



A Shock

The cost of health care and health insurance continues to rise. A traditional system of health insurance risk classification that discourages healthy lifestyles and preventive treatment doesn't help.

By Howard J. Bolnick

John is an active, healthy 45-year-old who vigorously exercises four to five times per week. He began exercising three years ago when he was diagnosed with high blood pressure. John's exercise regime, his loss of 10 pounds (although he could probably lose a few more), and his adoption of a heart-healthy diet have brought blood pressure readings at his last annual physical exam down from 170/100 to 135/85 and also reduced his total cholesterol level from 235 to 190.

John and his physician are very pleased with the positive results of his lifestyle changes. His doctor tells him that he has significantly reduced his chances of serious heart and circulatory disease. John was pleased with himself, too, until he applied for individual health insurance.

Based solely on the underwriters' review of his medical records, one insurance company offered coverage with a 25 percent additional premium; a second offered coverage with a 10 percent extra premium, plus an exclusion of all circulatory problems.

Matt, who is the same age, is a bit overweight (not too much), doesn't exercise, and loves junk food. He hasn't been to a physician in 10 years. Consequently, he has no idea that he, too, has high blood pressure (170/100) and a total cholesterol of 235. Nor do the two insurance companies Matt applied to for individual health insurance. Though they're the same two companies that rated John, they offer Matt individual health coverage at standard rates and terms.

Is it fair or defensible for John to be classified substandard and Matt to be offered standard coverage? Is there something more basic going on here than an isolated risk classification anomaly?

to the System

A Delicate Balance

Proper risk classification using health information gathered in the application process is the most important risk management tool insurance companies use to sustain viable individual and small-group health insurance markets. Without some combination of risk selection, risk rating, and modification to contract terms based on individuals' health status, these vulnerable markets would almost certainly fail.

At the same time, balancing adequate risk classification with public concern over the negative consequences of health underwriting makes insurance potentially unavailable or unaffordable, particularly to unhealthy, older, and less well-off customers.

Being keenly aware of market frailty, insurance companies strive to balance their need for adequate risk classification with public concern for negative consequences of health underwriting. This makes insurance

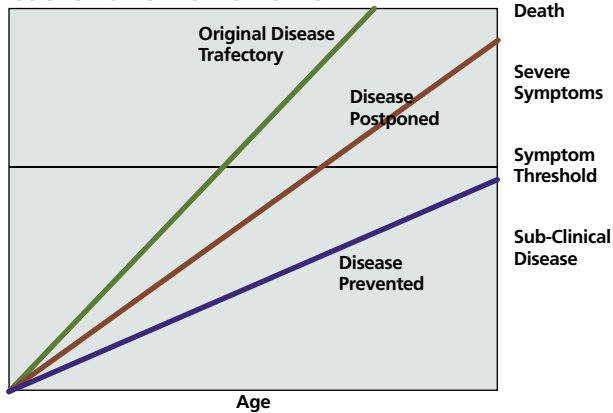
potentially unavailable or unaffordable, particularly to unhealthy, older, and less well-off customers.

Tensions between the public's interest in making health insurance widely available and affordable, and insurance companies' legitimate need to classify risks, have repeatedly been played out in state (e.g., small-group and individual NAIC) and federal (e.g., HIPAA and genetic testing) political battles. These politically sensitive conflicts often end with the imposition of new rules that constrain or eliminate insurers' use of effective risk classification tools.

Viable insurance markets need reasonable means of relating terms of health insurance coverage to applicants' varying health risk characteristics. Our fundamental actuarial rating principle of *individual equity*—offering the same contract terms and premiums to similar risks—is not an immutable rule. But as long as customers know more about their own health

Healthy Lifestyle and Chronic Disease

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Source: Fries, *Milbank Quarterly*, 1983

risks than insurance companies do, the potential exists for adverse selection severe enough to destroy the individual and small-group markets. So health insurers aggressively protect their right to gather important risk-related information and to use this information when setting terms of coverage for individual risks.

But insurance companies may not be keeping their risk classification systems up-to-date. Prescription drugs are increasingly effective at treating previously untreated health risks such as high blood pressure (HBP) and high blood cholesterol. Those who use psychological therapy and psychotropic drugs may be placed in risk classes far more punitive than called for by the severity and expected costs of their conditions.

