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MEDICAL TECHNOLOGY – WHERE IS IT GOING?

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- Trends and proliferation of medical technology
- What will be the impact?
- What is on the horizon?
- Considerations for containing utilization of various procedures and technology
- Genetic research

MR. JEROME M. STEIN: Our topic is unique in that it is the only one that might be of as much interest to any man or woman invited in off of the street as we hope it will be to actuaries. Much of what we will talk about did not exist a decade ago. As with other technology, be it computers, military weaponry, or food additives, there are problems created by the scientific advances. We hope that you will be better informed of both the nature of current medical technology and the new problems with which we must cope.

Bob Refowitz earned his M.D. and his Ph.D. in health policy and planning from New York University. He also has master's degrees in operations research from the University of California at Berkeley and in solid state electronics from the Massachusetts Institute of Technology.

Bob has been medical director for a copper smelter and for an HMO that was based at New York's Bellevue Hospital. Most recently he's been a vice president of medical services in the corporate office of Prudential's group insurance department. At the Prudential, he's been involved with quality assurance, utilization management and technology assessment. He's board certified in internal medicine and preventive medicine. Bob is about to assume a new position. He will be the regional head of preventive medicine for Kaiser Permanente's Cleveland region.

Next we have John Cova. John earned his bachelor's degree in biology at Duquesne University and his Ph.D. in physiology at Rutgers. He has a master's degree in public health from the University of Michigan, and he also was a postdoctoral fellow in neuroimmunology at the Albany, New York, Medical College. He's been a visiting neuroscientist and a research scientist at institutions in Stockholm, Sweden, and Washington, D.C. John has held faculty positions at Siena College and the Albany Medical College. He has many publications and articles to his credit, and he is the director of medical technology assessment for the Health Insurance Association of America (HIAA) in Washington, D.C.

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Finally, there's me, Jerry Stein, your moderator. I'm a graduate of Columbia University, and I have spent my whole career at Prudential. For the last eight years I was vice president and associate actuary in our small group and individual health department. I was responsible for our individual health insurance product line and also had the claim responsibility for small group insurance as well as individual health.

DR. JOHN L. COVA: I'm going to begin my presentation with a definition of medical technology. Medical technology, as far as a technology assessor is concerned, refers to any drug, device, medical or surgical procedure that's used in health care. Medical technology has had a profound impact on health care costs. In fact, it's been estimated that 20-40% of all medical costs result from three factors: the introduction of new technologies, the inappropriate use of existing technologies, and the use of obsolete technologies. Introduction of new technologies, however, is the greatest culprit in the increase in medical health care costs, and it is responsible for the preponderant amount of increase that we see.

Although these other two factors are not insignificant, the introduction of new technologies is what's occupying most of our attention. Typical high technology providers include imaging centers, clinical laboratories, cancer treatment centers, laser surgery facilities, rehabilitation facilities, ambulatory care facilities and ambulatory surgery centers. Most of these high technology centers are free-standing, that is, they are not housed within a hospital, and they are owned, in large part, by physician providers. What happens in this situation is providers usually wait until a community hospital acquires a new technology for example, magnetic resonance imaging (MRI) or positron emission tomography (PET). They use it for a while. They determine what throughput is necessary in order to make a profit, and then usually several of them get together, buy the equipment and operate a free-standing center that's in competition with the community hospital where the technology was introduced. These types of self-referral arrangements are what I view as a pernicious threat to cost containment efforts, and my friend, Bob Refowitz, when describing this self-referral situation frequently uses one of Mark Twain's quotes: "A man with a hammer sees a lot of nails that need pounding."

Medical technology assessment can be defined in a narrow sense or in a broader sense. In a narrow sense, medical technology assessment refers to the valuation or testing of a technology for safety and efficacy. In a broader sense, medical technology refers to a process of policy research that examines short- and long-term consequences of medical technologies. For example, a broad technology assessment not only concerns itself with safety and efficacy; but also it concerns itself with various aspects of effectiveness, and at this point I would like to distinguish between efficacy and effectiveness which are commonly used interchangeably but, in fact, are not interchangeable.

