would tend to offset unfavorable parameters such as a high cholesterol level of hypertension. And the converse would be true for those with less favorable genetic data.

Will Genetic Information Affect Someone's Ability to Obtain Insurance Coverage?

It is likely that use of genetic information will not significantly affect the availability and affordability of private insurance coverage. As noted earlier, a great deal of the life and health insurance in the United States is provided on a group basis by one's employer. About 90% of health and 40% of life insurance is group coverage. In these instances, individual underwriting is usually not done. Genetic information, whether favorable or unfavorable, wouldn't be a factor in obtaining coverage.

With individual coverage, genetic information may improve an insurer's ability to select risks in some cases, but I doubt that it will significantly affect the number of people who obtain insurance. As with other data developed during the underwriting process, genetic information might identify more or less favorable risk factors. This information, however, would be interpreted in the context of all of the other data available.

Many genetic diseases, such as Down's syndrome, cystic fibrosis, and sickle cell anemia, strike very early in life and can be detected by means other than genetic tests. Having genetic tests available might not result in many additional persons being identified as being at risk for these diseases. Other genetic diseases develop only late in life, with the result that young persons who are predisposed to them may still have a long life expectancy. And if they have passed the age at which the disorder usually develops their life expectancy may be normal.

There are some genetic disorders, such as Huntington's disease, for which additional genetic information might increase an individual's chance of obtaining insurance. For instance, if one parent had Huntington's disease, 50 percent of the children are at risk for this same disease. These individuals are very high mortality risks and may not be able to buy individual life coverage. A favorable
Many genetic predispositions involve only an increased likelihood of developing a disease, such as lung cancer, which is very uncommon in the average person. In many cases, this may not itself represent a very large increase in life insurance risk, especially if the disease is one which, like heart disease and many forms of cancer, tends to strike at relatively advanced ages.

Since genetic information may help insurers evaluate risks more precisely, there may be fewer rejections in the future than there are now. One reason for the rejections that occasionally occur now (3 percent of individual life insurance applications) is that, in high risk cases, it is often impossible to make a close estimate of the level of risk on the basis of present knowledge.

Presumably, an applicant would not accept a policy bearing a very high premium charge unless he/she had reason to believe that, high though the premium might be, the insurer has nevertheless underestimated the risk. The insurer, therefore, may reject such applicants rather than make an offer on what is highly likely to be (for it) a losing proposition. With greater precision in risk evaluation, the insurer would have less fear of accepting certain risks.

Finally, it is worth noting that private insurers - and not the government or other social agencies - have been responsible for initiating efforts to provide insurance coverage for people with illnesses that had been previously considered uninsurable. For example, at the turn of the century, diabetes mellitus was often fatal soon after its onset. After insulin was discovered, insurers were able to study the medical literature to determine the many different patterns of longevity and health among those with diabetes. Because they could analyze this data, classify the risks appropriately and charge a price commensurate with the risk, insurers began to insure diabetics. The same can be said about coronary heart disease, hypertension and many cancers.

Will Confidentiality of Genetic Information be Maintained?

Insurers have used genetic information in the underwriting process for a long time. Applications for insurance policies frequently seek information relative to family medical history, cholesterol, hypertension, coronary heart disease, cancer, diabetes, and many other impairments with a genetic component. Applicants' medical records, obtained in connection with some applications for coverage, also may reveal information relative to genetic impairments. Historically, insurers have used this information responsibly, protecting its confidentiality and relying upon it to make fair underwriting decisions. The lack of complaints about any breaches of confidentiality bear witness to this fact. Given this fine track record, I think the insurance-buying public can anticipate that any genetic information seen by insurers will be treated with the utmost confidentiality.

Is Use of Genetic Information by Insurers Discriminatory?

Much of the concern about use of genetic information by insurers stems from the word "discrimination." In today's world, this word often has very negative connotations, but it's a word with several meanings, some negative, some positive.

Private insurance, by its very nature, is recognized as being discriminatory in that individuals who represent a higher risk are routinely charged a higher premium rate. Risk selection is properly performed and there is "fair" discrimination when the applicant's expected future mortality and morbidity have been properly estimated and reflected in the premium rate. "Unfair" discrimination, on the other hand, is not and should not be permitted. Unfairness in the insurance context occurs when equal risks are treated differently and/or unequal risks are treated equally. In other words, unfair discrimination occurs when there is no sound actuarial justification for the manner in which risks are classified.

Comments about discrimination with respect to insurers' use of genetic information highlight the mistaken impression that identifying differences in risk is somehow bad or unfair. They also indirectly express the belief that it is acceptable to "discriminate" against those with health impairments such as cancer or coronary heart disease by charging an extra premium even though these disorders are no more one's fault than are genetic impairments. Distinguishing risks is precisely what insurance companies must and, in fact, are expected to do. It is because insurers are able to identify these differences that insurance coverage can be offered to so many people at affordable rates.