Delaying Morbidity

Chronic heart and circulatory conditions are among the most prevalent and most expensive diseases in our health care system. As depicted in the chart above, heart and circulatory diseases develop over many decades. With no intervention, advancing age may bring clinical symptoms of chronic disease, which are recognized by physicians and trigger ongoing and increasingly costly medical treatment.

With early changes in lifestyle, however, the age at which a person crosses the chronic disease symptom threshold can be postponed. For example, smoking cessation, weight loss, exercise, and healthy diet are widely recognized means of controlling high blood pressure and high blood cholesterol that, in turn, lead to chronic heart and circulatory diseases.

In addition, the early use of prescription drugs can control precursor symptoms. Medical research has shown that use of hypertensive and cholesterol-lowering drugs can delay the onset of chronic heart and circulatory diseases caused by high blood pressure and high cholesterol.

This model of delaying morbidity from chronic diseases is

being applied to other disease categories as medical research identifies environmental and physiological causes underlying chronic disease, allowing effective recommended changes in lifestyle and early medical intervention.

Postponing or preventing debilitating and costly medical conditions is clearly good news for the U.S. health care system. However, lifestyle changes and early non-aggressive medical interventions bring with them challenges to individual and small-group health insurance risk classification systems.

Prescription Drug Trends

National Ambulatory Medical Care Surveys (NAMCS) from 1985 to 1999 report increases in the mean number of diagnoses per 100 physician office visits (up 18 percent, from 1.39 to 1.64) and large increases in drug mentions (up 34 percent, from 109.0 to 145.9) per 100 physician office visits. In particular, drug mention rates have increased dramatically for three of the most common diagnoses:

Drug Mention Rates per 100 Office Visits

	1985	1999	Change
Hypertension	221	262	18.6%
Hyperlipidemia	162	257	58.6%
Depression and Related Diagnoses	136	216	58.8%

In each of these instances, the increase comes from expanded use by previously untreated adults considered to be at moderate or low risk, not as a result of increases in serious disease. Increasing numbers of applicants for individual and small-group health insurance report use of hypertensive, hyperlipidemia, and anti-depressive drugs. Clearly, some uses indicate serious medical conditions that merit substandard rating or even denial of coverage. Much increased use of prescription drugs over the past decade, though, comes from applicants who would not have been using these drugs in the past. In the face of rapidly changing profiles of prescription drug users, many insurers may be continuing to use risk classification criteria that treat all hypertensive, hyperlipidemia, and anti-depressive diagnoses and drug use as risks requiring ratings, exclusions, or even declinations. These traditional risk classification systems may be committing a fundamental design error of treating demonstrably dissimilar risks in the same manner (error of risk heterogeneity).

So what are the facts?

High Blood Pressure and Prehypertension

The National Heart, Lung, and Blood Institute (NHLBI) of the National Institutes of Health released new guidelines (JNC 7) in 2003 for the prevention and treatment of hypertension. The new guidelines recommend more aggressive interventions for the estimated 50 million adults who are hypertensive (systolic

Disease Prevalence, Insurance Risk, and Risk Classification in U.S. Adult Population

Actual Risk of Stroke, MI, and Heart Failure	Hypertensive Disease ▶ 50 million ▶ Systolic BP 140+ ▶ Diastolic BP 90+	Prehypertensive Disease ▶ 45 million ▶ Systolic BP 130-139 ▶ Diastolic BP 80-89
High	▶ Treated, Uncontrolled 12.5 million ? Untreated—12.5 million ? Undiagnosed—12.5 million	
Moderate	? Treated, Controlled ? By Rx—17million	▶ Undiagnosed ▶ Untreated ▶ Treated, uncontrolled
Low		? Treated, Controlled ? By Rx ? Lifestyle changes?
Potential Risk Classification Errors	? High risks that may be classified as standard	? Low and moderate risks that may be classified as substandard

blood pressure 140+, or diastolic blood pressure 90+, or existing drug treatment), of which only 59 percent were identified as being under treatment.