Efficacy refers to how well a technology performs under optimal conditions, i.e., the conditions that prevail at a medical center, a teaching hospital or a medical school. Effectiveness, on the other hand, refers to how well a technology performs when it comes into general use. The standard Food and Drug Administration (FDA) approval process for drugs and devices provides convincing information about a drug or device's efficacy. It tells us very little about its effectiveness, hence, the need for

postmarketing surveillance. It's the postmarketing surveillance that ultimately provides effectiveness data.

When drugs or devices are tested for safety and efficacy, they're done under the conditions that are associated with randomized clinical trials. They're administered under tight protocols. The patients are examined carefully, and the whole process is carefully monitored.

Broader technology assessments concern themselves with the clinical effectiveness and also the cost effectiveness of a given treatment. A broader technology assessment also considers the social, economic and legal long-term effects of a technology. In addition to cost effectiveness a broad assessment might also consider quality of life issues. I might add that currently very few broad assessments are done. Most technology assessments concern only the evaluation of safety and efficacy.

The users of assessment information are manifold. Policymakers have traditionally used technology assessment information for setting up regulations and laws that determine where and how a technology should be used. Industry is concerned with technology assessment because it gives some idea of how rigorous industry needs to be in its product development, and assessment also gives industry information about pricing. Health professionals use technology assessment in the choice of diagnostic and treatment protocols. Consumers find technology assessment information useful in terms of making informed choices. However, third-party payers now, in my opinion, appear to be the most interested segment of our society in technology assessment. Third-party payers are now beginning to find that technology assessment information is essential to rational coverage policy decision and also to the establishment of practice guidelines. Technology assessment provides the fundamental information that's necessary for practice guidelines.

Technology assessments are generally referred to as primary assessments or secondary assessments. Although there are components that are common to both types of assessments, they are somewhat different. A primary assessment is one that relies on experimental data, for example, a randomized clinical trial or the FDA approval process. Primary assessments are long, laborious, fraught with difficulties and incredibly expensive. Consequently, relatively few are performed.

The steps in a primary assessment process begin with identification. Assessors, be they in a federal agency or a private agency, identify a technology that's in need of assessment. The identification, then, is followed by a testing protocol. In the case of a primary assessment the testing procedure usually requires a randomized clinical trial in which experimental data are accumulated. The next step in the process is referred to as the synthesis. The data are evaluated, analyzed and then disseminated in the form of peer-reviewed articles or a report, for example, if it's a federal agency.

The most common type of technology assessment is a secondary assessment. Assessors identify technologies that are in need of assessment. They then go to the peer-reviewed scientific literature, do a thorough search, and evaluate the data and the findings that appear in the peer reviewed literature. The assessors then synthesize this information and disseminate it in the form of a report or another peer-reviewed, published article.

Technologies are generally referred to as emerging, new, or existing, depending upon their stage of development and the extent to which they've been incorporated into medical practice. All technologies begin in the basic research laboratory. If experiments in the lab prove promising, the technology then moves into the applied research arena. If applied clinical studies are promising, the technology then moves into the developmental phase. From the inception of the technology in the basic research lab to the time at which it undergoes development, the technology is usually referred to as an emerging technology. Emerging technologies are then adopted, and in the case of drugs and devices the movement of a technology from development to adoption requires a drug and device approval process, i.e., the FDA process.

This is not true for procedures, particularly surgical procedures. Many technologies can move from the developmental phase to the adoptive phase without this rigorous testing of safety and efficacy.

Technologies that are in the marketing and adoption phase are generally referred to as new technologies. After a technology is adopted, it then undergoes a process that we refer to as diffusion. Diffusion refers to the movement of a new technology into general use, and we know today that diffusion occurs very rapidly, sometimes in a matter of five to six months, frequently before anyone has time to do an assessment. The technology then comes into widespread use, and with continued research usually it will prove to be, over time, obsolescent or if it proves to be clinically ineffective, it becomes a nonused technology.

