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IMPACT OF MEDICAL TECHNOLOGY ON HEALTH CARE PROGRAMS

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This session will discuss trends in medical technology as they affect health care benefits programs. Topics will include:

- o Life extension--costs, ethical issues
- o Organ transplants
- o Trends in high-cost procedures
- o Plan design considerations

MR. JOHN K. AHRENS: It is very important to separate the impact of AIDS and organ transplants from other large claims in order to evaluate past experience. It would be very dangerous to assume that the normal excess loss trends will cover new developments such as AIDS and organ transplants. At the beginning of this decade, normal trends did not anticipate neonatal risk. Excluding the expected impact of AIDS and transplants, the trend in the frequency of larger claims seems to have recently declined significantly, following large increases. The number of claims amounting to over $100,000 per year increased 80 percent between 1982 and 1983, 70 percent between 1983 and 1984. The increase between 1984 and 1985 seems to be only 50 percent and projections for 1985-1986 are in the neighborhood of 40 percent. This is a significant reduction.

It is very difficult for an actuary to forecast the financial impact of AIDS and organ transplants. New information, including what we may hear today from our panelists, can have a dramatic impact on our assumptions. The major variable seems to be frequency since cost, especially for organ transplants, seems to have enough fat in it that

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competitive pressure within the provider community could keep it in check. For AIDS, the cost seems to be for custodial care and thus not subject to severe price pressures, unless a new treatment develops. For AIDS, the number of new cases is expected to double each ten to twelve months so that 300,000 people may develop it within five years. At least 80 percent of these victims are likely to be in the insured population. However, their distribution between individual, small group, large group or self-funded group policies is not known.

Compared to the potential increases in frequency for organ transplants, the doubling of AIDS each year seems fairly stable. Organ availability is the major factor affecting future costs in organ transplants. In 1984, less than 3 percent of the over 15,000 persons who could have benefited from a heart transplant received one. Only 4 percent of the over 8,000 persons who could have benefited from liver transplants received one. The problem has not been cost as much as it has been the availability of the organs from persons who are brain dead. Yet more than 23,000 people annually are involved in accidents that leave them brain dead so the potential supply of donors is considerable. Currently about 13 percent become donors, primarily for kidney transplants.

Efforts are underway to increase the number of donors. Last fall the National Organ Transplant Act was signed into law. In addition to prohibiting the sale of human organs, it requires the establishment of a national computer bank to match organ donors with potential recipients. Efforts to implement this are now in process. Reluctance on the part of doctors and nurses to request consent from grieving relatives has been a major deterrent to increasing the number of available organs. However, some states are encouraging donor consent forms on the back of drivers licenses. Two states, Oregon and New York, have recently passed laws requiring physicians to ask relatives about organ donation where appropriate. These kinds of developments can have a significant impact.

Although the number of transplants does not appear to be growing at the rate it could, it seems reasonable to assume a doubling of the number each year. However, we must be wary of the possibilities of significant increases. Three and four times the current number of transplants are possible.

Not all changes in medical treatment increase costs. One example of this is neonatal care where fetal monitors may enable doctors to take prompt action with high-risk pregnancies. Not only does this increase a baby's chances for survival, but it can also save $2,000-$3,000 per day in the delivery of care.

As actuaries, it is our responsibility to translate all of these developments into expected costs which can be built into rates charged for protection from these financial risks. In order to attach some meaning to the importance of high-cost trends I will concentrate on the projected impact of AIDS and organ transplants on claim costs in excess of $50,000 and $100,000 in a calendar year.

Assume that from 1985 to 1986 normal costs of claims above $50,000 increase 30 percent and those in excess of $100,000 increase 40 percent, excluding claims on organ transplants and AIDS. Now assume that excess costs for AIDS and organ transplants are doubling each year for both excess levels. Obviously then, depending on the proportion of claims resulting from AIDS, or organ transplants, the actual increase in excess costs will exceed the normal 30-40 percent.

At this time, it does not appear that the frequency of organ transplants varies significantly by area. The costs could vary considerably, although those appear to be more a function of the provider than the geographic area. Therefore we might assume that the proportion of excess claims that are on organ transplants is fairly constant throughout the country. The incidence of AIDS so far has been highly dependent on geographic area. Almost half of all U.S. AIDS cases so far have occurred in San Francisco and New York City. For illustrative purposes I have grouped these two areas with Los Angeles, Miami, Houston and Newark as high-risk areas, even though the risk in San Francisco and New York City may be more than double that of the other cities mentioned. I have grouped cities such as Chicago, Atlanta, Washington, D.C., Boston and Dallas as significant risk cities. All other metropolitan areas of over 1-1.5 million persons are grouped as average-risk areas since the exposure appears to be similar to what could be expected on a national average basis. Finally, there are remaining risk areas, where frequencies may be only 20 percent of the national average. These geographic variations are incredible compared to we are used to in our business. Normally an area factor ranges from .6 to 2; for AIDS, the factors could vary from .2 to 9.

Except in the high-risk AIDS areas, organ transplants account for the major portion of the additional increase in excess costs. For claims above $50,000 in an average-risk area, total claims for 1986 could increase 45 percent rather than the 30 percent normally expected. It could be as much as 55 percent in high risk areas, and only 40 percent in the lower-risk areas. Since all of that variation is based on AIDS, one cannot help but notice that the major impact is still from organ transplants.