JNC 7 also creates a new clinical category of prehypertension (systolic blood pressure 130 to 139 or diastolic blood pressure 80 to 89) and recommends that this large group of adults (estimated at an additional 45 million Americans, or 22 percent of the U.S. adult population) adopt lifestyle changes. The new prehypertension diagnosis was created for two reasons:

- Blood pressure increases steadily with age, and
- Studies indicate that the risk of death from myocardial infarction (MI), stroke, and other vascular disease increases with blood pressure levels starting as low as 115/75 mmHg, with a doubling of risk for every 20/10 mmHg rise.

While JNC 7 doesn't recommend use of hypertensive drugs to treat prehypertension, physicians are likely to prescribe drugs for many patients in this category. But a clinical diagnosis of hypertension or prehypertension (HBP), or the use of prescription drugs to control hypertension, isn't adequate information to determine an applicant's actual excess risk of stroke, MI, and heart failure.

Unpublished data from NHLBI estimate that between 1999 and 2000, 17 million adults diagnosed with hypertensive disease had their HBP under control. This group has a significantly reduced excess risk, exhibiting demonstrably lower risk of stroke (between 35 percent and 40 percent estimated reduction in incidence), MI (20 percent to 25 percent reduction), and

heart failure (50 percent reduction). If underwriters don't identify actual risk, applicants with their HBP under control will probably be classified as substandard when, in fact, their excess risk profile for serious chronic disease is standard.

A clinical diagnosis of prehypertension is new, so there are no statistics available to demonstrate the risk of underwriters' over- or under-assessing actual excess risks. Before the creation of prehypertension as a clinical classification, though, the estimated 45 million adults in this category would have been considered "standard" health insurance risks. Many applicants in this group now will have a new clinical diagnosis (prehypertension) on their medical records, and many will be taking anti-hypertensive drugs.

These "medicalized" applicants run a strong risk of being incorrectly

classified as substandard for health insurance. Substandard ratings are hard to justify since they were previously recognized as standard. Those applicants with prehypertension who do lower their blood pressure by lifestyle changes or anti-hypertensive drugs actually reduce their real risk of chronic disease.

NHLBI data estimate that 20.5 million adults between 1999 and 2000 either didn't know they had HBP or they did know and weren't being treated. Health insurance applicants in this category are actually substandard risks. However, widely used health insurance applications and underwriting requirements are unlikely to identify these risks. Most applicants in this category will be misclassified as standard, despite their actual high excess risk.

The problem for health insurance risk classification from this significant heterogeneity between actual excess risk and risk assessed in the underwriting process is two-fold. It creates:

- A *false positive* classification of undiagnosed or many untreated hypertension risks as standard, when they are actually substandard.
- A *false negative* classification of controlled hypertension risks as substandard when their actual excess risk is significantly reduced by lifestyle changes and/or drug therapy.

While proper classification of risks controlled by prescription drug use must recognize the extra cost of hypertensive drugs, these are demonstrably better risks than those left unknown, untreated, or uncontrolled. The problem of classifying applicants who are on anti-hypertensive drugs is not insignificant.

Some or all of the cost must be reflected in contract terms (e.g., specific drug exclusion, pre-existing condition exclusion, or higher deductible), charged as an extra premium (that should reflect an off-setting reduction in future expected chronic disease claims), or spread across premiums for the entire standard risk classification.

High Blood Cholesterol Levels—Hyperlipidemia

New guidelines for managing hypercholesterolemia (Adult Treatment Panel III, or, ATP III) were issued by the National Cholesterol Education Program (NCEP) in 2001. The guidelines are intended to prevent or delay coronary heart disease (CHD) based on research demonstrating that intensive cholesterol-lowering therapy can significantly lower long-term risk.

As with HBP recommendations, lower is better. The new guidelines adopt an optimal low-density lipoprotein cholesterol (LDL-C) level of <100 mg/dL and recommend lifestyle changes and prescription drugs to achieve this goal, particularly for patients with other risk factors. Goals for patients with a lower risk of CHD are less aggressive.

ATP III greatly enlarges the adult population for which cholesterol-lowering treatment is recommended, including large numbers of previously untreated adults. This clearly implies much wider use of hypercholesterolemia as a clinical diagnosis and much greater use of cholesterol-lowering prescription drugs. Estimates of the incidence of high blood cholesterol in the U.S. adult population don't match exactly with ATP III definitions. But using CDC estimates, there are up to 67 million adults covered by ATP III treatment recommendations.