Most technologies enter widespread use and remain there. They don't enter into obsolescence, and there are some reasons for that. One of the reasons is often the people who use these technologies spend many years of their life learning how to do them, particularly surgical procedures and diagnostic procedures. They are reluctant to abandon something they believe works well and provides them with a good living. What generally happens is that we end up with layers of technology that are both cost effective and clinically effective. Rarely, technology will move into nonuse if it is shown to be conclusively ineffective or unsafe.

What do I think the future trends in health care technology are?

1. Pressure for technology will increase. The American public is not going to abandon its desire for more technology.

2. There will be an increased reliance and expansion of diagnostic technologies. People seem to think that the earlier something is detected, the better, even if there's no treatment for what's detected.

3. Financial resources will continue to decline. There will be less money available for these things, and I think we'll see a continued surplus of expensive high technology. MRI is an example of it. I think there are now 1,500 MRI centers in the United States.

4. There will be continued concern about risk management and quality and value concerns, and perhaps it's in this area of risk management that actuaries can provide some valuable input into the assessment process.

5. We'll see an increased emphasis on the development of regional diffusion strategies. I think we'll see more contracting, more networks of excellence, and more centers of diagnostic excellence.

DR. ROBERT M. REFOWITZ: John, by virtue of having to represent the HIAA, gave a very scholarly and academic presentation. I'd like to be a touch more irreverent, go back over some of the same issues that he raised and leave you with some observations based on six years with the Prudential and group insurance. I'd like you to take back to your companies, ways in which actuaries might be a great help in the technology assessment process. You folks may not realize you have extensive expertise in statistics which is something that is rarely shared by medical professionals, and many of the battles over the evaluation and appropriateness of technology involve the misuse of statistics.

Is technology the scapegoat? Is it the cure or is it the disease? I represent that it's both, and I also represent that, despite the fact that I have exceedingly strong opinions on these issues, I will probably give conflicting points of view. This is because the issues are so complex and so enmeshed in the societal expectations that people have about health as opposed to medicine. Medicine is what we can deliver, and health is what people think they're buying. In our complex American political economy no simple or clear solution really will take place. No solution will take place that doesn't have a win-win solution for everyone in the American political economy, and, quite honestly, that's exceedingly difficult in this case when the great success of the biomedical industries involves segmental marketing, picking off marketplace issues, exploiting patent protection, using strange things like vastly different pricing for drugs in different countries. (I'm sure you are aware of the fact that U.S. firms make most of their research money in the U.S. and subsidize the cost of drugs in Europe where the governments set the prices irrespective of the development costs, and, therefore, it's a classic shifting of expenses to the United States. That's why our drug prices are among the highest in the world.)

The New York Times yesterday had a wonderful article, "When Healers Are Entrepreneurs: A Debate Over Cost and Ethics." This article laid out some of the issues that John talked about with regard to overuse of MRIs. Now, you probably heard the debate about Canadian versus American insurance and that many of the key differences are the Canadians' "underinvestment" in technology. They have approximately six MRI scanners, and we have 1,500. Even adjusting for population, there's a key message there. Perhaps the Canadians would do better with 12, but we only need about 300.

I do personally believe that ownership of expensive diagnostic technology is inappropriate for physicians. It is just not proper for providers who choose which tests to order to be direct personal investors in technology. There's nothing wrong with buying GE stock, and GE makes MRI, because you think that's good. There's nothing wrong with buying Merck because Merck makes fine drugs, but I think the direct proprietorship and self-referral bias, is very "bad" practice. The physician's more historically revered role as the true, impartial, independent advisor to patients has been generally lost.