The increases just cited were estimated under the assumption that organ transplants and AIDS claims were included in the 1985 claims to which the trends were applied. The danger is that, due to statistical fluctuation, no AIDS or organ transplant claims could be in a companies 1985 claim base from which trends are developed. Then the actual increase in 1986 could be much greater, if in 1986 the expected claims from AIDS and organ transplants are realized. This increase could range from 55 percent in the low-risk areas to as high as 140 percent in high-risk areas, and 70 percent in the average risk areas. Given that the normal expected trend was 30 percent in this example, those would represent substantial surprises to anyone writing excess coverage.

At a $100,000 excess loss point, AIDS has less of an impact than organ transplants since the average cost of AIDS per year is expected to be only in the $75,000 range. Rather than a 40 percent normal trend, the increases including AIDS and organ transplants could be 50 percent for

low-risk areas, 55 percent for average-risk and 65 percent for high-risk areas. The effect of not having organ transplant claims in the 1985 base is even greater than at a $50,000 excess low point. Claim costs could increase at rates from 78 percent in the low-risk areas to 95 percent in the average and 150 percent in high-risk areas. I doubt if anyone has built those kind of trends into pooling charges.

Different actuaries would develop different figures, but the potential dangers are clear. Greater increases in AIDS and organ transplants claims can increase overall excess costs by thirteen-fifteen points, whereas not including them in the base figures could result in increases that are almost as much as double what would normally be expected.

To put this risk in perspective, claims in excess of $50,000 may be only 5 percent of total claims and those above $100,000 only 2 percent, but the impact of missing those trends by much can be substantial. In addition, with the continuing trend of employers toward assuming more risk, the claims above $50,000 and $100,000 are becoming a major marketing target for providing insurance protection. Thus, it represents a substantial area for profits or losses. Due to the nonrefunding nature of these pooling charges and the increasing competitive pressures on those rates, losses here cannot be recouped easily.

Let's assume for a moment that, based on these examples and your own knowledge, you are convinced there is a need for action. In going to your Vice President of Marketing with a proposal to raise pooling charges, 50 percent in Los Angeles because of AIDS and organ transplants for example, is not going to win you any friends. At the same time, the marketing people would not be able to sell it to clients since many of your company's competitors will not make similar moves. In the face of such opposition it is very difficult to stick to your guns, because you probably are not totally convinced yourself of the seriousness of the danger. After all, how many AIDS and organ transplant claims have you seen?

The crux of the problem, is data collection. How many companies, even those with significant exposures, can sort excess claims by diagnosis? How many are confident the diagnosis would actually say organ transplant or AIDS instead of one of the resulting complications such as pneumonia or meningitis? We need to challenge ourselves to bring more knowledge to key decision makers in the federal and state governments as well as to insurance companies, employers and their consultants. We need to combine data through industry bodies such as the Health Insurance Association of America (HIAA), the National Blues Association and even the Society of Actuaries. However, with the continued growth of self-insurance, provider-based insurance and prepaid health plans, compiling complete data is a very difficult process, even if there was wide-spread cooperation. From such data we would need to develop position papers, based on actuarial methods which would produce sound estimates giving authoritative weight to the findings. One cannot go to key decision makers with figures that do not have a basis in actuarial principles. We actuaries need to increase our research efforts in emerging areas and form closer, more cooperative relationships with health care providers and other health experts.

Assume that everyone agrees on the potential impact of AIDS and organ transplants and wants to do something about it. It appears there are two major choices: rationing, or funding whatever costs develop. The concept of rationing, either through denying benefits to some people or for some diseases, would not be easily accepted. Since most persons have health insurance, the approach would have to be denying benefits for some diseases. This would not be easy in the U.S. where we are accustomed to receiving costly treatment without question. However, in Britain there is stringent rationing of some procedures. For instance, two-thirds of British patients with kidney failure are denied renal dialysis treatment whereas virtually all patients in the U.S. are treated.

Even a potentially limiting approach like diagnostic related group (DRG) has recently received bad press. The news media has come alive lately with horror stories blaming the Medicare DRG system for the hasty release of aged patients. Senator Edward Kennedy has come back into the picture recently with the introduction of a Medicare reform package containing an antidumping provision which could impose civil sanctions on hospitals and criminal sanctions on physicians who inappropriately transfer patients. Needless to say, rationing is a very touchy subject.

Assuming that rationing won't occur, you can be sure that insurers will be expected to cover these risks. The question is how risks like organ transplants will be covered. We can no longer rely heavily on experimental exclusion wording since there is no clear determination of it anymore. Organ transplants have not been considered experimental by many companies for over a year. Yet, Medicare still won't cover heart transplants. Coverage for this can be extended by insurance carriers either through the insurance policy or riders, or employers can do it through their plan documents. Also the states could mandate coverage. Once it is covered, we as actuaries must determine the most equitable way of funding the risk. For AIDS it could be appropriate to dramatically increase area factors for high-risk cities. Increasing the age factor for single males age 25-45 could be another approach. For organ transplants, some companies have issued riders specifically covering certain charges for a specified rate. This rider is often reinsured, which is simply a means of shifting financial risk to another party and does not really solve the problem. There is also the danger that reinsurance may not always be available. Another approach would be to raise the pooling levels, thus potentially shifting more of the burden back to the employer. These approaches are the traditional methods available to us in such instances.

