

Project 2010

On the Current Crisis

in Healthcare and its

Implications for the

Hospital of the Future.

EARL E. BAKKEN
KIHOLO BAY
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PREFACE

THE FACT that I was the cofounder of what is now one of the largest medical technology companies in the United States, it has become apparent to me over the years that the development of more and more advanced medical technology has been accompanied by a deterioration in the quality of the doctor-patient relationship and of patient centered hospital care.

Perhaps this could not be helped: the initial fascination with breakthroughs in medical technology have pushed aspects of the art of medicine—intuitive diagnosis, the "bedside manner"—into the background. The time has come, however, to reexamine what has been lost and forgotten: it is my opinion that much of what aggravates the current crisis in health care delivery adversely affecting both quality and cost can be traced to the lack of a humane medicine.

Many, perhaps by now most, medical professionals now recognize this to be true, and it is greatly to their credit that action is being taken to correct the situation. Progress in the development of a humane medicine is, however, not moving as fast as it should—not as fast as it has to in order to positively affect the current health care crisis.

While I believe that the inappropriate use of technology has led to many of our difficulties involving the cost and quality of medical care, I also believe that medical technology has contributed enormously to our quality of life. I certainly do not advocate stopping the development of new medical technologies; it may even be that we need more and better technology, appropriately used, to help with the present situation. We must, however, combine the medical "high tech" of the present and future with the "high touch" of the past. The center of modern medical practice must be the patient, not hardware, procedures, and theories. The lectures in this volume will address all these issues in detail.

When I retired from Medtronic in 1989, my wife Doris and I moved to our retirement home on the Big Island of Hawaii. I am still very active with Medtronic on a part-time consultant basis, but as this commitment has diminished, I have spent more time involved with medical and environmental issues in Hawaii. As luck would have it, our move to Hawaii coincided more or less with the beginnings of a local campaign to construct a new hospital in the nearby town of Waimea, a hospital that would serve the northwest area of the island. I gradually became more and more involved with this project, eventually joining the board of directors and taking an active role, helping to guide the hospital project toward a patient centered, integrated approach to health care delivery.

Fortunately, such an approach was not at all a novel concept to the people of North Hawaii, and many of those involved in promoting the new facility both professionals and laypersons already saw the need for the kind of institution I describe in "Not Just Another Hospital." We hope that our efforts in creating the North Hawaii Community Hospital will produce a model for the rest of the State of Hawaii—already known for its leading role in health care policy and, perhaps, even for the nation.

I wish to thank the Archaeus Project board for their suggestions and criticisms, and the staff of Archaeus Project: Dennis Stillings and Gail Duke, who massaged these lectures into publishable form; and Cathryn Stewart, who designed and produced this volume.

EARL E. BAKKEN
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EDITOR'S PREFACE

THIS COLLECTION of lectures by Earl Bakken constitutes the third volume in the series "Time, Mind, and Medicine," the other two being *Chronobiology: A Science in Tune with the Rhythms of Life* (1986) and *Cyberphysiology: The Science of Self-Regulation* (1988).^{*} These publications reflect the concern felt by Earl Bakken and Archaeus Project for the future of health care in the United States. In the attempt to find a solution to the problem of high cost and declining quality in healthcare delivery, Archaeus Project organized two Congresses one in 1986 in Santa Fe, New Mexico, and the other on the island of Moloka'i in Hawaii in 1989. In addition, Archaeus Project has worked with North Hawaii Community Hospital, Inc., in arranging symposia and workshops on patient centered health care and the role of the mind in medicine. A number of articles on health care and medically related topics have appeared in the Archaeus Project publications *Artifex* and *ARCHAEUS*, and Archaeus Project has a large collection of audio- and videotapes on the subject of health care as well.

Earl Bakken, a resident of the Big Island of Hawaii, is also an active member of Friends of the Future, a Hawaii-based organization concerned with, among other things, issues of preserving the native Hawaiian heritage, preserving the environment, and instituting health and wellness programs. In his position as chairman of the Health and Wellness subsection of Friends of the Future, Earl is working in cooperation with concerned residents of North Hawaii to establish a public health and wellness information center. This project is well under way and promises to be an important component, along with the planned North Hawaii Community Hospital, in the creation of a new community approach to wellness programs, health care, and the promotion of preventive medicine.

While the elements of Earl's message are repeated throughout this collection of papers, each presentation emphasizes a different aspect of the health-care issues with which he is concerned. Each presentation contains important data that help to fill out the picture of the current state of health care in the United States. This data and the accompanying statistics change from year to year, even from month to month. As editor, I have made every effort to keep this information as current as possible. Indeed, from the time this manuscript is finished and the time it gets into the reader's hands, there will have been many proposed changes in healthcare policy, new statistics will have been generated on the costs and quality of health care, and new views will have been expressed on the doctor-patient relationship and the nature of appropriate hospital and home care.

There are few hopeful signs that changes will occur to alter significantly the direction in which health care is going, namely, toward yet higher costs and increased limitations on access to high-tech medicine. The ominous curves of the graphs contained in the following papers may be expected to move upward unimpeded, and the projections they represent may be considered very apt to occur. We therefore believe that the information and ideas contained in this volume will be valid for some time to come.

DENNIS STILLINGS, DIRECTOR
ARCHAEUS PROJECT

BIOGRAPHICAL INFORMATION

IN 1949 EARL E. BAKKEN was cofounder, along with the late Palmer J. Hermundslie, of Medtronic, Inc.—the world's largest manufacturer of cardiac pacemakers. He served as Medtronic's chief executive officer and chairman of the board from the company's incorporation in 1957 until 1976. He then took the position of senior chairman of the board until his retirement in April of 1989. The company's current position of world leadership in cardiac pacemaker technology derives from Bakken's development of the first wearable, external, battery-powered, transistorized pacemaker in 1957. It was made for the University of Minnesota cardiac surgeon Dr. C. Walton Lillehei.

Earl Bakken also founded The Bakken: A Library and Museum of Electricity in Life located in Minneapolis. The collections of this library and museum, initiated in 1970, now consist of hundreds of original antique medical electrical devices and several thousand publications documenting the history of the use of electricity in medicine and biology.

In 1982, Bakken created, Archaeus Project, a public educational organization that gathers and publishes information on the role of consciousness in health and healing. In addition to its regular publication *Artifex*, Archaeus Project produces special publications such as *ARCHAEUS* and the monographs in the series "Time, Mind, and Medicine." Archaeus Project also maintains an extensive networking and consulting operation and has organized several important meetings on issues of mind and medicine.

Earl Bakken has authored several scientific papers and has delivered lectures to medical, technical, scientific, educational, and business groups around the world. In addition to his several positions on boards of directors and his fellowships and memberships in professional organizations, Earl Bakken has received honorary doctorates from the University of Minnesota and Tulane University. Other awards include Outstanding Minnesotan of the year (Minnesota Broadcasters Association, 1988); the Governor's Award for Leadership in the Business Application of Science and Technology; the Centennial Medal from the Institute of Electrical and Electronics Engineers; and the Engineering for Gold Award from the National Society of Professional Engineers (1984), honoring the cardiac pacemaker as one of the ten most outstanding engineering achievements in the last fifty years. He has received a Royal decoration as an Officer in the Order of Orange-Nassau (Netherlands, 1989).

Project 2010

A Vision of Health Care in the Twenty-First Century

The "health-care crisis" is so acute and complex as to demand a new conceptual framework one that makes it possible to think clearly about what to do and why to do it.

-W. Andrew Achenbaum

AMERICAN HEALTH CARE HEALTH CARE is undergoing a crisis of major proportion. It is characterized by both, rising costs and falling quality and is fast increasing in severity. Many people even those in the health care professions do not realize the gravity of the situation. We cannot continue in this trend for long perhaps no more than another couple of years without facing disruption of the entire health care system.

Numerous proposals have been made for correcting this situation; some are inappropriate, and some are merely inadequate, providing only temporary answers. A few people think that the crisis is caused by the exorbitant fees that physicians charge, and that the problem will go away if doctors' expectations are more reasonable. Others believe that we should transfer a portion of the defense budget to the health care system. Still others want to increase further the taxes on corporations. And a sizable number favor simply putting more money into the system to solve the crisis, rather than concerning ourselves with reducing the cost of what is provided. The American Association of Retired Persons (AARP), whose members now account for one-quarter of the voting public (and the percentage is increasing), calls for a national health care system to be modeled after either the Canadian or the British system.

* This article is based on the edited transcription of a special presentation given by Earl Bakken to the Archaeus Project membership on March 7, 1990, titled, "Project 2010: A Vision of Medicine in the 21st Century." It has been revised and updated several times since then to reflect new data on health-care costs and quality. This lecture is also available on video- and audiocassette.

As we shall see, all of these points of view fail to address basic realities. We believe, however that the beginnings of a solution have been formulated by Project 2010. It is an attempt to conceptualize a health-care system that will meet or surpass world standards while remaining affordable.