Who suffers if an insurer doesn't charge an appropriate premium solely because the applicant's impairment has a genetic basis? Healthy individuals paying standard insurance rates, policyholders who are making additional premium payments because of some non-genetic health problem, and, in cases involving genetic data, every applicant whose genetic information is favorable (which will probably include the great majority of ap-
All of these people would be forced to pay higher rates so that those at greater risk can pay less than required by their risk. The attractiveness of private insurance for everyone, healthy and impaired, begins to decrease.

Insurers try to charge premiums commensurate with the risk. Applicants with a greater likelihood of experiencing an early claim are asked to pay more into the insurance pool since their risk is greater. It is this probability that is important, not whether a disease has a genetic basis or whether it can be controlled. For example, an individual with coronary heart disease or a recent history of cancer has an increased risk of death and illness. An insurer doesn't ask if it is or isn't the individual's fault. Likewise, someone with a similar probability of early death or poor health due to a genetic disorder would be charged a similar amount. Again, fault or lack of control is not an issue.

Within the context of discrimination, the point is sometimes raised that society has prohibited insurers' use of certain factors over which a person has no control, notably, race, gender, and religion, even though these are characteristics that would be useful when trying to classify risks. Because of this precedent, as the argument goes, society should also prohibit use of genetic information to classify risks.

Let me address these points individually.

With respect to race, it is true that insurers are legally prohibited from basing underwriting decisions on race. It is also worth emphasizing that insurers are very supportive of this legislation. The reason is this: race by itself is not a risk factor in determining one's expectations for health and longevity. Differences in morbidity and mortality among races are explained by the presence of health impairments. Laws prohibiting use of race during the underwriting process are in essence a confirmation of the principle of equity: they state that risks that are equal, i.e., the intrinsically equal morbidity and mortality among races, must be treated the same. Note that they do not require that insurers treat different risks the same, as would be the case if such a philosophy was applied to those at greater risk or death or illness because of cancer, heart disease, or a genetic impairment.

Regarding gender, epidemiologic experts have concluded that there are intrinsic gender differences in morbidity and mortality risks. These gender-related differences are recognized in the vast majority of jurisdictions. As of July 1991, there were no federal laws or regulations mandating unisex pricing for life or health insurance products, and only one state - Montana - has enacted unisex legislation that affects life or health insurance. This bill was passed in 1983, and there have been repeated attempts to repeal it since that time.

I don't know if insurers ever used religion to classify risks. The members of some religious groups such as Mormons and Seventh-Day Adventists have high average longevity, probably attributable in large part to avoidance of alcohol and tobacco use. Such legislation would presumably prohibit insurers from offering lower cost coverage solely on this basis.

Conclusion

Diagnostic and therapeutic advances in the practice of medicine are both inevitable and desirable. Genetic testing represents such an advance. It will be thrust on a society that has had little experience in dealing with many of the complex ethical, medical, and social issues that will arise. Many facets of society - including the private insurance industry - will need to study the potential impact of this new technology and adapt. At this time insurers are no more able to answer the difficult questions concerning future use of genetic testing than is any other facet of society. In fact, most of the questions themselves are still unknown. We will continue to study the issues and await further developments. This can be the only reasonable course of action until significant technologic advances are made and the nature and use of genetic testing becomes more apparent.

What insurers most fear in the future is that people will learn of important genetic information outside the context of insurance and then successfully use this medical knowledge to gain an undue advantage in the application process. This is unfair both to insurers and other applicants and policyholders who must pay higher premiums in order to issue coverage to those who failed to disclose this information. Americans choose the type of insurance system they want. If they choose a private insurance system, it must be one that makes sound decisions about which risks it will insure. A system that does not classify risks will at some point cease to be an "insurance" system. Whatever entitlement program remains will be very expensive because it will allow unrestricted access to coverage by those with very serious diseases, some of which are genetic in nature.

There are those who would suggest that genetic information not be shared with insurers. This is in spite of the likelihood that this information will be favorable in the great majority of cases. As noted in a recent editorial dealing with ethics and the human genome, "A rule that
insurance companies should not seek genetic information about potential policyholders would probably be unenforceable, would be unjust to those free from defect and would probably be unconstitutional in most advanced countries. The policy adopted in the past by all countries where private insurance is sold is not to deny insurers access to medical information, but rather to require that the medical information utilized be accurate and up-to-date, and that underwriting decisions be based on sound actuarial principles rather than arbitrary assumptions. These same requirements of fairness are appropriate for genetic information as well.

References