An article by a senior editor of the *Journal of Clinical Hypertension* warns that the number of adults prescribed cholesterol-lowering drugs may increase from 13 million to 36 million. In addition, the article notes that while diet alone can significantly lower LDL-C, patients are more likely to opt for prescription drugs than adopt effective lifestyle changes.

Implications of ATP III for health insurance risk classification are similar to those for hypertension: more applicants with clinical diagnoses of hypercholesterolemia, and more findings of the use of prescription drugs. It's all but certain that, were good statistics available, we would find the same two risk misclassification problems (false positive and false negative) arising in applicants with high blood cholesterol that we found with HBP.

Risk classification problems will likely grow (or perhaps magically disappear) if the United States follows the United Kingdom lead and allows anti-cholesterol drugs to be sold over the counter. In July 2004, the United Kingdom began allowing a low dose of Zocor to be sold without a prescription or physician referral to groups at moderate risk of heart disease. This change in the United States would confound and cause even greater heterogeneity in the use of anti-cholesterol drugs as a health insurance risk classification indicator.

Mental and Nervous Conditions: Psychotropic Drug Use

The widespread use of psychotropic drugs poses a complicated risk classification problem, one quite different from issues associated with HBP and high blood cholesterol. New and effective classes of drugs that made their way to the market in the 1990s, such as selective serotonin reuptake inhibitors and atypical antipsychotic drugs, have reduced side effects. This has led to a very large increase in the use of psychotropic drugs, which are now often prescribed by primary care physicians and not by mental health specialists. Use of psychotropic drugs rivals that of anti-hypertensive and anti-hypercholesterolemia drugs with 216 drug mentions per 100 office visits in 1999 versus 262 and 257, respectively, for the other drugs. While it's difficult to estimate patients from these data, clearly the number is quite large, perhaps as large as 40 million U.S. adults.

It appears that much of the growth in psychotropic drug use may not be associated with mental health diagnoses. One study of employer health insurance claims data published in *Health Affairs* found that 6.8 percent of insureds had a mental health or substance abuse diagnosis, but 14.5 percent of insureds had used a psychotropic drug.

Researchers find it difficult to determine the source of this major discrepancy. Clearly some of it comes from miscoding real mental health problems in an attempt to avoid real or perceived health insurance policy limitations or other mental health stigmas. A greater proportion, however, may be explained by use of these drugs for non-mental health problems such as insomnia and menopause, and by physicians trying to help their patients cope with less serious problems of daily life.

The use of psychotropic drugs for other than legitimate mental health diagnoses has potentially serious consequences for health insurance risk classification. There's clear evidence that depression and mental health problems are associated with significantly increased medical care expenses, including the cost of comorbidities.

These findings lead many health insurance companies to classify all applicants who have used psychotropic drugs as substandard risks, even though the apparently widespread use of psychotropic drugs for non-mental health problems doesn't carry with it the predictive cost implications of real mental health problems.

Indeed, a large proportion of these applicants actually may be standard risks. Traditional health insurance applications and underwriting requirements are not well suited to discriminate between psychotropic drug use by standard non-mental health risks and true substandard mental health risks.

Once again, widely used traditional risk classification systems are likely to create an unintended and troublesome heterogeneity in the classification of applicants with psychotropic drug use.

More Potential for Risk Misclassification

Risk classification heterogeneity isn't limited to the classes of

drugs and diagnoses discussed above. Two other diagnoses that potentially affect significant numbers of applicants for health insurance serve as examples. The distinction between mild and more severe chronic respiratory problems affects large numbers of applicants. In 1999, there were 198 drug mentions per 100 office visits recorded for this category in NAMCS. Risk heterogeneity can be caused by a significant increase in the use of prescription antihistamines and other new drugs to control allergies and mild asthma. The potential for misclassification is now even greater as a number of popular drugs have moved from prescription-only to over-the-counter dispensing.

Diabetes is also becoming susceptible to heterogeneity problems. Clinicians are more sensitive to pre-diabetic patients, encouraging them to make lifestyle changes or to begin prophylactic use of prescription drugs.