THE COST OF HEALTH CARE

IN RECENT YEARS, health-care expenditures have been increasing by about 10 percent annually. There have been periods of relative stability, such as the introduction of DRGs (diagnostic related groups) in 1983, but the pattern continues. If we project the current 10 to 12 percent increase into the future, we will be facing a health-care budget of \$1 trillion a year by 1995 and \$1.6 trillion—16.4 percent of the Gross National Product (GNP)—by the turn of the century.² (By comparison, the entire national budget for 1990 was only \$1.3 to \$1.4 trillion.) By 2010—the year we have chosen to focus on—costs will have reached \$2.5 trillion. By 2085, the cost of the health-care system alone could consume our entire GNP. This upward spiraling of health-care costs is entirely unstopable. (Figures 1 and 2)

As 1990 progressed, it became apparent that the rate of increase in health-care costs would exceed the projected 10 percent, and that the \$660 billion estimate would fall substantially short of the actual health-care expenditure for that year. We spent about \$2700 per person on health care in 1990.³ (Figure 3)

CONCURRENT WITH the rise in costs, we are witnessing an undeniable decline in the quality of our health care. In infant mortality rates, we rank behind all other Western countries and have recently dropped from 19th to 20th place.⁴ Our life expectancy is now a few years less than that of most other Western nations, including Spain

and Greece. And if we look at the statistics on such major diseases as heart attacks, we find that we are just not keeping pace with the other civilized nations, even though we are spending much more money.

Hospitals are not admitting as many patients as they have room for, because they lack adequate personnel to attend properly to those patients. The most critical need is for nurses: it would take at least an additional three hundred thousand to make up our current shortage. The lack of qualified technical personnel such as X-ray, laboratory, and pump technicians is similarly acute. And the number of applicants to medical schools has been decreasing, so that even though we have more than enough physicians in this country at present, our current surplus can be expected to disappear by the turn of the century.

The continually increasing costs of the healthcare system are forcing more and more companies to reduce their employees' health insurance coverage. On the other hand, when coverage is mandated, many people and employers are forced out of the system. We now have between 31 and 37 million uninsured people in this country (15 percent of the population), a group composed mainly of the young and the poor. (Figure 4)



FIGURE 5 The uninsured by age: Percentages of those not covered by health insurance.

The number of uninsured patients makes up a significant percentages of those who are admitted to a hospital emergency room for immediate care.⁵ The medical expenses they incur cannot be shifted to other potential payers, because they in turn are not being reimbursed through Medicare or other agencies that might have available funds. This means that hospitals are not being reimbursed for emergency service, and emergency rooms across the nation are being forced to close! An ambulance carrying a critically ill patient may have to check in at several hospitals before finding one with an open emergency room, even in large cities where one would expect facilities to be completely adequate. And in rural areas, entire hospitals have been closing up at an alarming rate; if they have a particularly high percentage of Medicare patients, the DRG payments will not cover their expenses. (Figure 5)

HEALTH CARE QUALITY

PATIENTS WANT THREE THINGS from any healthcare system. First, they want access: they want to be able to get medical attention when they need it and to know what they will be compensated for. Second, they want relief of symptoms. And third, they expect a little personal attention, a few words of reassurance and a friendly squeeze of the hand. In today's system, it is this third aspect that has fallen into neglect. All patients except for the 37 million uninsured have ready access to the system, and their symptoms can usually be relieved by drugs or by technological intervention. But virtually no provision is made for ministering to psychological needs, because the system does not compensate the nurse or physician for time spent on that sort of care. (Figure 6)

A recent Harris poll interviewed people about their feelings toward health care. Only about 50 percent of Americans were satisfied with the care they had received, compared to 67 percent of the English and about 80 percent of Canadians who were satisfied with their respective systems. Much of the dissatisfaction of Americans may be due to the tendency of health-care professionals to disregard patients' psychological needs. (Figure 7)

One aspect of psychological care that needs improvement is the building of trust between patient and physician. Currently this relationship is almost adversarial: on receiving a new patient, a doctor may wonder whether this is the sort of person who is likely to press a lawsuit.

These are a few of the problems that lead to a reduction in the quality of health care; there are many more. But this does not mean quality care is not available. The American medical system is the best in the world, and medical personnel are well trained and qualified. Given the opportunity, nurses and doctors often do provide full spectrum care, but those opportunities occur only rarely.

REASONS FOR THE INCREASE IN COST

Increased reliance on technology

Fifty years ago, a physician relied on the "art of medicine": the good words, the hands-on treatment, the recognition of healing as a process taking place between doctor and patient. Today medicine is a science, rather than an art; personal interaction has been left behind. Instead, unnecessary and potentially dangerous diagnostic and therapeutic procedures are made available to everyone, regardless of age or prognosis.

Overutilization of the health care system

There has been a strong media campaign to convince the public that medical attention is needed for every minor ailment. We readily oblige, thinking that someone else is paying the bills. In a sense this is true: most of us who carry medical insurance are actually overinsured. Also typical of Americans is the expectation that the doctor will be able to "do something" to give immediate relief. We do not want the interference of bodily complaints; we do not listen when the doctor advises a few days' rest. This leads to overly aggressive treatment by physicians, the unnecessary use of drugs (with their attendant side effects), or even unnecessary surgery.

This situation does not obtain, of course, in other countries. One reason for this is that the same condition may be diagnosed differently elsewhere. A patient diagnosed as having hypertension in the United States might find that the problem "disappears" in Germany, for example, where it is differently defined.⁸ (Low blood pressure, rather than high blood pressure, is regarded by German physicians as being the greater threat.)

The increase in the numbers of elderly

The elderly need more medical attention than younger people do. Around 2010, baby boomers will reach 65 and will drastically swell the elderly population. People are already referring to this eventuality as the "Age Bomb" or the "Age Wave."

Mandated coverage

A company furnishing insurance for its employees by paying premiums to an insurance company is required to cover certain problems that are largely cosmetic but which have been promoted into mandated coverage by special interest groups within the state. Most states do mandate the coverage of a whole spectrum of medical-related treatments. (Figure 8)

Inflation

This adds an increase of approximately 5 percent per year.

AN ANALYSIS OF COSTS

Litigation

For every dollar spent on health care, about 20 percent is absorbed by litigation: malpractice insurance, product liability insurance, settlement costs, fighting lawsuits, and accounting for perhaps the greatest portion in this category "defensive medicine." Although they may know what is wrong with a patient, doctors must insure themselves against potential lawsuits by prescribing diagnostic tests they would not normally recommend. If a lawsuit is brought against the physician, there is no evidence of an "oversight" to result in charges of incompetence or neglect.

If we consider only what doctors and hospitals bill for insurance, that estimated 20 percent spent appears as though it should be reduced to about 3 percent. Since there are no records of the costs of defensive medicine, exact documentation is impossible. We have therefore derived the figure of 20 percent from interviews with insurance professionals and with hospital, clinic, and HMO administrators. In their opinion, the figure is conservative and is implicit in the context of the current litigious atmosphere.¹⁰ This atmosphere directly affects competitiveness. Due to liability concerns, 47 percent of U.S. manufacturers have withdrawn products from the market; 25 percent of U.S. manufacturers have discontinued some forms of product research; and approximately 15 percent of U.S. companies have laid off workers due to product liability problems. Foreign competitors often have liability insurance costs 20 to 50 times lower than U.S. companies. A 1987 study by the Institute for Civil Justice found that the average punitive damage award increased, in inflation adjusted dollars, from \$43,000 in 1965-1969 to \$729,000 in 1980-1984 (a jump of 15 hundred percent). In personal injury cases, the increase has been even more substantial."

Bureaucracy

Usually referred to as "the B-factor," bureaucracy accounts for at least 13 percent of our health care dollar.¹² It consists of salaries paid to all the personnel hired by hospitals and clinics simply to handle the paperwork required for insurance reports and for Medicare and Medicaid documentation. It also covers the costs of the two hours a day spent by private physicians in filling out forms.

The regulatory environment

Another 12 percent again, a conservative estimate of the health care dollar is spent on regulatory groups. These groups have jurisdiction over medical companies, hospitals, and doctors. They are in a constant state of proliferation, and Congress is pressuring the FDA to increase regulation. It should be noted that even before we mention the costs of actual health care, almost half of the health care dollar is gone.

As noted, we spend \$2700 per person on health care in the United States. In comparison Great Britain spends about \$900 per person, and Canada, about \$1400. When our higher administrative and regulatory costs are taken into account, however, we find that we spend less on actual health care than does Canada. The litigious environment is almost absent there; they have a more straightforward and simpler bureaucracy; and the regulatory system, while certainly present, is much more benign and less costly.¹³

Iatrogenic disease

Iatrogenic diseases are conditions caused by the very process of diagnosis and treatment: patients often acquire more problems than were originally present. This situation accounts for another 5 percent of the health-care dollar.¹⁴

Care of the terminally ill

During the last six months of life, patients consume at least 15 percent of the health-care dollar; estimates of this figure can run much higher.¹⁵ These are often patients who are in a chronically vegetative state, and even if they regained consciousness they would not be able to resume lives as healthy, productive citizens. It seems that a new understanding and acceptance of death is being required of us, and with it a context of meaning for the gradual disengagement from life.