Several recent trends could signal a new approach to funding these costs. These have some aspects of limiting access, but do not appear to be as ominous as rationing. One idea would be for an employer to implement overall benefit maximums at a level as low as $100,000. Then, they may have a medical review committee in place that could grant additional payments where appropriate. The employer could negotiate with providers to perform some services at prenegotiated prices which would be more likely to provide appropriate care above the maximum rather than rely on regular fee-for-service charges. For example, if in a case of a premature birth there was an overall benefit maximum of $100,000, one may be willing to have that baby moved to

another community provider charging on the order of $1,000 per day versus charges that may have been running $2,000 or $3,000 per day.

Any time there is a benefit limitation, however, the financial impact to the employee must be considered. One way this impact could be reduced would be through a catastrophic protection benefit offered through a flex benefits program. And, there again, this would be tied in with a preferred provider. In addition, it is necessary to have some sort of medical review committee provide a means to take into account the special considerations present in these types of claims. This medical review committee should make recommendations to the employer, who would then make the final decision. I am not sure that physicians should be made the sole judge of who should receive care. The medical community, acting alone, has no strong incentive to make such decisions for moral reasons or because of the significant risk of malpractice suits. However, some people have been trying to make physicians assume much more responsibility in this area. Insurance companies run a risk in making such decisions, even if they are acting within a contractual context. Claimants may seek ways to bring it to trial. Obviously, putting the decision upon employers is a new approach and there will be many obstacles to overcome. However, the time has come when everybody is becoming aware that the employer is the true customer and thus should have a direct say in how his money is spent.

MR. ROBERT W. MOREY, JR.: My specialty is underwriting prepaid health plans. I want to give you an overview of the way we approach catastrophic risk from an analytic point of view, and why we approach it this way.

First of all, the staff members at my firm are in what we call a controlled risk business. That is to say, we are working with and trying to understand those prepaid health plans that have controlled or charge negotiated, risks as opposed to traditional indemnified fee-for-service business. That distinction leads us to pricing decisions that can be dramatically different from those appropriate for catastrophic premiums in the indemnified business. For example, with a similar set of benefits, a traditional reinsurer might charge $3.00 or $3.50 per person per month for indemnified fee-for-service coverage; we might charge $1.00. That gives you an idea of the difference between what we call controlled risk as opposed to uncontrolled risk.

We write business in forty-seven states in every major market in the country. We approach each risk on an individual basis. We do not pool risks. There are various factors in the methodology we use which lead us to believe that we should be looking at what could happen in terms of the catastrophic exposure, as opposed to emphasizing what has happened in the past. For example, probably 50 percent of the time when we are running a claims ration in excess of 100 percent, we may actually lower the premium. We do this because we believe that the inherent risk exposure in the particular plan, for other reasons, is declining. The knee-jerk reaction tends to be as follows: high claims, high risk, higher premiums. But, we have been able to make our approach on the basis that there are a lot of other factors that we consider far more important than the overall spectrum of events in

understanding the risk. As far as medical technology and changing economics are concerned, we think the big change is that these processes are no longer evolutionary, at least as far as catastrophic risk is concerned. If we had to operate using regression analysis, trying to understand the incidence of a procedure in the past and what the unit procedural costs are, and thus what the exposure for that type of procedure is going to be in the future, we probably would not be in the business today. We have been in it a long time and the reason we have been able to survive is that we have taken a proactive approach to understanding risk as opposed to a reactive approach.

The first point is that the pace of change in medical procedures is accelerating. The application of new technology is accelerating and these technologies are coming about faster. They are being accepted more quickly by the medical profession and the charges associated with these procedures are coming through rapidly. What you are faced with, if you use a reactive regression approach, is catch up. You are always trying to catch up to something that is happening faster and faster and faster. Also by simply looking at the past, you can come up with inappropriate or misleading conclusions. The financial impact of those can be very dramatic. For example, consider the evolution of by-pass surgery as one relatively high-cost procedure that has come on the technology scene in the last eight-ten years. It gained very rapid acceptance, and grew so fast that in a period of three years virtually every major tertiary care medical center in the country was forming a team to do these kinds of procedures.

The other side of the coin is that the cost of this technology dropped dramatically as it became a relatively mature therapy, at least in the negotiated control charge area. Costs also moderated in the fee-for-service area. We saw costs for the hospital portion of bypass surgery go from the $30,000-$35,000 grant to negotiated charges in the $11,000-$15,000 range, regardless of the intensity. In fact, I recently spoke with someone who negotiated a contract with some hospitals to perform this procedure for $11,500, regardless of how long the patient is in the hospital and regardless of whether or not it is a valve replacement. As incidence went up very rapidly and then leveled off as a percentage of the population, the costs leveled and then began to drop dramatically. We no longer consider, at least in our sector of the business, by-pass surgery to be a catastrophic risk. The costs are almost invariably under $50,000, unless there are very serious complications. In most of those cases our clients have negotiated away the tail anyway, so it is not really a risk from our point of view.

I'll talk a little bit more about organ transplants. Again, going on historical data, I think one can come up with some very misleading conclusions. For example, we think the incidence of adult liver transplants is about one per 1.5 million insureds per year. This is based on data under excess catastrophic coverage on millions of lives. From our perspective, that incidence of adult liver transplants has not really changed significantly in the last year or so. However, the costs of providing that procedure have changed dramatically. For example the procedure performed on a fee-for-service basis in Presbyterian Hospital in Pittsburgh costs $200,000-$250,000 without serious complications and

$400,000-$450,000 with serious complications (those occur about 15 percent of the time). We have participated in obtaining, with the health plans that we work with, controlled charges for the same procedure from very prestigious institutions all over the country. They are all prepared to perform the same procedure for $75,000-$125,000, regardless of serious complications. We think that the overall exposure in organ transplants, at least in the controlled charge sector, has dropped by 50 percent in the last two years.