If you look at the selection of physicians, they are generally bright and hard working. The American Medical Association is preserving the notion of independent judgment and freedom of the physician to treat anything in his or her own way. Such independent judgment is great as a concept, but what it doesn't bring with it is the responsibility to continually check and upgrade your performance and constantly measure it against the changes in diagnosis and treatment. Therefore, the notion of guidelines with regard to practice behavior are appropriate. The support that the commercial payer industry can give to the idea that medicine can in most cases be practiced according to general guidelines is not in any way going to compromise quality and will bring with it, at least in the short run, the impression of efficiency.

Technology is enmeshed in medicine, and the inappropriate use of technology for any number of reasons, while certainly not the villain, is one of the most significant villains. If you wanted to invest and make money on Wall Street, you buy Biotec and other high-tech diagnostic stuff, and go in and out of the market in a three-year time frame, with a rapid return. When we're playing the other role of health insurance people we say wait a minute. You don't want to do that because that might waste money and exploit the marketplace. I believe we have this tremendous problem as a country in that we've been unable to reconcile the competing pressures. The free economy is integral to the United States, but to pretend that health care is anything other than a marketplace economy ducks the issues and leaves you with your hands in the air saying how on earth did we get to where we are and, more importantly, how will we fix it going forward?

Let's look at what Robert Young did in "Marcus Welby, M.D." as a physician; he was the patient's counselor. He helped the patients decide what to do. He really wasn't selling technology. He was the kindly, old, family physician, and that role in this society is gone. I think that's a great loss because many people with a skilled advisor and a sensitive one who knows them might be far more prone not to do something when given enough information to make that kind of decision. If someone was there to give you the proper reassurance, care could be delivered in a more sequential fashion as opposed to a shotgun fashion, and I think you can see the implications of that, and it would be more satisfying, more effective, and less expensive, and we could then afford to redistribute some of that money to do other worthwhile social things.

Bob Blendon, a physician pollster from Harvard School of Public Health notes, "Americans want the best health care that someone else's money can buy." Universally that's exactly what they want, and they're exceedingly confused because depending on who you talk with, they will pick the health care system of an unknown eastern European country over the American health care system, and they have not a clue that those folks don't even have sterilizers. There is an incredible dissatisfaction and yet an incredible overexpenditure of money, and there must be something fundamentally wrong with the system, and I can't say that technology is what's wrong, but, again, I want to leave you with the belief that it's not an innocent participant in this, particularly as technology has become noninvasive and duplicative.

Human touch is really lacking in many encounters between physicians and patients, and I'm not saying it's the physician's fault. It takes longer to convince patients they don't need the CAT scan for the headache than it does to order it, and imagine if you

have a piece of the CAT scanner. It is quite possible that this is about the level that many medical practice decisions play out.

Then there's the specter of malpractice risk. The American legal system has created some excuses and done some strange things that allows some otherwise very odd behavior to go forward because in many ways the system has the critical success factor. The notion of being sued 15 years later for something you might not have thought of at the time, allows all sorts of irresponsible and perhaps counterproductive behavior on the part of lots of people. For example, when you look at obstetricians, perhaps a third of them get sued every year, you're hard-pressed to argue with them because the threat of a suit is real. While the notion of somehow improving or helping medical care is not very substantial, and yet, we, as a society, in our unwillingness to do something with that problem are allowing that to fuel many of the things which are causing other problems like the growth of technology, the inability to have guidelines, the inability to discipline physicians for acting in ways outside of normal behavior patterns. Well, they always throw up the malpractice risk.

As John suggested earlier, patients come to physicians with incredible expectations, and physicians work very hard to meet and exceed them, for which they get paid very well: Quid pro quo, that is the money changing hands belongs to neither of them.