AIDS

The percentage of overall costs attributable to AIDS and AIDS-related diseases is currently about 3 percent, but that figure is growing. Projections as to the future course of the disease vary a great deal, but this single factor could potentially overwhelm the system.¹⁶

Smoking and other detrimental behaviors

Smoking accounts for about 10 percent of our health-care costs (and for about 15 percent of the deaths each year). Since another 5 percent of the health-care dollar goes to treat medical problems such as those caused by criminal activity,¹⁷ the abuse of drugs¹⁸ and alcohol, the misuse of firearms, and the neglect of safety precautions such as

seatbelts and helmets, the amount left over for the actual care of the sick may be as little as 22 percent of the health-care dollar.

WHILE IT MAY BE PARTIALLY TRUE that physicians are to blame for poor quality health care, and that expensive and unnecessary treatments and procedures are being advocated, any conceivable remedy for these problems will not make much difference in costs: most of the funds allotted for health care are spent in areas peripheral to the practice of medicine. (Figure 9) Over half the 1990 federal health-care budget—\$660 billion, or about \$2 billion a day—went for items not directly related to health care. If, instead of condemning the doctors, we were able to reduce each of these cost factors by half, we would have no crisis: it could be obviated just by making a change in the laws pertaining to health care and by simplifying the concomitant bureaucracy.

As if our picture of the current state of affairs were not bleak enough, the recent report of the Pepper Commission stated that insurance must be provided for the 31 to 37 million people who are presently uninsured, and that long-term health care must be provided for the elderly whether they are at home, in the hospital, or in a nursing home. The report was quite positive, but it did not suggest where the additional funding required by such a program might come from. If it is put into effect, it will increase the cost of the health-care budget by about \$85 billion. Of course, the sum could be made up by increasing taxes, and corporations are being targeted for additional payments into the system. But corporations cannot afford this additional outlay if they are to remain competitive in the world market. Massachusetts and Hawaii have already instituted full coverage for the elderly and uninsured, and both states are now experiencing financial trouble in this area. If programs such as the one suggested by the Pepper Commission are pushed through Congress, \$85 billion will be added to the current \$660-billion medical budget, and it becomes difficult to see how disaster can be avoided.

WE HAVE EXAMINED the ways in which money for health care is spent; we will now analyze the sources of this funding. In 1988, the budget for health care was \$550 billion. (Figure 10) Approximately one-third of this amount came from the federal government through Medicare: the portion of Medicaid supplied to the states,¹⁹ the V.A., the National Institutes of Health, and all of the health-care programs and institutions that are federally funded. Another third was paid for by corporations, and the remaining third was covered by hospitals and other institutions. Three years ago, about 10 percent was paid for by the states, but an increasing number of states can no longer afford that percentage of subsidy. Oregon, for example, has instituted strict rationing.²⁰ Our ambivalence toward such a program becomes especially clear when someone dies because requests for a transplant were denied.

About a quarter of the \$550 billion was paid directly by individuals, those who had their own insurance. Included in this amount are expenditures for medicines, over-the-counter drugs, and memberships in athletic clubs.

In 1988, 33 percent of the health-care budget was paid by the federal government. The following year, in an attempt to control the cost of Medicare, the government reduced that amount to about 30 percent. Therefore, the government paid less in 1989, and companies paid more—35 percent instead of 33 percent. States reduced their share to about 7 percent, and the private contribution increased to about 28 percent.

In 1990, the total cost, as we have said, is at least \$660 billion; this represents more than 12 percent of our GNP.²¹ The federal government cannot match the annual 10 percent increase in health-care costs because of the Graham-Ruddman-Hollings bill, which limits the amount by which the government is allowed to exceed its budget; this year's Graham-Ruddman limits are about \$89 billion. With federal and state governments unable to pay their share, companies and individuals will have to contribute more in order to cover the increase.

Any institution that carries insurance for its employees will be subject to an average insurance rate increase of 40 percent per year. (On the average, American companies are now paying out nearly 50 percent of their pretax profits for medical insurance coverage for their employees.) The percentage will be as low as 20 percent to 25 percent for the larger companies²² who are able to manage their own insurance, rather than use an outside insurance company. But small companies face an increase of 80 to 100 percent, and are being put out of business over this issue alone. The cost of insurance is taking up half of their profits. And because many small companies

have no profits to begin with, they are forced to drop medical insurance programs for their employees.²³ Yet, in complete disregard of economic realities, certain politicians are pressing to mandate full employee medical insurance.

This situation has made it increasingly difficult for American businesses to compete with foreign companies, which are not burdened with comparable costs. For example, out of the amount received for each vehicle, the Chrysler Corporation must put \$700²⁴ into health care for employees. (Because of union pressure, Chrysler has very high health-insurance coverage.) And if American companies cannot show an increase in profits each year, the stock price becomes depressed and acquisition soon follows. (Figure 11)

These financial problems are exerting an enormous pressure on American corporations. We cannot go another two years with such high increases in health-care costs²⁵; no company in the nation will remain solvent. (Figure 12)

For the near future, we may expect to see an increase in bureaucratic and regulatory costs, and a continued decline in the quality of health care. End-of-life costs, however, may be mitigated slightly by the use of "living wills," and the costs of iatrogenic disease are being reduced as clinics and hospitals institute better methods of quality control. It is nearly impossible, at this point, to predict costs relating to the investigation and treatment of AIDS. And human behavior is very difficult to change: we expect medical problems related to lifestyle to continue to increase by at least 10 percent per year. There will be more hospital closures, more morbidity, and more mortality in the system.

One of the solutions being proposed is health care rationing. Many authorities believe that we have no alternative, that there is just not enough money to give state-of-the-art care to everyone. Those most affected by such a change, of course, will be the elderly.²⁶ Daniel Callahan discusses the implications of such a system in his book, *Setting Limits*.²⁷ Ideally, he feels, modern medicine should try to provide not only a good life, but a good death. The human body, insofar as possible, should behave like the old Wonderful One Horse Shay, the famous buggy that was so well built and maintained that it operated perfectly for 100 years, then fell apart all at once: no part failed before any other. We, too, would like to be healthy to a certain point, and then die quickly and cheaply without morbidity. To that end, the goal of medicine with regard to the very old those over 85—would be to relieve suffering and keep the patient as comfortable as possible; at some point, death must be accepted as inevitable. Expensive medical technologies would no longer be used to prolong life for the elderly or, in certain cases, for people of any age. When the former governor of Colorado, Richard Lamm, first proposed such a solution in 1985, it generated a great deal of controversy, but his ideas are now gaining some acceptance. Lamm was of the opinion rather crudely expressed, perhaps that it is the duty of the elderly to die, so that they do not place an unbearable financial burden on the young. This line of reasoning now has a number of proponents and has gained de facto implementation, although health care policies may not have changed overtly. Rationing in health care will happen; it is repugnant to most Americans even to think about it, but we can only hope that it never becomes as extreme as it has in England and other countries.

Another possibility is the adoption of a national health-care system similar to the ones in Canada and England. If, in order to escape the cost spiral, we were forced to wait months or even years for certain medical treatments, few Americans would find the situation tolerable.

Another approach to cost containment is the application of "outcome studies," which try to track waste and inefficiency in the health care system. A recent study, for example, declared that only 50 percent of all the diagnostic procedures carried out by U.S. physicians result in significant benefit to the patient. Ultimately, however, a great deal of money and time is being spent to provide analyses that—while they might be enlightening—will not lead us out of the crisis.

Regionalization instituting a board to prevent the duplication of services in local hospitals is something that may develop in some areas, but its potential for political maneuvering may render it untenable.

The current health care situation seems to demand nothing less than a transformation of how we think about birth, life, old age, and death. The economics alone demand it. It is equally important that we address the dissatisfaction of many people with the very nature of the health care they presently receive.

WE NOW COME to the solution proposed by Archaeus Project, which we refer to as Project 2010. Its purpose, first of all, is to devise a system that will provide optimum health care 20 years from now. Twenty years, almost a generation, is a period of time in which significant change can be brought about. If we could implement all we know about health and sickness care, what would the resultant environment look like? It would have to reflect our knowledge of such things as the difference between relief of symptoms and true cure, the interdependence of mind and body and mind and environment, the innate abilities of the body to heal itself, and the curative effect of a positive relationship between patient and health-care professional.

Secondly, once we have defined our vision, we must determine the means necessary to bring it into existence. The year 2010 has been chosen because it is far enough in the future to give us some objectivity. Planning for 2010 is not likely to be felt as a threat to the professional situations of medical people practicing today.