Some of the catastrophic carriers have come out with premiums for organ transplant coverage at 19¢-20¢ per person per month for a $50,000 deductible. From our perspective, the true claims cost of that coverage is probably between 1¢-1½¢ per person per month. The people we work with, based on that conclusion, have decided they are not going to participate in that type of coverage. From our perspective, it is just another catastrophic risk, and not all that high in cost either. We are looking at exposure for bone marrow transplants in the area of $100,000. Heart and heart-lung transplants have hospital costs from $50,000 to $100,000 with a maximum of $125,000. The physician's cost is a small component of that, maybe $10,000. The cost of the organ may be $15,000, so the hospital cost is the major portion. The net result of the whole process is that if one looks at the literature, and listens to all the talk about organ transplants, one might be panicked into thinking that this is going to be a major component of new costs. We haven't seen it; that is to say it is not panicking us. It may come about, but I am confident that if this goes the way of by-pass surgery, there may be a rapid increase in incidence if the organs become available, or there might be a tremendous increase in incidence if an artificial mechanism is developed. But, the costs on a procedural basis will eventually come down dramatically. So what is talked about now as being $200,000 is going to be more like $50,000.

Now I'll talk about AIDS. It is something we are very worried about from a cost impact. We think that in a market like San Francisco, total health costs were increased by 10 percent just because of the increase in AIDS in that population last year. I emphasize that is a 10 percent increase in total costs. We think there will be one newly diagnosed AIDS case per 1,500 to 1,700 enrollees in the coming year in that population. To put that in perspective, suppose there are 10,000 insureds in the city of San Francisco paying an average premium of $70 per person per month; that is an $8.5 million premium base. The fee-for-service cost of an AIDS case over a year and one-half (the average time until the person expires) is around $125,000-$150,000. Probably $100,000 will be spent in the first year after diagnosis. In that population of 10,000, there are perhaps eight cases with $100,000 to be spent on each next year. This is in addition to what is already being spent for AIDS. This means that there is close to a million dollars of liability sitting in that population currently undiagnosed, but which will be diagnosed this coming year on an $8.5 million premium base. Those numbers are big, and they are going to get bigger. They are going to get bigger rapidly, exponentially. The difference between a cost of $125,000-$150,000 over an average period of a year and one- half to a cost of $50,000-$80,000 in a controlled charge environment is very significant. As a result, we are not too concerned about

catastrophic exposure in our population. If I were working in the uncontrolled indemnity side, I would be very, very concerned about the big increments and rapid growth in costs.

Two characteristics of the AIDS patient are that he is heavily oriented towards the gay population and tends to be from San Francisco. Both Dr. Atchley and I may be more knowledgeable about this thing than others might be. In any case, this is a terminal disease--100 percent terminal. The insured is not going to recover from it. Now, with all terminal diseases other than AIDS, the patient tends to remain close to his physicians, close to the care that he is receiving. He doesn't tend to leave the area, or leave his health care environment. In the AIDS situation 50 percent of the cases we have seen have moved away from the area where they were diagnosed as having the disease, and have literally gone home to die. The reason is that half of the people who contract AIDS in San Francisco are from somewhere else. They had moved to San Francisco within the last five years. After they contract the disease and it begins to reach high intensity, they usually go home to another area of the country to be with their families. What does that do to conversion exposure? We write guaranteed conversion, and we have an exclusion for AIDS. The potential AIDS exposure in any kind of a conversion product is quite large.

It is important to understand this exposure from the point of view of the provider and, particularly the catastrophic exposure from the point of view of the hospital involved. An understanding of the economics of the hospital and of the therapy are necessary. Looking only at aggregated numbers, one might think, for example that in a high-cost area like San Francisco or Los Angeles or Miami, the average cost per hospital day is high at around $900. When we talk about underwriting by area, we mean we underwrite by hospital, not by geographic area. We are concerned about the economics of individual tertiary care hospitals. We have to know what the difference is between a neonatal case that gets into Variety Children's in Miami as opposed to Jackson Memorial in Miami, since there are dramatic differences. A neonatal case in Variety Children's is probably going to average about $1,600 per day as opposed to about $1,000-$1,100 per day in Jackson Memorial.

If one doesn't know those distinctions by therapy, by hospital, one can get some very misleading ideas of what the exposure really is. For example, consider a tertiary care hospital that is proprietary, and information is available on its contributions to fixed overhead and profit between the Intensive Care/Comprehensive Care (ICU/CCU) unit and the Medical/Surgical (Med/Surg) unit. A typical hospital in California might charge $2,400 a day for the ICU/CCU unit. The variable cost is around $800 with a fixed cost of $1,600 to cover overhead and surplus. For the Med/Surg unit, it typically charges $800 a day, the variable cost is $400 a day and fixed cost is $400. This proprietary hospital is making three times as much money on its high intensity care (ICU/CCU) as on its low intensity care (Med/Surg). If the same tertiary care facility is in a not-for-profit academic setting, with the same average patient revenue as the proprietary hospital or within $50 per day, it is going to charge $1,300 for ICU/CCU care with variable costs of about $950 and fixed costs of about $350 a day. For low intensity care, it is

going to charge $750 a day with variable costs of $450 and fixed costs of $300. Now what is the point of all this? That academic, not-for-profit facility has essentially the same fixed costs whether it provides high-intensity or low-intensity care, but the propriety hospital is making three times as much money on the high intensity care.