As John was talking, I made some observations that I wanted to leave with actuaries and others who might be in the insurance industry. The first is with regard to claims made with statistics. Please never forget the old Mark Twain adage which surely applies – Liars, damn liars, and statisticians. Folks, this was my pitch earlier about using your talent which, may involve only basic statistics to assist in evaluating research and other claims. I think that your companies would welcome the resource of someone to help them critique simple statistical trials and claims and to point out errors in study design. Any of you know about a Kaplan-Meier curve? These curves are used very inappropriately in health care technology evaluations and drug evaluations, and if you could teach people what the curve says and what it doesn't, you'd be of great assistance.

Now, let's discuss the insurance stuff. Based on several years in the "wars," I'd like to offer the following observations. This is Refowitz's personal opinion, and I doubt that this is new to any of you. The American legal system, particularly the civil law system, is absolutely ill-equipped to handle the complex issues of scientific efficacy, technology and medical appropriateness that wind up being contractual disputes because of the underlying nature of the insurance contract. I'm not the first one to have observed that and to cry out the need for a science court.

The legal system may be wonderful for criminal matters and may be wonderful for other things, but when you get it involved in these highly technical issues, in my personal opinion, it really does no one very good service. One suggestion I have is for you to go back to fundamental principles of trying to more clearly define what's covered and what's not covered. In the short run this will diffuse some of the disputes that involve these new technologies because it's a very complex issue. Words like "appropriateness" and "medically necessary" mean different things to different people. So, therefore, my advice would be to be as clear and precise as you

can. And perhaps the other closing remark is never forget that in technology more is more, more is not better. You're making microdecisions, but there's nobody making macrodecisions, and I think that's a fundamental problem which is not easily resolved by the Society of Actuaries, but if you could do it, that's super.

MR. STEIN: As the last decade of the twentieth century progresses, genetic testing is likely to become one of the hottest public issues for the life and health insurance industry. Other public sectors may also be involved, such as lending institutions and employment. What is genetic testing and why is it controversial?

Genetic testing is the analysis of the human chromosome to determine whether certain of its genes are defective. "Defective" is judgmental and "abnormal" would be more precise. I'll use "defective" because of the harm caused by the abnormalities. Scientists have been able to determine that certain defective genes cause certain diseases while other defective genes produce propensities to diseases.

For example, cystic fibrosis and Parkinson's disease have been shown to be caused by specific defective genes. On the other hand, other defective genes have been shown to cause a propensity to contract certain types of cancer when combined with other environmental factors. In these cases, the person with such a defective gene is not certain to contract cancer but rather is more likely to do so under a set of environmental conditions.

The Human Genome Project is a study now underway that will, if it's funded to completion, take about 15 years and cost upwards of $15 billion. It will "map" all of the 50,000-100,000 human genes to determine which can cause or influence diseases if they are defective.

Knowing the cause of a disease has usually been science's best first step toward curing that disease. The good news, thus, is we hope that finding a defective gene can lead to finding ways to correct the gene's defect. Thus, we might be looking forward to many human miseries being cured or prevented in the coming century. While the first attempts at gene therapy have already been made, there is not likely to be dramatic breakthroughs for several years to come.

In the meantime, many questions have been raised about how the insurance industry should react to these dramatic scientific advances:

- Should insurance companies be allowed to ask applicants about genetic tests that might have been taken?
- If tests are admitted, should the applicants be required to give the results?
- Should health insurance pay for genetic tests?
- Should health insurance pay for genetic therapy?
- Should insurance companies be allowed to rate or reject applicants whose tests have indicated disease-causing or disease-encouraging genes?

- Should insurance companies order genetic tests as part of the underwriting process?

In November 1990 at the request of the HIAA, I spoke at a conference on "The Impact of Human Molecular Genetics on Society." Held at the Bambury Center on Long Island, it was attended by several dozen of the physicians and scientists who are most active in the genetics field. Also participating were a number of representatives of industry, government, the scientific press and various ethical pursuits.

All of the above questions were raised. It was even suggested that a person who was to be genetically tested should first make sure that he or she had acquired all of the insurance that might be needed for the rest of the person's life so that he or she wouldn't have to lie about any adverse findings.