Project 2010 looks toward achieving a balance between high-tech medicine and what we call "high touch"—the healing that takes place within the complex relationship of body and mind. We must learn to activate this dormant potential. Neither technology nor high touch alone is sufficient; properly applied, however, technology can give direction to the body's healing processes. In such a supportive role, technology will continue to hold a place in the medical armamentarium, despite its high cost and often inappropriate application.

We have proceeded as if our technological interventions operated independently of the minds of either the doctor or patient, yet the mind may well modulate the effects of a drug or device in a very positive way. Likewise, the device or drug may elicit healing powers from the patient. Instead of incorporating the healing powers of the mind into the application of medical technology, we have stubbornly tried to eliminate its influence entirely. When a new device or drug is tested, our standard for efficacy is the double-blind study. But by following such protocols, we have unwittingly put ourselves at a disadvantage and unnecessarily handicapped our efforts in matters of life and death.

We must cultivate a new class of physicians who have the ability to heal by touch, and to diagnose by sight, smell, and feeling, following in the tradition of the great bedside manner of physicians of old. Our high-tech capabilities may then be added to these skills, and will function all the better because they are administered with human caring. Machines and devices work well only when the patient's willingness to participate in the treatment is taken into consideration. When these conditions are met, the effectiveness of medicine may well be beyond imagining.

We have discussed the basic ideas and concerns of Project 2010. Many details have yet to be explored. Finding a way to reduce the costs of litigation will be a primary concern, so that precious resources are not wasted in practicing defensive medicine. Malpractice does exist, of course, and patients should be compensated for damages resulting from medical incompetence; but awards of millions of dollars are clearly in excess. With lawyers taking half to two-thirds of an award, most plaintiffs actually receive little of the money anyway. Several states, Indiana and California among them, have already introduced tort reforms in an attempt to reduce or eliminate high punitive damages. Similar reforms are in process in Florida and Minnesota.28

Project 2010 will also advocate the institution of new policies to cut back on regulatory and bureaucratic overhead. The Canadian system, for example, does not deal with the multiplicity of forms and agencies that exists in the United States and so has been able to reduce these costs substantially. The introduction into this country of Canadian methods would entail major revisions in the system of third-party payment.

The reestablishment of trust among doctor, nurse, and patient is also high on the list of our goals. True rapport is an essential ingredient in enlisting the power of the healer within, the only real healing power that exists. The right touch, the right feeling, the right words of the physician can all act with the beneficial power of a wonder

drug. In China, diagnoses are made from the condition of a patient's pulse. The doctor sits across a table from the patient, taking both of the patient's hands to feel the pulse at the wrists. The doctor may sit with the patient in this manner for half an hour, talking with the patient and feeling the pulses. Such a procedure alone has tremendous therapeutic power, because the patient is being touched and listened to and is receiving a significant portion of the doctor's time. The picture of health care in the United States, however, is often quite different: It can appear as though we would rather the patient were attended to by a computer. The lack of rapport with the patient and his or her family may have practical consequences. The malpractice litigation problem, for instance, may be significantly ameliorated by changing the style of communication within the doctor-patient relationship. Among families filing suit for malpractice in cases of perinatal injuries, 13 percent felt that doctors would not listen, 32 percent were concerned that the doctor would not talk openly about the situation, 48 percent actually believed that the doctor had misled them, and 70 percent thought that they had not been sufficiently warned about long-term neurodevelopmental problems.²⁹

AT ARCHAEOUS PROJECT, we have introduced the concept of cyberphysiology. Cyberphysiology subsumes a wide range of techniques and phenomena that appear to be able to affect a variety of "autonomous" physiological functions in profound and specific ways. These include the disciplines of psychoneuroimmunology and autogenics, the phenomena of biofeedback and hypnotherapy, the symptomatology of multiple personality disorders, and the practice of meditation, yoga, and similar techniques that can affect one's state of consciousness. Such cyberphysiological practices need to be promoted on a wide scale and taught to our children at an early age. Young children also need to be introduced to the fundamentals of chronobiology the relationship of our minds and bodies to time, to the cycles and rhythms that relate to our physical and mental sensitivities, and to the parameters of our physical functioning. Perhaps babies and children do not need to be taught these things; perhaps they are already chronobiologically tuned and have not yet fallen victim to the division of mind and body that lead to abstraction of experience. Rather than being taught chronobiological principles, they may just need to be encouraged somehow to preserve their natural adaptations. An increased awareness of these patterns and fluctuations can greatly improve our understanding of physical ailments. The measurement of blood pressure is a prime example of the need for a chronobiological approach to health care. It is estimated that of all the treatment for high blood pressure in the United States, fully half of it is unnecessary. These people do not have high blood pressure; the measurement was simply taken at the wrong time of day. Conversely, others do have high blood pressure, but the condition often will go unnoticed because measurements are not taken at a time of day when pressure is elevated.

The eventual integration of cyberphysiology and chronobiology into allopathic medicine will improve health care tremendously. One day physicians will look back at the way medicine is currently practiced that is, without regard for either cyberphysiology or chronobiology and ask how we could have imagined we were doing something for our patients when these fundamental aspects of human functioning were not taken into account. The costs of implementing the techniques associated with cyberphysiology and chronobiology are negligible, because, once learned, they can be practiced independently of medical supervision. Moreover, the consistent use of such techniques can tremendously augment the quality of our patients' lives.

Again, the techniques of cyberphysiology and chronobiology are not to be regarded as replacements for conventional medicine. Strictly speaking, we are not looking for alternatives. We are looking for significant adjunctive or complementary approaches to medicine, however—that combination of high tech and high touch that we have been discussing.

AS LONG AS WE ARE SPEAKING of a future when anything is possible, one of the larger changes we would like to effect is the restoration of the family. Leonard A. Sagan, the author of *Health of Nations*,³⁰ points out that in Western nations, there is statistically very little correlation between the health of a populace and the amount it spends on health care. Other, relatively "undeveloped" countries in which very low health-care costs obtain have much more satisfactory statistics on the health of their people than do the United States, Canada, or England. Of course, statistics can be manipulated, but the conclusion drawn by Sagan is that the health of a nation stands directly in relation to the health and stability of its extended family structure.

In countries with a generally healthy population, families are concerned about their children and elderly relatives. A family unit will often consist of more than one generation, but will center around a mother, father, and children. Parents help the children with their education. In Japan, for example, a major part of the mother's role is to educate her children. In this country, parents are relying more and more on various institutions to educate and raise our children. We are just too busy; our families are broken by divorce and dislocation. Very few extended families exist anymore in the traditional sense. As we grow up, the impulse for many is to get married and move away, rather than staying close to our parents and later, perhaps, even bringing them into our own homes to care for them. If we accept the premise that health depends on the cohesiveness of the family, it may be that our deteriorating health is simply the result of inadequate family structure. Someone who receives health care in our institutions and is then sent home is apt to suffer a relapse—perhaps because the family is not providing the support necessary for the patient's convalescence.

Trying to put the family back together again is like trying to go back to the "true religion" of our ancestors: those ways may be lost to us. We may have to discover a new idea of what the family should be. In looking at those areas in the United States that have the best health statistics, however, we do find a congruence with areas valuing the traditions of the family. The number one state in most health-related statistical categories is Hawaii; Minnesota ranks second. These two states also seem to have a strong sense of family continuity.

Preventive medicine, of course, will be a major focus. For the sake of expediency, we divide the whole person into two main categories: mind and body. Total health, quality of life, and optimum length of life will require that we care equally for the body, brain, and mind. Those areas affecting the mind include religious beliefs, altered states of consciousness (such as meditation), our families, the time taken for enjoyable activities, such as the enjoyment of nature, and guarding against the effects of stress.

Out of concern for our physical well-being, we must learn to cultivate good nutritional habits avoiding overindulgence and the use of toxic substances such as tobacco. We must pay attention to the rhythms of nature as they manifest within us—the circadian, lunar, and annular rhythms. In addition, we have the resources of current allopathic medicine: the surgery, drugs and devices, the chemical and mechanical interventions that we must sometimes resort to.

Another of our concerns is that attitude of the medical staff toward the patient needs to be "rehumanized." Individual concern for and attention to the patients should take precedence over institutional problems, but for various reasons discussed above, this is often impossible. In the health-care system today, especially in urban areas, the hospital patient is a number and little more. Rather than being referred to by name, for example, patients are often identified by the disease that brought them in: "The bladder case in Room 301," or "The skull fracture in 411." With resources so limited and pressures to reduce cost so high, the "bottom line" becomes the one consideration to which all others are subordinated. There is good reason for this: a health-care institution might not survive the next quarter if its expenditures are not met.

In a small community, medical professionals are likely to know their patients personally. When members of the community enter the hospital, they are addressed by name and are given individual care by the nurses and doctors. This type of health care, even if it is technologically inferior to that provided by the large urban institutions, is much more effective for most complaints.