What happens when either of these settings gets both a heart attack (or a myocardia infarction (MI) and an AIDS case? The heart attack (or the MI case) requires high-intensity care for a short time duration, and even though the average patient revenue for both hospitals will be roughly the same, the heart attack case is going to cost twice as much in the proprietary setting as in the academic not-for-profit environment. For the AIDS case, which requires low intensity care for a long duration, the difference in the cost between the two hospitals is going to be negligible. Thus when one is looking at an area, one has to understand what the exposure is by hospital, understand their charge profiles for different intensities of care. Without that understanding one comes up short in trying to understand the differential risk on market-by-market, plan-by-plan, area-by-area bases. We think risk pooling is a quick way to lose money because the marketplace is not going to allow someone to set a high enough pooled rate to absorb the differential market-by-market or plan-by-plan risks.

I would like to comment quickly on perinatology. We have worked with one group of people who put this program in on a very sophisticated basis. They dropped their neonatal (preemie) incidence and exposure by 70 percent in a period of two year. From a catastrophic point of view, that is fantastic. For every week the birth of a baby can be delayed, medical costs are reduced by $5,000-$7,000. So, the idea is to try to defer the baby's birth, to full maturity if possible. Perinatologists have developed some interesting techniques to do this, and the cost savings that can be engendered in such a program can be fantastic. For example, an expenditure of $100,000 to put a program like that in place can yield a savings of $2 million in one year depending on the size of the health plan and on the size of the perinatology group. Another common misunderstanding is that hospitals don't make any money on their neonatal facilities. A twenty-bassinet neonatal facility in a tertiary care hospital with 75 percent occupancy for the year, with average charges for that level of intensity of care, will generate the maximum profitability of any other type of unit the hospital has. There is a lot of money in neonatal care; just look at the proprietaries who provide it. They would not be in it unless they thought they could do pretty well at it. Anything you can do that results in a reduction in the incidence of this type of risk in a proactive sense in very beneficial.

Finally, we believe that medical care delivery is becoming cost driven, on a referral basis as opposed to a quality and intensity basis. That being the case, a lot of different decisions are being made about where the patients go for care, why they go and the incidence of referral cases. We think that the traditional approach of analyzing regression equations using aggregated data, or outdated information, which one may have to purely out of necessity, can be a very misleading process to arrive at sound market actions. My main thought is that it is very important for those people who are involved in underwriting to become

provider sensitive. One has got to get close to the people who are actually providing the care, particularly the hospitals. One has got to understand what the hospital's economics are, how decisions are made, who benefits from those decisions and what biases there are in the system. Those decisions are changing very rapidly, and the process of change is accelerating. Again this make it awfully difficult to work in the traditional regression analysis sense. To put it another way, we think that it is necessary to be proactive as opposed to reactive when looking at catastrophic risk.

DR. WILLIAM A. ATCHLEY: I will speak to you as a practicing physician, one who has a particular sense of ethics. I will speak first about AIDS because I am from San Francisco, and we in the medical community there deal with it as a disease on an individual patient basis, a personal basis, everyday of our lives.

It is a very difficult problem, just from a human point of view. We feel a great deal of compassion for the people who have it. They did not go out and ask for it. They did not know what they were doing. From the point of view of the people, mostly gay men, who don't have it, we remind them that it is a venereal disease and that they don't have to get it. Now, we have another category of people who have it and one of my patients has the distinction of being the first person in San Francisco to be knowingly diagnosed as having AIDS as a result of a blood transfusion.

It is very difficult to know what is going to happen with AIDS. It is the result of a certain kind of lifestyle or intravenous medications, and the lifestyle has suddenly changed very dramatically in San Francisco. There was a great deal of resistance on the part of the gay population to acknowledge that this was a threat to them. Various efforts were made to shut down the bathhouses and things of that sort, but the initial efforts were not successful. Now it is all different. The bathhouses, all but perhaps one or two, have closed because they don't have any business. A cultural backlash is coming and people, this includes gay people, no longer want to go to restaurants that are openly gay or have gay waiters. I have a number of gay patients and they are all terrified of the illness; they suddenly realized that it is their responsibility. So, the lifestyle has abruptly changed. There will always be a few individuals who are totally irresponsible to themselves and to the community of which they are a member, but their number is now quite small.

Regarding transfusions, I feel that the risk in San Francisco now is zero. Blood screening is extraordinarily scrupulous and I would predict (you never say never in medicine) that there will be no more cases of AIDS transmitted by transfusions. The hemophiliacs had a terrible time because the virus got into the intravenous preparations that keep them from bleeding to death. That particular AIDS victim pool has already suffered a sharp drying up.

AIDS can be transmitted by heterosexual contact. The problem is, we don't know how. We don't know how much of a threat it is. Only time, epidemiological studies and other kinds of research will tell us

just how big a threat this is. It does not have to be a very big threat though to be a very serious one. It is estimated that right now there are about one million people in the United States of America who have been infected with the AIDS virus. This does not mean that they will all get AIDS. We currently believe only about 15-20 percent of them will come down with AIDS. However, those who do come down with the disease will all die. Is the disease transmissible from a clinically silent patient to an uninfected person? We don't really know yet. Perhaps some way of treating the illness will appear on the horizon. At the present time, there is no solid advance in this area. A number of things are being tried, but it may take a long, long time before an effective therapy is found. We don't have control of the disease.