My position was, and is, that the insurance industry right now has no urge to order or use genetic tests. We don't want to split our applicants into many narrow categories of risk. Our practice has always been to seek a broad base of applicants to be accepted as insureds at a single, standard price. In practice, good family histories on applications have allowed us to identify many of the same risks that genetic tests are likely to reveal.

This attitude is likely to change if genetic tests become cheap and widespread. If someone knows that he or she is virtually certain to contract a specific disease within the foreseeable future, and the insurer can't determine that situation, there's a great opportunity of gross antiselection. You should never bet on a ball game with someone who knows the final score.

The American Council on Life Insurance (ACLI), and the HIAA, are working jointly to develop a statement of policy for the insurance industry with respect to genetic testing. We don't want to cause premature concern about our industry's role on this issue, but events have not allowed us to just sit back and wait. Legislation is already pending in some states that could prohibit us from testing, from asking about tests, or from taking underwriting action on the basis of genetic test results. We cannot afford to sit back and be handcuffed by legislation before the nature and the magnitude of the problem is known.

The final question I will pose as I open the meeting for discussion is: Should the mortality or morbidity costs of disease caused by defective genes be treated any differently by life and health insurance companies than similar costs which are caused by accidents or nongenetically caused diseases?

MR. GREGORY W. PARKER: This question is for either Dr. Cova or Dr. Refowitz. Could you give a sense of who you think can be most effective in curing the problem to bring technology back in line to where it's not taking such a big bite out of the medical care dollar?

DR. COVA: I think that's an extremely difficult question to answer. It's a very good question and a pertinent question, but it will involve a fundamental change in our societal attitudes. I don't think there's a single agency or a single industry that can accomplish that. What we have to realize as a society is that the inappropriate

application of technology has profound public health consequences, and we don't generally view things from a public health perspective. Most individuals view the effectiveness or appropriate use of technology from the perspective of an individual. A physician is trained to do what's best for an individual patient, and a patient expects that, and I'm not taking issue with that. But when we get a very small number of people who require extremely expensive technologies, what happens is that increases the cost of health care coverage across the board for everyone. It makes health care much more expensive for people who need routine technologies that are proven, effective technologies that are frequently needed, such as surgical procedures for things like appendectomies and cholecystectomy. These are the things that most people need, and when we begin to rapidly adopt complex and expensive technologies, and use them without exercising an appropriate societal perspective we get into trouble. I don't know if we're ready for that as a society.

DR. REFOWITZ: I share John's general observations, but I'll try hard, having been global and perhaps metaphysical before, to be concrete. I think things that insurance companies, insurers and good citizens in general can support include the notion of defining medical appropriateness of diagnostic tests, the so-called guidelines movement which the federal government is now starting. It will take continued support by large sectors of the society not to let that effort be derailed. You can, in fact, define what appropriate medical care is for 99% of people, and the 1% who fall outside those patterns cannot be used as an excuse to destroy the former effort. You just need to provide safeguards. Second, I think a public education campaign would certainly be in order, and that runs counter to all the other marketing campaigns which are being done by everybody who's selling the stuff. Someone needs to be helping patients understand – since the physicians seem not to be doing it – the ways in which health care works and the fact that additional testing may or may not be necessary. That whole disequilibrium in medical practice is real, and any effort that helps correct such a greatly inappropriate situation is good.

I would support the notion of living wills to the extent that they're appropriately done. They can offer the potential for reducing that exorbitant sum of money which is spent in the last year of life.

And perhaps maybe because I'm from the east I can say things like the "R" word, *ration*. In the midwest you run risk of being run out of town on a rail for that thing. We do it anyway. We just do it on the basis of access to insurance or access to income. We ration everything widely. There was an experiment in national health planning that used to have things like certificates of need, and it's astonishing that every time the certificate of need legislation was blown away in the various states there was an incredible overbuilding.