Jean Watson, Dean of the University of Colorado School of Nursing, has created the Center for Human Caring. This institution confers an ND, a University-approved doctoral degree in Human Caring. Nurses in this program write their dissertations on the laying-on of hands, visualization, the role of music in health, color therapy, aromatherapy, and the generally healthful influences of proper nutrition and environment. Graduates are accomplished healers that can be easily integrated into the health-care system, particularly in rural hospitals. But rural hospitals cannot afford such care, real health care, because it is not compensated under current entitlement programs.

If we could find some way of reimbursing adjunctive approaches, we could shift a much greater degree of responsibility for health and sickness care onto the individual. We have all been very successfully trained to rush to the hospital with every ache or pain, but we find we must now unlearn these lessons. We must learn to listen to the body and the psyche and to ask how what we observe is affecting us.

Today an increasing number of things are being classified as diseases. Behaviors once thought of as merely excessive or counterproductive are now being redefined as medical, and hence reimbursable, conditions. Into this category fall such "addictions" as shopping, gambling, sex, and alcoholism. We are spending formidable sums of money to extinguish these bad habits: not only is the individual treated at great expense, but immediate—and sometimes not so immediate—family members receive treatment as well, since they are looked upon as "codependents" or "enablers." Compensation for the treatment of such manufactured "diseases"³¹ is particularly attractive for many medical institutions, since very little technology is required. It is perhaps ironic that the costs of high-tech medicine should be under close scrutiny at the very time that the costs of low-tech treatment for manufactured syndromes are rapidly on the rise. We are bailing out the boat of high-tech costs with a teacup while the inventors of new diseases drill holes in the boat's bottom.

By the year 2010, it is quite possible that our current conception of hospitals will be completely obsolete. Even today, most medical care can be handled on an outpatient basis. Hospitals of the future will concentrate on emergency room services, the treatment of trauma, and a variety of surgeries, and will contain only a few rooms in which to keep patients the night before and the night after treatment. They will be primarily intensive care units: those patients who do not require critical care will probably never be in a hospital.

It is clear that if patients in the intensive care units are provided with such small amenities as the right music, smells, and colors, humor, and a window with a view of the world outside, the required amount of drugs and the length of their hospital stay³² can both be reduced. This in turn substantially reduces the operating costs of the hospital and increases the number of People who can be discharged alive and healthy.

WHAT ACTIONS need to be taken to realize the vision of 2010? First, we need to be informed: at present, public awareness remains low, but events will soon force these issues to everyone's attention. Increases in health-care costs will continue to burden the general public, and they will no longer tolerate the substandard health care they will receive at such great expense.

It is now time for everyone to become active in determining health-care policy. We must communicate with our political representatives and let them know that outcome studies will not provide us with adequate solutions.

We need to meditate on the meaning of family. Perhaps there is no way to retrieve the idyllic family life that we read about in old books, but which is so rarely in evidence now. Perhaps we will find substitutes, or perhaps the resurrection of the family is dependent upon an experience of collective disaster, in which the reformulation of family ties becomes a necessity for survival.

We need to examine the use of adjunctive medical approaches, to find ways of integrating high touch and high tech into a single medical system. We need to have ways of determining whether we really need professional medical care, or whether more of our health problems might be treated equally well at home.

It will not be easy, but we must change the system. We will soon clearly see the system self-destructing if its course is not altered. In one Harris poll, 85 percent of the people in the United States were in favor of a new health-care system. But what sort of system will that be? Will it be one that we can dream about, that we can now envision for 2010?

INTEGRATION OF THE HEALING ARTS AND THE HEALING SCIENCES³²

WE HAVE IN HAWAII the opportunity to do something very special: we are in a position to build a hospital from scratch. To be able to design it and build it in such a way that it will suit the medical world of tomorrow is

an exciting prospect to contemplate. Not only will this hospital provide very high-quality care to local people, but it can be a demonstration project for the whole nation. So I hope that all of you—those who live here and are working directly on the program and those who are from other islands who are, or will be, friends of the North Hawaii community project—recognize the tremendous things that can be done here.

It can be said of the current situation in health-care what was said of the time of the French Revolution: this is both the best of times and the worst of times. In many ways it is the worst of times to be building a new hospital, particularly a small one, because such small, community hospitals are closing all across the nation. These hospitals are having a hard time filling their beds and a hard time recruiting personnel. But it is also one of the best of times for the North Hawaii community to be building this hospital, because of important changes that are taking place in medicine and in health-care delivery. We have the opportunity to make this a very successful project.

As many of you know, a national health-care crisis now exists. Costs are spiraling upward and out of control; the pressure to contain those costs is becoming ever more severe. The new health-care budget that was just passed includes a tremendous reduction in the government share of health-care payments. This will put heavier financial pressures on hospitals all across the nation.

In 1990, the total health-care budget was at \$660 billion, and it continues to rise. At this rate, the health care budget will be \$1 trillion by 1995, and \$1.5 trillion by 2000. This is simply not a sustainable rate of increase. Cost controls have to be instituted; we must find ways of delivering quality health care at substantially less cost to society.

About a third of the total health-care budget is provided by the federal government in the form of Medicaid, VIA, NIH, and so on, and the relative size of this contribution is not going to increase. The federal government is not going to increase its share by the 10 percent that health care is going up each year. Another third of this budget money is put up by companies, institutions, and health-care programs that are covered by various kinds of insurance. There are serious limitations on how much can be contributed from this sector. Corporations and other business institutions are struggling in every way they can think of to reduce health-care costs. The health-care cost burden for them is crippling their ability to be price-competitive on the world market. The states also contribute health-care money, but many states are already pushed to the limit and have begun to develop health-care rationing programs. The remaining contribution is from those people who can afford private insurance. With this entire sum increasing 10 percent to 11 percent per year—well in excess of the rate of inflation—every one of these resources is so burdened that measures must be taken to relieve the financial strain, and the repercussions of these efforts at cost reduction fall heavily on hospitals, forcing many to close.

There are ways in which we can limit some of these costs at the North Hawaii Community Hospital (NHCH). Let us take a look at some of the details:

At least 20 cents of the health-care dollar go into the litigious environment: malpractice insurance, cases that are settled, and the extreme way in which defensive medicine is often practiced in order to reduce the risk of litigation. Some say that defensive medicine may account for at least 25 cents of the health-care dollar. Then there is the bureaucracy factor, the so-called "B-factor" all the paper-shuffling procedures involved in receiving reimbursement. One thing we can do, as we build this hospital from scratch, is to build in state-of-the-art computer systems in order to make the billing of accounts much simpler than it is at present.

The costs involving the regulatory environment refer to the operation of such agencies as the FDA, peer-review procedures, and all the other regulatory measures that impinge on physicians and companies doing business in the health-care field. I think we can find ways of reducing these costs, starting at our own end. What we have left after these costs are covered is the money that will be spent on actual health care.

Five Approaches

WHAT ARE THE SOLUTIONS being considered to contend with this crisis? There, are basically five approaches that have received the most attention:

Managed care

The HMOs, PPOs, and other systems of managed care are all doing some good, but they are not really achieving the level of efficacy needed to resolve the cost issue.³⁴

Rationing

After we consider the limits of what can be accomplished by managed care, rationing seems to be the next step. Oregon is moving toward a rationing system, but is having great difficulty designing a fair program. They have to ask: Do we cut out the elderly? Do we generally limit the availability of health-care services to everybody? It is very difficult, with the American tradition of democracy, to come up with a rationing program that is acceptable. Yet many people feel that this is the only way we are going to solve our problem. Furthermore, few people have great enthusiasm for a national health-care system, yet even some of those who oppose such a system admit that something needs to be done along those lines. However, the countries that do have national health care do not find it all that satisfactory. They are now looking for solutions that they see as coming from the private sector.

Outcome studies

Now everyone's attention is on outcome studies. Some outcome studies have produced interesting and valuable results. The proponents of outcome studies emphasize that we should know what long-term benefits various procedures produce in relation to the cost and distribution of health care, and what the long-term benefit to the patient is in terms of quality of life. But those who are looking to rationing and outcomes studies as solutions tend to take a "cookbook" approach, trying to define exactly what treatment is appropriate for this or that patient according to age and condition. And that is nonsense; humans and the circumstances of their disorders are much more complex than that. The outcome of treatment will vary enormously depending on the patient's state of mind, the state of mind of the doctor, and several other variables involving family and life circumstances. If outcome studies and rationing drive us toward such cookbook medicine, we are in serious trouble. We will stop thinking of new and tailored ways of treating patients individually and say, "This is the way it's done—period."

Regionalization

Regionalization may be helpful in small geographical areas. Using this concept, you reorganize hospital services in an area where you have several hospitals, dividing up the work and assigning a specialty to each hospital.

The 2010 concept

The concept that I think is of special importance to us at NHCH is the one that I refer to as the "2010" concept, according to which we project our thinking out to the year 2010 and forget about the health-care system that prevails today. The trick is to look ahead to the year 2010 and ask, What could the ideal health-care system be by that year? Suppose that we had a magic wand and we could "magic away" the litigious environment and the bureaucracy; suppose we could also quickly learn more than we know today about the nature of the mind in health and disease as well as the important healing factors in the patient's attitude. What sort of optimum health-care system could we then develop? If we can imagine what this might be, we will have a direction and a goal toward which to travel.