Let's move from the AIDS to a more global picture of medicine. I am going to bring in two populations that you in the audience don't usually work with, old people and poor people. Older people are taken care of mostly by Medicare, poor people by Medicaid and state welfare programs. In doing this I want to enlist your interest and I hope your participation in a very difficult and challenging debate that is going to go on into the future. We are all involved, very seriously and personally involved. Let me lay the groundwork first by telling you all the good news.

I am dazzled everyday by what I see in my own hospital and what has happened over the years. I will start with antibiotics because my life was saved by penicillin. I was the first person in the world with staphylococcus pneumonia to get penicillin and survive. Now everything is high tech. Consider invitro fertilization, or test tube babies. There are 700 of them now, alive and well. Perinatal diagnosis, prenatal diagnosis and intrauterine surgery are new. For example, a mother was found to have twins by various diagnostic methods, but it was found out that one of them had Down's Syndrome, or mongolism. That fetus was terminated with intrauterine surgery so that the other baby would have a good chance for a healthy life. Fetuses can be taken out and operated on, even to fix hearts or kidneys. CAT scanners are absolutely mind boggling, but not as much as the magnetic resonance imagers which give the most exquisite detail of the brain and every other part of the body, and now can provide information about metabolism and Alzheimer's disease. Other examples are coronary artery surgery, heart valve surgery, transplants and, of course, the most recent and most challenging of all the artificial heart. Well, this is wonderful, but let's take a pause and discover, as I and other physicians have, that it costs a lot of money.

The test tube baby procedure requires about five tries of mixing up the sperm with the ovum before conception takes place, which is about the same batting average as the natural process. Each mixing costs $5,000 so it costs about $25,000 to conceive this way, yet it is something that sometimes happens to people for free when they are not watching! End-stage renal disease costs $3 billion a year, and remember that by definition these people are terminally ill. Charges in intensive care units added up to $20 billion in 1985. With heart transplants, we use a figure of somewhere around $100,000 each. For the artificial heart, $200 million has been spent since 1960 to study it.

There is absolutely no reason to think that the artificial heart won't work or that it won't work well. However, it is projected that it will cost about $150,000 a year to take care of a patient who will live an additional 54 months on the average, much of that time chronically ill. Now, you might say: "That is just a step on their way to a human heart transplant," but that is not correct. Dr. Denton Cooley suggests that there is a maximum of 1,000 human hearts available a year and that only about 500 hearts right now are available for transplantation. So, there are going to be lots of people on the artificial heart and there won't be hearts for them. We are trying to increase the number of organs but it is so difficult logistically. There are 7,000 people today on dialysis waiting for a kidney.

What does this mean? When you add it up, you find it is beginning to strain the system. The expenditure on medical care now is 10-11 percent of the gross national product and it continues to rise at a faster rate. There is going to come a time, if we aren't there yet, when we decide we have got to do something in the way of constraints. What are we going to do? It seems that everyone wants to get out from under the costs of health care. The federal government has a $200 billion deficit and many of the expenditures are fixed. Most of them can't be shot down, but Medicare, seems to be a fair target in that 50 percent of all hospital bills are paid by Medicare. That is an enormous amount of money, and the federal government is doing everything it can to reduce Medicare expenditures. This brings me to a very important point I wish to make. No matter how much the expenditures are reduced, medicine is going to discover a new disease to be treated, a new surgical procedure, a new antibiotic, a new way to treat leukemia, and so on. We are going to be more effective with seat belt use. We are going to cut down on people dying from head trauma. Remember, the people who stop smoking or who wear their seat belts are being saved to die later on in their lives, a death which perhaps might be much more expensive.

There are forces driving the situation which could very easily bankrupt us. The states want to get out from under the costs. They take care of the welfare patients in large measure. Much of it (40-60 percent) is with money that they receive from the federal government in grants and aid. The federal government does not want to give them that money because it is needed to reduce the deficit. So the states are, in an agonizing way, trying to constrain their expenses. Corporations want to reduce their costs, a good example is Chrysler. If it wants to remain competitive with the Japanese, it has to cut costs. Again, health benefits are a fair target, since $600 of the cost of every car is for those. Insurance companies are also trying to cut down their costs. One of the actuary's jobs is to determine the risks and possibly set them aside; that is, don't take on those patients. The picture I am painting is that we have suddenly realized that we can't afford what we are doing, and everybody wants to shift the burden somewhere else. But needy patients are still there. People are still getting sick and somebody is going to be taking care of them. And, of course, who takes care of them but society through tax dollars?

We are in an ethical dilemma. How are we going to limit our resources? Mr. Ahrens said earlier that rationing is odious, perhaps unacceptable, but we are already there. I don't think we can avoid it. We don't call it rationing, we call it "allocation of scarce resources," which is a much nicer term, but that is what it is. It is going on everywhere. The marketplace itself, which is held up as almost a divine touchstone, is a way of rationing. When things are too expensive, people just don't go out and buy them, and that goes for health care as well. However, those who can afford it will go out and buy it. People come over from Saudia Arabia to get their liver transplants, their artificial hearts or their heart transplants. The people who can afford it will buy it and the people who can't afford it may lose their access to it.