What's Fair: ASOP No. 12

There are a number of standards, regulations, and laws that affect insurance company risk classification systems. Left unchanged, outdated risk classification systems will develop significant heterogeneities and leave actuaries and insurance companies open to unintended risk classification problems.

The actuary's responsibility for risk classification systems is

described in Actuarial Standard of Practice No. 12, *Concerning Risk Classification*. Section 5 of the standard describes one of three primary purposes of risk classification as "to be fair." To achieve this purpose, the standard requires health actuaries to follow basic principles in developing and maintaining a risk classification system, including:

- "The system should reflect cost and experience differences on the basis of relevant risk characteristics."

- "The system should be practical, cost-effective, and responsive to change."

In describing how to develop a fair risk classification system, the standard notes, "the actuary can rely on actual or reasonably anticipated experience..." and "Information gained from clinical experience, or from expert opinion regarding the effects of change on future experience (e.g., medical or engineering), may be used." (Section 5.1)

As best I can determine from my own experience and discussions with underwriters and actuaries, most existing health insurance risk classification systems are based on underwriting manuals originally developed to predict mortality rates for life insurance applicants. These life insurance manuals have been modified to predict morbidity rates based on medical underwriters' and insurance company physicians' expert judgments and, to a lesser



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extent, on actuarial analyses of historical claims data.

Some insurers and actuarial consultants do analyze claims data to refine their risk classification systems, but the data is often old and lack needed risk variables (e.g., lifestyle or physicians' clinical indications for drug use). This makes it very difficult, if not impossible, for actuaries to differentiate among and measure the many new risk classification variables that arise from changing clinical medicine.

While rate and benefit law and regulation vary significantly by state and by group versus individual health insurance policy forms, many states require health insurance companies to maintain risk classification systems that don't unfairly discriminate among risks. For example, Illinois Insurance Code Section 364, "Discrimination Prohibited," contains the following requirements:

"No company, in any policy of accident or health insurance issued in this state, shall make or permit any distinction or discrimination against individuals solely because of handicaps or disabilities in the amount of payment of premiums or rates charged . . . , or in any other terms and conditions of the contract it makes, except where the distinction or discrimination is based on *sound actuarial principles* or is related to *actual or reasonably anticipated experience*." (Italics added)

This law seems to be a clear link to ASOP No. 12, and it raises the stakes by requiring that insurance companies be able to justify their risk classification processes in response to an insurance department inquiry or other legal challenge. Given the nature and complexity of health insurance risk classification, a regulatory or legal challenge would seem to be difficult to defend.

Political Environment

It has been 10 years since the Clinton administration proposed a broad reform of the U.S. health care financing system. It's once again common to encounter media reports and political charges about Americans without health insurance, rising premiums, "cherry-picking," and other insurance company "abuses." The current political environment seems to encourage media scrutiny of "abusive" insurance company practices to heighten public awareness of serious problems with our health care financing system and to further various agendas for health care system reform.

The *New York Times Magazine* recently published a story entitled "Singled Out," subtitled, "A warning to the self-employed: Even affluence and good health may not matter when you shop for health insurance."

The article describes serious problems that an affluent and self-assessed healthy couple had when they applied for an individual health insurance policy. Their story paints a picture that seriously questions the fairness of the insurance company's risk classification practices.

Stories like those told in "Singled Out" can easily undermine

the credibility of health insurance companies, and we often have no good response. A more scientific study of individual health insurance underwriting anomalies and inconsistencies ("How Accessible Is Individual Health Insurance for Consumers in Less-Than-Perfect Health?") was prepared for the Henry J. Kaiser Family Foundation in June 2001.

It's in the best interest of the industry, which does so much good, to work hard at avoiding problems that can prove unhelpful in our increasingly politically charged environment.

A New Challenge for Health Insurers

The lesson for health insurance companies is that medical care is entering an era where large numbers of currently healthy people can be identified as being at risk for serious chronic conditions and encouraged to make appropriate lifestyle changes or begin prophylactic drug use to delay or avoid future problems. Consequently, health insurance risk classification is becoming increasingly heterogeneous, which creates the potential to undermine this beneficial medical trend by causing these people concerns about the adverse consequences to their health insurance of their taking appropriate preventive measures. Resolving these issues is a serious challenge for health insurers. ●

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