I HAVE CHOSEN the year 2010 because nobody feels really threatened by a year so far in the future. Medical professionals are apt to be more willing to consider possible circumstances in the distant future than they might be if they thought such changes would be taking place soon, affecting their immediate status and income. It is my belief that we can build a "2010 hospital" here in North Hawaii, a hospital that would manifest the principles of a mind-body approach and a patient-centered medicine, and could do so before 2010, perhaps even in the mid-1990s, when we expect this project to be completed. Think what a wonderful opportunity this could be, what a tremendous boon this would be for the residents of this area, and what it might mean to the nation to demonstrate that such a thing can be done.

The possible realization of the 2010 concept excites me, and would certainly give me a great sense of fulfillment if it could be implemented in the NHCH. In a way, we have no choice but to pursue such a concept. If we don't, then the NHCH will encounter some very difficult problems. If we limit ourselves merely to envisioning a hospital operating according to today's standards or even by the standards of 1995 it is unlikely that our project will grow and prosper.

If you examine the work and recommendations coming out of all the organizations addressing the current health care crisis, you will see that clearly there is general agreement that a fundamental restructuring of the health-care system is required. But no one seems to know what that rebuilding might be. They have come up with rationing, with many variations on a national health-care system, the weak promises of outcome studies, but none of these approaches involves the radical restructuring of how health care is delivered and compensated for that is desperately needed. Again, this is an opportunity for the North Hawaii community to build a hospital about which we can be excited and proud.

THE THEME OF THIS COLLOQUIUM is mind-body issues in the practice of medicine and how these issues may be incorporated into the way our hospital operates when we open in 1994 or 1995. To set the stage, in a sense, for the rest of our speakers today, let's define this mind-body issue as I see it, as others tend to see it, and how Archaeus Project addresses the problem.

Let us suppose that on my left are things that involve the mind, and to my right are the things that involve the body. You'll note that when we use the term mind, we do not identify mind with brain. The mind is not entirely separate from the brain, but it is not physical, and the brain is. Different people use different terms for mind: consciousness or psyche, for instance. It is clear that each of our individual minds creates a more or less individual reality for us. This is not to say that reality is entirely a product of individual consciousness, but that each of our minds perceives, interprets, and reacts to whatever "reality" in itself might be through the medium of a vast, and largely unconscious, reservoir of personal experience combined with a particular social and cultural background. These variations in the interpretation of "reality" cannot be reduced to issues of chemical and physical reactions, and they have the greatest implications for individual response to health and disease.

To my right, we have placed our notions about the body. We usually think of the body as a machine of which mind is a noncausal, ineffectual epiphenomenon; we believe that every function in this "meat machine" eventually can be studied and elucidated. This is the reductionist viewpoint: if you look at finer and finer points down to organs and molecules, down to the atomic level, you're going to find that anything that is wrong with the body can be defined by some change in the physical structure of that body and, once having ascertained the causal chain leading to the disorder, you can develop and apply appropriate interventions to the problem. This really is as much a matter of faith as anything else, and is really what is called scientific medicine today. And if the body is a machine, then using scientific and medical technology seems to be the only rational way to deliver medical care.

But all this has little to do with the mind. We treat the body with surgery, drugs, and devices, but the mind is left out of the equation. However, it is very interesting to note that technology often works much better if the mind of the patient enters into the process. I know from my own experience at Medtronic that we have much better results with certain devices if the person understands what the device is, believes in it, and understands what it means to live with it.

Coming from the side of the mind, as is more often done in so-called humanistic or holistic medicine, we see something that incorporates a variety of medical practices that fall outside what is generally taught in medical school—medical approaches with a long history, such as nutrition, faith healing, massage, the laying on of hands (touch therapy), and homeopathy. Eastern medical techniques, such as moxa, acupuncture, and Ayurvedic medicine are also used by holistic practitioners. I am especially interested in the approaches I refer to as "high-touch" therapy, because a lot of what is involved in the cure of disease is the touching of the patient's body by the healer—irrespective of the rationale often given about these therapies. Human touch connects the mind with the body and helps the body to heal.

Through research being done in biofeedback, hypnotherapy, psychoneuroimmunology, and a number of other "cyberphysiological" disciplines, we are learning a great deal more about the interaction between mind and body in both health and disease. On the technical side, we already know a great deal about every organ of the body, and this body of knowledge continues to grow at a rapid rate. We know rather less about the role of the mind. However, as our technological knowledge increases, it becomes more apparent that the mind is a greater factor in the equation than we had hitherto supposed. As we learn more about mind and body, the links and interactions between them become more apparent and undeniable. The best medicine for the patient occurs when these two general approaches are integrated.

"The role of the mind" means that some of the effects that devices appear to produce may be due to the fact that they are serving as powerful placebos. If that is the case, so be it. We are looking for beneficial results to the patient, not primarily confirmation of our theoretical prejudices. A recent report in *The New England Journal of Medicine* stated that the TENS (transcutaneous electrical nerve stimulator), when compared with a placebo, showed that both the TENS and the placebo worked. So the implied conclusion was, Don't use either one. This is not a very intelligent conclusion. The objective is to obtain beneficial results; it doesn't matter whether it's a placebo or a device—use it! But this is a very difficult point of view to try to get across in medicine today, and this has to do largely with the fact that medicine is based on double-blind studies. In my opinion, such studies in medicine have been the source of considerable harm. In a double-blind study you are leaving out of the picture the patient's mind as well as the minds of the medical professionals involved. When you have left out the patient's state of mind along with a major part of the doctor's ability to convey trust and belief to the patient, practically nothing is going to work well. What we should shoot for first in medicine is the result, and study the mechanisms later. Sometimes, when I lecture at major hospitals about the fallacies of double-blind studies, doctors walk out. But, interestingly, most of them do not. I don't really mean to condemn double-blind studies; they serve their role and have their application, but we should not let them blind us to what we really seek, namely, patient results.

Technology has made tremendous strides over the last few decades. In 1940, there wasn't a lot of technology in medicine. There were a few well-known tools for a doctor to work with: stethoscopes, basic X-ray machines and techniques (although they weren't shielding the X rays properly back then), and some minor testing devices. In those days, the doctor had to come to a patient's home, and what a doctor practiced more of then was the "art" of medicine: high touch, holding the patient's hand and touching his forehead, smoothing the sheets and adjusting the pillow, and adding the magic of words. Words were and are now powerful medicine for the patient. The patient trusted the physician, and the process of recovery developed out of a special relationship. This was not a "consumer-provider" relationship. The patient's mind was obviously deeply incorporated into the healing process. Certainly, physicians had a lot of patients they couldn't save, due to the lack of technology, but they achieved very good results in spite of that deficiency. Also it should be kept in mind that the greatest progress in the control of disease and extension of life expectancy came from advances in sanitation and nutrition, not from any special technology.

As time went by, starting with World War II, a lot of technology began to move into medicine. Soon it became the case that, if you went into a hospital, you saw very little high touch anymore. Some of the doctors going through training didn't even know how to palpate a patient. All they knew was how to look at an electrocardiogram or read the reports that came from the laboratory. They were often not interested in looking at the patient; that didn't matter. Technology was thought to be able to solve all problems. When the results didn't turn out as expected, we just used more technology to attempt to bridge the gap.

RECENTLY, I have seen changes in the attitude of medical professionals toward high touch. Doctors are recognizing that the patient is more than a machine. Of course, there have always been doctors who have understood that and have practiced medicine as an art right along. But the difficulty is, they don't get paid for it. It's hard to practice high-touch medicine extensively when there is no compensation for it. In spite of that problem, the use of high touch is growing rapidly. Eventually, we will be able to combine the intelligent use of technology with high touch, incorporating the patient's mind into the process. We will learn to reach the person's "healer within," to turn on and support natural healing processes. This movement toward high-touch medicine will have an effect on both the physical and administrative aspects of future hospitals.

There is one more thing that I think is important for our hospital planning, and that is the idea of self-care. Self-care is definitely low-tech. Only about a third of home care may involve technology, mostly of a fairly routine sort. A lot of family care is added to this at no monetary cost. In a hospital the technology becomes a major part of the cost of running the hospital, however. At NHCH, if we can balance technology with human care, we can substantially reduce the cost of operating the hospital. We can also reduce the cost of building the hospital.

AT ARCHAEOUS PROJECT we have coined the term *cyberphysiology*. *Cyber* comes from the Greek word *kybenetes*, the helmsman of a ship. This refers to the mind (helmsman) as director of the body (ship). The term is gaining in usage, and several articles have been written on it. It is a term with which to discuss all those disciplines and practices that pay heed to the interaction between mind and body.