We can't hide behind money anymore. This to me is a rather poignant circle. Back around 1964 when we were first doing kidney transplants in Seattle, there were not enough to go around. So a committee was established to decide who would get the transplants. This committee was call the "God Committee" because the members were deciding who would live and who would die. They were very proud of their efforts, but soon they became totally dismayed. They found that they just couldn't decide anymore who would get the kidney--who would live and who would die. At that moment the federal government stepped in and agreed to underwrite the kidney transplants. And of course what's happened is that the expenditures, as Mr. Morey said, have mushroomed. Everybody wonders now, with the dialysis program and the transplant program, where is the end?

We have to set up certain principles which I will call ethical principles. I feel much better about discussing ethics when I remind myself that I'm just trying to determine what's fair. It is nothing more complicated than that, just what's fair for you, what's fair for me and what's fair for patients. We in the medical community are obliged to work with various ethical principles. I can't give you any simple rules to follow but we think about what's right in the short term and what's right in the long term. As far as I'm concerned, there's nothing inherently unethical about any high-tech medical procedure or any medical procedure at all. What we're talking about is the economics of the situation. The medical ethics field is quite proud of itself because it has really done a very fine job airing ideas like life support and life prolongation. Previously, these were one-on-one decisions between the doctor and the patient. Now, groups of patients are affected.

We find that society can't give a patient a right to health care if there aren't any resources to back that up. Rights all come from society. They don't come from anywhere else. They may ultimately come from some divine source, but basically the contract is given by society to individual persons. But the society can't grant a right when there are no resources to carry it through. We're going to be faced with, and there are certain ethical issues groups already working on these, such things as is it best to choose younger people over older people for insurance benefits? to cover a fatal disease over a crippling one? to choose longer-term value over the shorter-term, or the greatest good for the greatest number of people. We, all of us in society, are already facing the challenge of what's right for our species. If we take

care of all the hemophiliacs, which we do, they pass their gene on. Thus, the number of hemophiliacs, instead of being weeded out by some Darwinian process, is growing. Thus, the overall health of the species is now an imperative issue we have to think about.

Let me talk to you about the doctor himself, and make what I see very clear. I see an intolerable pressure on doctors if we ask them to solve all of these problems. When the doctor goes to the bedside, he is and must remain the servant of the patient in every way. This has been the tradition forever, and I hope it doesn't ever change. The doctor can't go there and say: "Well, I'm sorry, we make decisions on a cost/benefit basis, so you don't get a kidney." On the other hand, the doctor is the one who knows how to guide us in some of these areas. He is a very valuable person when working with the actuaries and the lawyers and the economists and the ethics people. He can give input about the likelihood of there being some benefit to the individual if the procedure is performed. So the doctors can serve in a consultant role in solving some of these problems. But that should be done ahead of time, so when he goes to the bedside he doesn't have to make these life-and-death decisions.

My final statement is that ethics are a function of economics. Ethics are money-driven, and so ethics and economics are opposite sides of the same coin.

MR. AHRENS: Mr. Morey makes controlling risks sound so easy. As actuaries, we don't know costs in that detail and, more importantly, how to force some control over these costs. He makes it very clear that fee-for-service pricing is not a very attractive area to be in. Given we can't go completely controlled, how do we as fee-for-service providers bring some control to some of these risks?

MR. MOREY: I think that the distinction between the underwriter who's involved in uncontrolled fee-for-service risk and ourselves, who are involved only in controlled risk, is going to merge. It is going to be eliminated over time. The amount of uncontrolled business is getting to be less and less all the time. We're getting a middle ground of PPOs and IPOs and all the rest of these acronyms which represent, in my mind, a middle ground between the totally indemnified fee-for- service open panel system and the totally controlled closed panel prepaid health plan. Inevitably, the underwriter who has been involved in the uncontrolled risk is going to have to get involved in controlled aspects of the delivery system, because he is going to be looking at risk and setting premiums for something other than just the traditional indemnified product.

MR. AHRENS: One interesting event is that the industry is moving rapidly towards the so-called triple option product where the insurer goes to the marketplace and says to an employer: "We do it all. We offer the so-called prepaid product and we also offer a swing option PPO product where the people can stay in the controlled delivery system or, if they go outside, they pay some type of a coinsurance and maybe a deductible. Also they can opt for the total open panel." Some of the questions that come up in pricing those products are who gets

what adverse selection, and is the underwriting experience for all three products dumped into the same pool or is it separated? If it becomes separated, it seems to be that then one would get into the "them or us" question of what types of risks are going to go closed panel, how much differential there should be between the two different products, or the three different products, and how much differential can be absorbed without getting some very obvious selection problems.

MR. MOREY: The comfort the underwriter has had in dealing with his traditional uncontrolled risk is going to come to an end. The process is going to get a lot more complicated in terms of understanding the exposure and the differential risk between populations, picking different types of panels, and so on. That whole thinking is a new dimension for me. We've been involved, for example, with Lincoln National in a preliminary way to determine what happens when you begin to associate the traditional business with prepaid vehicles and you go into the marketplace with a dual option product. How should that be done? I can tell you this, the underwriters in the group division of Lincoln National have had some problems dealing with this. They're very nervous about who gets what type of risk and if they want to take a chance on it. The reality is, in my view, one doesn't have a choice, that we are all going to have to live with dual option or triple option products, and we are all going to have to acquire greater understanding of the economics of the controlled portion of the delivery system. If someone does not understand the economics of it, how can he possibly differentially price the products? That is where it is at. When I say understanding the controlled aspects of it, let me give you an example.