DR. COVA: If I might add the comment about certificate of need, recently in a southern state three certificates of need for PET devices were denied by the North Carolina Department of Health. The people who applied for those certificates of need and were denied are now opening free-standing centers because they don't come under the certificate of need legislation.

MR. JOSHUA JACOBS: I would like to ask about practical implications of guidelines in insurance policies. Do you think that you can write into policies what will be covered and what will not be covered as a practical matter?

DR. REFOWITZ: That certainly was my pitch. I don't think the insurance industry is best served by writing the guideline. I think as a practical matter the federal government is now spearheading this effort. This is the entire distillation of the course I've taken in contract law. Say what you mean, say it clearly, and mean what you say. The extent to which insurers do not do that in contracts sets up a contractual dispute, and as the insurers are the ones who drafted the contract, usually those disputes are found in favor of the plaintiffs. I'd like to convince you to go back to your companies and when the issues of guidelines come back don't say, great idea, but it won't work. I think the support for these things produced on a national basis, even if they won't cover everything, must be unwavering.

MR. DANIEL L. WOLAK: Building on the last question, taking a specific example, Dr. Cova mentioned that the many high tech, free-standing centers are a large threat to cost containment. Do you see a way that we, as insurers, can limit coverage for those type of facilities?

DR. COVA: I think that the answer to that lies in practice guidelines. In other words we have to have, as Bob pointed out, some independent body determine where, when and how a diagnostic procedure should be used, and also in the process of defining these practice guidelines will define specific subsets of patients that need these things. For example, one can use PET to detect and evaluate coronary atherosclerosis. One can also use an existing technology, SPEC, single positron emission CAT scans, for doing the same thing. However, the issue is when does one use SPEC which is cheaper, and when does one use PET? Well, it turns out that there may be a very small number of patients where PET would offer a significant diagnostic advantage. A well-formulated practice guideline would enable an insurer to detect that and say, we will pay for PET for these specific indications; in the absence of those indications we will pay for SPEC. That's the kind of thing I think would be very helpful.

DR. REFOWITZ: I would echo John's sentiment. I don't want you to go away from here thinking it's hopeless. It's certainly a monumental task, but finally those of us who have been in health policy for about 25 years are seeing the federal government driven by the prospect of "bankruptcy" in the Medicare trust funds to finally put together a loosely knit and certainly not happy consensus organization which will in some way try and rein this in. To go back to the gentleman's question, it's not so much the site at which the test is given because that's where good, old American ingenuity comes in. Somebody can always undercut the cost of the next guy by selecting his patients carefully. Hospital charges support uncompensated care. Hospital charges support teaching programs. Free-standing centers support the people who own them, and they can often undercut the competitors' charges. The issue is appropriateness.

The second question, and insurers are starting to wrestle with this, is the notion of getting providers to compete on the basis of quality and cost -- to become preferred providers. To date, preferred provider organizations as a rule are simply discounted

fee-for-service, and that hasn't helped a whole heck of a lot. Any providers who want to cut their fees 20% can join, and since the discretionary component of medical care allows you to increase utilization 20% imperceptively you're fiscally neutral.

DR. COVA: If I might make one, additional comment. As far as these diagnostic technologies are concerned, I think we're all familiar with contracting procedures that have resulted in these transplantation networks or centers of excellence for transplantation. I think that the best way of implementing diagnostic practice guidelines would be at diagnostic centers of excellence. It might be feasible for insurers to contract with specific centers that provide the diagnostic procedure according to these appropriateness guidelines.

MR. WILLIAM J. SCHREINER: To what extent has the medical profession itself showed a taste for cleaning up the self-interest accusations that are made against it?

DR. REFOWITZ: To the extent that the profession finally has -- perhaps fueled by Congressman Pete Stark, who certainly has raised the issue of conflict of interest and inappropriate use to a high level of public visibility -- with regard to this very previously unspoken about practice of buying physicians' opinions through this continuing education and other subsidies, that reflects a change.