One more good way to reduce health-care costs—a cyberphysiological way—involves generating greater patient satisfaction. In our last colloquium,³⁵ speakers lectured on the importance of patient satisfaction. The proper application of cyberphysiological principles will mean that patients leave the hospital sooner. They will be satisfied with their care, so that the risk of litigation will be reduced even if the results are not everything they expected. Staff satisfaction is also a key factor. This is of great importance in recruiting and retaining staff. As I travel around the United States speaking of the North Hawaii hospital, I find nurses and doctors everywhere saying, "I want to come." They see this as an opportunity to return to the kind of practice that they went into their professions to find. One of the big problems for a small hospital is to maintain the high occupancy rate that is required in order to remain solvent. If we have high patient satisfaction, doctors are going to refer patients to our hospital, and we can keep the beds filled.

Another thing we need to do is to change the way in which reimbursement takes place. We need to see that high-touch approaches to medicine receive compensation. Until then, this kind of balanced high-tech, high-touch medicine is premature. Physicians are already moving toward this way of practicing medicine, but we have to prepare the ground for it.

Every few weeks, Washington issues reports on the health-care crisis. These do little more than rehash the same old questions with no better suggestion than to charge companies more for employee health care and to increase taxes. So Archaeus Project is working on getting the attention of opinion leaders at the national level. 2010 is often perceived as a breath of fresh air in an area of discussion that has become pretty stagnant.

We need to learn from others who are doing some of these things: from the Planetree organization³⁶ on matters of hospital interior design and patient-centered care, from psychoneuroimmunologists on mind-body interaction, from holistic practitioners on alternative approaches, from outcome studies to see what is effective, and so forth. We need to know exactly what kind of medicine we're talking about and the impact that the practice of that medicine will have on recruitment, staff training, and even the way the building should be built. We have a great opportunity to build a community hospital here in North Hawaii that has most of the attributes of a hospital of the year 2010 and do it by 1994.

TWENTY-FIRST-CENTURY HEALTH CARE*

MY TALK TODAY on health care in the 21st century will focus on the situation in the United States, even though the problems I will discuss are problems that also face many other countries. My belief is that the present system of health care in the United States is unsustainable. We all know about the 30 to 40 million uninsured—a number that grows daily. There is unease about our health-care system; patients often leave the hospital sooner than they should and, in too many cases, sicker than they went in. There is a serious shortage of nurses. The high cost of malpractice insurance, hospital closings, and many other elements contribute to the falling quality of health care. You read of these matters in nearly every newspaper and magazine you pick up. The cries for reform in the health care system are reaching a crescendo as we are headed for a major national health-care catastrophe. This is one of the biggest problems facing our country. The current system of health care must be restructured, and very soon—certainly before the year 2000.

Many proposals for restructuring the health-care system have been put forward by government and government-appointed agencies, but the real changes will have to come from inside the medical profession and from the demands of people better educated to take on more personal responsibility for their own health. We will need the support of our citizens, communities, and government organizations to speed up this restructuring. Everyone will have a role to play in this process.

Great problems provide us with great opportunities. If things were not so desperate, the opportunity for definitive change would not be as clear and as exciting as it is at present.

There are two major issues that lie at the heart of the health-care crisis. One is a problem known to everyone: rising costs that are spiraling out of control. The other issue is the need to create a new philosophy of health based on some commonsense considerations of the relationship between mind and body. I will first consider some of the economic factors involved in health-care costs.

When the subject of health-care costs arises, people often discuss these costs in relation to the Gross National Product (GNP). (Figure 1) There are problems with this. I am not quite sure what it means when we say, for instance, that health care costs constitute "12 percent of the GNP." It is actually hard to say just what that percentage should be. Perhaps health-care costs should be 15 percent or 20 percent, or maybe we can say that the GNP isn't growing fast enough. I'm not sure that "percentage of the GNP" really tells us much. People are concerned that the cost of health care here is a higher percentage of the GNP than it is in Canada. When we look at the different components of cost, however, what we spend for health care in the United States—for actual, delivered-to-the-patient health care—is probably not more than they are spending for delivered-to-the-patient health care in Canada. A very large portion of our health-care costs involves expenditures that are not directed at actual care of the patient.

Let us look at health-care cost projections for the years ahead: health-care costs for the year 1991 are projected to be about \$756 billion. If you extrapolate this figure to the year 1995, these costs will exceed \$1.5 trillion. Of course, such an amount of money far outstrips any known resource. (Figure 2)

Where does the money come from to cover current costs? Less than a third comes from government, i.e., for Medicare and Medicaid, and more than a third of it comes from employers, and that share is growing. Another 10 percent comes from state funds, and the remaining 25 percent comes from private insurance. (Figure 3) The federal government is now beginning to limit what it will contribute to Medicare and Medicaid and is also instituting serious cost controls. For reasons I will address later, companies are at the limit of what they can contribute, and those of us who have private health insurance know how fast those rates are increasing. Private insurance is rapidly becoming unaffordable.

How have these costs gotten so out of hand? About 20 percent of health-care costs represents paperwork: the red tape of reimbursement, the time the doctors spend filling out forms, all the additional personnel that are needed in hospitals to send forms to 1500 different insurers, and all the layers of bureaucracy involved in health-care reimbursement and health-care cost control. This portion of our health-care dollar is growing, and the 20 percent figure is probably conservative: I have seen recent studies that indicate that about 30 percent of the health-care dollar is actually tied up in paperwork. (I must add as a caveat here that accurate statistics in the health-care field are very hard to come by, but the figures I am giving here are conservative ones.) Another 15 percent of our health-care dollar is lost to the litigious environment in the United States, that is, to malpractice insurance and the costs of associated settlements. A good share of that 15 percent arises from what is called "defensive medicine," i.e., the costs involved in elaborate and often unnecessary medical tests done chiefly to avoid the chance of a lawsuit. This cost, of course, cannot ever be totally eliminated, but we need to work on tort law reform to control the size of malpractice settlements. Outcome studies are taking a look at the number of unnecessary medical procedures that are performed, and I think this will lead to valuable results. (Rand studies say that as much as 20 percent to 30 percent of medical procedures might be unnecessary.) Another 10 percent of the health-care dollar is taken away by the regulatory environment in the United States; that money goes to all the agencies that impose rules and regulations on companies, hospitals, clinics, and doctors. While other industries are enjoying less regulatory interference, regulation of the medical field is on the increase. These three areas of health-care cost in

the United States-bureaucracy, litigation, and the regulatory environment are much higher than they are in the Canadian system, and if you add it all up, almost 50 percent of our health-care dollar is going toward expenses that are not directly applicable to the care of patients. (Figure 4)

Another factor that leads to high costs in the health-care system is iatrogenic disease, that is, when the medical treatment itself-through error, misdiagnosis, and inappropriate treatment-leads to new medical problems. Iatrogenic disease raises health-care costs at least another 5 percent. Quality-control systems are now making their way into hospital management. Presumably, quality control will reduce these costs.

If we can find ways of reducing costs in each of these problem areas-even by 25 percent or 50 percent-we will have made substantial progress in solving the overall problem. We have to look first at cutting costs in these areas before we start cutting costs for the actual delivery of health care.

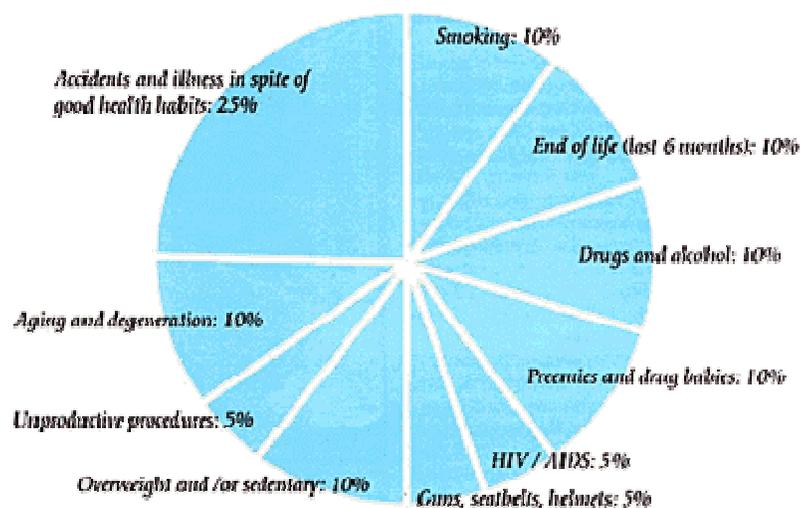


FIGURE 5 Health costs due to poor lifestyle.