If somebody tells us that the medical director is a 36-year-old psychiatrist, we rate the health plan down immediately. Imagine the situation of a 36-year-old psychiatrist going to a 58-year-old general surgeon and telling him that he is over-utilizing and that patients should be taken out of the hospital more rapidly. His ability to do that, if you understand the views of different specialists about their conferees in the industry, is poor since it is a highly difficult and awkward situation. We are not going to get much control, in our view, from the 36-year- old psychiatrist. These are the subjective factors we try to assign a mathematical weighting to in a formula. These are the kinds of factors that are, in my view, going to be increasingly important to understand.

Another example of this is the question of who is doing the actuarial work for this group. When we look at controlled risk delivery systems and their pricing in the marketplace, we're concerned with who is doing that work. We know about ten people we think are pretty knowledgeable about the actuarial side of prepaid health. If any of them is doing the work, then we rate the plan up by a factor. That is a totally subjective evaluation on my part. If we see the name of a person we don't know, or we have some other opinion about, then the plan is given a neutral weighting of this item. Traditionally, these kinds of factors have not been looked at, but we think they are going to get more and more important in evaluating controlled versus uncontrolled risks.

MR. ELLIOTT I. COBIN: I'm with Provident Mutual. Mr. Morey, you mentioned the impact of AIDS on conversion policies. Other than taking into account in rates, what can be done? Can we change the conversion policy benefits? Most states regulate that.

MR. MOREY: Yes, that is right. I can tell you what we've done. If a guaranteed issue conversion product has to be written in a state, we put an exclusion in for AIDS. And, since we don't charge for the product, when the regulators have come in and said: "We're not quite sure that this is appropriate or legal in terms of the state law," we've said: We don't have a problem with that. If you want to conversion, the exclusion is in there. If you don't want the conversion, we'll take the exclusion out." It is as simple as that. AIDS to us is an unacceptable risk in a guaranteed conversion product, a totally unacceptable risk.

MS. JOAN P. OGDEN: I'm with Wilcox and Cannon. Mr. Morey, could I ask you to expand on that further? Increasingly, states are mandating conversion coverage so that you must cover any condition that is covered under the product to which it is a conversion, and further mandating extended benefits if an individual is terminated from a group for any reason of disability, for the period of disability, up to one year. How does that impact on what you're suggesting there?

MR. MOREY: When we talk about conversion, we put it into two categories. There is the conversion where the person stays within the health system in the regional area. If he leaves the employer group but he is still living there, he must be picked up on an individual product in the same area by the same entity. We're not concerned about that type of conversion because the AIDS risk is already in that situation. What we're concerned about is the out-of-area conversion, the conversion that takes place on a guaranteed basis, if it is regulated. The person for whatever reason, regardless of their health profile, decides to leave the service area of the plan. Maybe he is in the San Francisco and he decides to go back to Peoria. We call that situation out-of-area conversion on a guaranteed basis without proof of insurability. In that kind of product, we think the AIDS exposure is unacceptable because of this unique problem associated with the AIDS patient where he literally goes home to die. I want to say that softly, but that is the reality of it. We have been queried on this exclusion, by the way, by perhaps fifteen or twenty states and have received a lot of criticism about it. Without exception, however, they have backed off when we said: "You want the conversion product for people who move away from the area. On a guaranteed basis, we can do that but the AIDS exclusion is in there. Otherwise we won't write that coverage."

MR. AHRENS: I think you'll find that the regulation of prepaid health plans tends to be a little different than that faced by insurance companies and the Blues. This is why Mr. Morey is able to do something like this. I don't think I'd go to my contracts people and tell them: "I've got this great idea, why don't you try it."

Once I had some concerns about whether it was possible for the AIDS virus to mutate and start affecting more than just what is considered the gay community.

DR. ATCHLEY: I haven't thought about it, but I know that Mother Nature is capable of almost anything in that regard. Viruses do suddenly mutate and they do spread, and it is something to be concerned about. However, there is no way to predict what you don't know.

I have a question for Mr. Morey. When you see coronary artery bypass grafting going from $25,000 to $11,000 under contract, are you at all worried that there might be corner cutting or shaving of the quality of the care given, and are any monitors set up to make sure the care is as good as it was before or perhaps even better?

MR. MOREY: The interesting thing is that most of the institutions that have entered into these contracts are the same institutions that were previously performing those procedures. It is to some extent a volume-driven business, and I'll tell you how anxious they are to get that business. The hospital has included in its fee the cost of one dependent going along to accompany the patient. Some of the institutions have even said that they will include in their fees the total transportation and living expense for two people to come to the institution where treatment is performed. From a quality image, there may be some corner cutting going on, but the types of facilities that are proposing to become tertiary care referal centers for high intensity, sophisticated care, are considered to be among the most prestigious in the country. There is a tremendous trend going on right now for the major hospitals to become anchors for networks of hospitals in their regional areas. Some of the areas are bidding for business in the entire United States! Cases have been shipped from Philadelphia to Seattle because of a particular facility that does bone marrow transplants. This is becoming a way of life, so it is very important these regional centers understand the economics of these arrangements.