In order to cut the cost of health care without reducing what is spent on care for the patient, we should also address the issue of detrimental lifestyles that lead to injury or disease. About 10 percent of our health-care bill in the United States is due to smoking. If, by the year 2000, our environment were free of tobacco smoke, we could substantially reduce that cost, and we are seeing progress in this area. End-of-life costs medical expenses incurred in the last six months of life-add another 10 percent; drug and alcohol abuse, 10 percent; the cost of keeping premature infants alive, 10 percent; and the cost of AIDS is slightly under 5 percent but growing. New legislation that redefines HIV patients as AIDS patients may nearly double this cost overnight. The misuse of guns, the disuse of seatbelts, helmets, and other safety devices, obesity and sedentary lifestyles, as well as unnecessary medical procedures, all contribute to costs that could be controlled. When you add it all up, only about 25 percent of the health-care dollar is left over for the treatment of those illnesses that afflict us in spite of good health habits, safety practices, and good genes. (Figure 5)

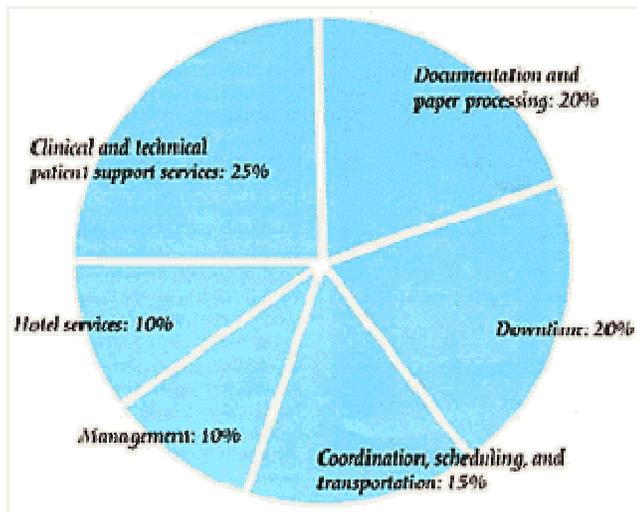


FIGURE 6 Hospital labor costs.

Costs can also be reduced by the better management of hospitals. About 20 percent of the cost of a patient's bill goes for documentation and paper processing. If the hospital invests in appropriate computer systems, that cost certainly can be reduced. A well-run hospital will use laboratories and expensive equipment more efficiently. About 15 percent of hospital time today is spent just in coordinating and scheduling. Because the hospital has so many classifications of workers, scheduling a patient for an X ray may involve coordinating the efforts of a couple of dozen people. Management time spent simply in operating the hospital facility is about 10 percent. Costs in the hospital reflect the national picture: again, only about 25 percent of the budget actually goes toward patient care. (Figure 6)

Another special aspect of our health care costs involves the care of the elderly. There are about 10 million hospital patients in the United States over the age of 85. This will increase to 20 million by the year 2000, and will continue to go up until at least the year 2010. This reflects the rapid general growth in our elderly population, also known as the "age bomb" or the "graying of America." The "age bomb" will become an increasingly important factor in our consideration of health-care cost trends. I have heard several people speculate on what the eventual life expectancy of humans might be. Some have speculated that it may be as much as 120 years. Maybe it's possible to reach an average age of 100 years, but I think that 90 may be about the limit. Such a lifespan might be nice if we also could live well during old age and then die quickly and inexpensively. That would be the ideal, as in the old story of the "Wonderful One-Horse Shay" that was so well built and maintained that it ran for 100 years and then fell apart all at once, not one part before the other. (Figure 7)

FIGURE 9 (ON THE RIGHT) SHOWS WHY THE COST OF THE PRESENT HEALTH-CARE SYSTEM WILL BECOME UNSUSTAINABLE IF WE CONTINUE TO DO WHAT WE'RE DOING. THIS SCALE REPRESENTS MEDICAL COSTS FOR EVERY MAN, WOMAN AND CHILD IN THE UNITED STATES—THE TOTAL AMOUNT OF MONEY THAT'S GOING INTO OUR HEALTH-CARE SYSTEM. AT PRESENT, THE COST PER PERSON IS A LITTLE OVER \$2000, BUT THIS FIGURE WILL REACH NEARLY \$6000 BY THE YEAR 2000.

What will be the effect of rising health-care costs on companies and employers? Currently the cost of health-care coverage for companies is about \$3500 per employee per year. Health-care costs are absorbing at least a quarter of the total profits of all the companies in the United States. The rate of increase of these costs is approaching a minimum of 20 percent per year for most businesses, 40 percent for some, and more than 80 percent for others. No company can increase its profits rapidly enough to match this rate of increase. For a company to increase its profits even 15 percent per year would be a tremendous achievement. With 25 percent of our profits going for health care, we are still paying a mere \$3500 per employee. If we look forward to the year 2000 (and, of course, making projections in this way is very difficult), we see this cost reaching \$17,000! Why is the cost of health care

to employers increasing at such a rapid rate? Largely because of "cost shifting." The government is not allowing that part of the health-care bill that is paid by Medicare and Medicaid to grow at the rate that health-care costs are increasing. This results in the health institutions shifting costs to the private sector: to employers, employees, and private insurance. That is why employers are paying such huge and increasing amounts in premiums. Companies cannot sustain this outlay, of course, so they will shift more of the burden of health-care costs to the employees. I believe that, by the year 2000, we will have reached a point at which companies will no longer pay health-care costs for employees. If American companies continue to pay such costs, it will mean that we will become noncompetitive in world markets because the cost of health insurance will have to be added to the price of products. This is already happening now, in fact, and it is a grave concern of nearly every major company in the United States. (Figures 8 & 9)

Are there any solutions? Literally dozens of solutions have been proposed. The May 1991 issue of the Journal of the American Medical Association was totally devoted to different proposals for renovating the American health-care system: some 15 approaches were suggested in this one issue.

Many of these proposals revolve around so-called "managed care," which includes the Health Maintenance Organizations (HMOs), Preferred Provider Organizations (PPOs), and companies with major departments for managing their own health-care systems. Benefits have been realized from managed care, but the managed-care approach is far from adequate to control health-care costs. A second set of proposals involves so-called "regionalization"; that is, rather than each hospital owning expensive equipment like Magnetic Resonance Imaging (MRI) machines, such devices would be shared among several local institutions. Hospitals would then operate in groups. Such an arrangement, however, would be very hard to sell to hospitals that are usually in competition with one another. "Outcomes management" is the theme of yet other proposals. Outcomes-management studies are carried out to determine what the long-term effects of a given diagnostic or therapeutic procedure may be for the quality of a patient's life. A surprising number of medical procedures in common use today have not been evaluated for long-term effectiveness. We may find that 10 percent to 15 percent of medical procedures do not provide sufficient long-term patient benefits to justify their cost. Of course, merely doing these outcome studies is also expensive, which will also add to our current huge medical costs. It is certain, however, that by the year 2000 a procedure that has not been shown to be effective is not going to be reimbursed. As a further consequence of this, medical technology companies will also be faced with having to demonstrate that a given technology will be cost-effective.

Yet other proposals involve the partial or total imitation of Canadian, English, or German national health-care systems. For a variety of reasons, it is unlikely that these systems would find acceptance in the United States. There are also proposals for mandated coverage. Today we talk about the 35 million or so people in the United States who are, for various reasons, uninsured or underinsured. Many of the proposals that are in Congress involve mandating that every company cover their employees' health insurance. If that happened, it would put thousands of companies out of business, because they could not afford the cost.

The two approaches that I think really offer some hope for the future, and that would cost comparatively little, are (1) heightening individual responsibility for health, and (2) instituting humane, patient-centered care. Individual responsibility and humane health care are the two factors that can both reduce the costs and improve the quality of health care. What would the introduction of these "systems" mean to us as citizens of the 21st century? To stimulate individual responsibility, companies would contribute funds into a "health-care savings account," and the employees would buy their own insurance. This individual insurance, backed in part by employer funds, should not be "first-dollar coverage," because such coverage leads to overuse of the system. I would suggest that people pay the first \$1000 of medical expenses out of their own money. That way, we could reduce overutilization substantially. I believe that it is important that we as individuals should be the health-insurance purchasers if we want to have a choice of what kind of health care we want.

Education in good health habits starting at a very early age and the return of the traditional doctor-patient relationship are two other improvements that could have a very positive impact on the quality and cost of health care. As we look forward to the 21st century, we will find that there will be a greater understanding of self-help

and individual responsibility for health. We can no longer just let ourselves fall apart and then expect the health-care system to put us back together again.

Since we will all have increased responsibility for our own health in the 21st century, what about the responsibilities of the health-care providers?

First, we have to find ways to control the number of medical professionals. Right now there is probably a slight surplus in the number of doctors, but we have to convince more young people to go into nursing, because there are serious shortages of trained nurses. Health-care providers will also have to recognize that a patient is a whole, composed of body, mind, and spirit, not a machine to be repaired. In the 21st century, health-care providers will offer a balance between high touch and high technology. We claim that technology can cure everything with a pill, a device, or a surgical approach. Such things are important, but for 80 percent of what ails us all we need is a physician who will pay some attention to us while nature takes care of the problem.

What are some examples of these changes in the health-care system toward individual responsibility and humaneness that might help solve our problems in the future?

Such changes have been pioneered by the Planetree experimental unit at Pacific Presbyterian Hospital in San Francisco. This one unit of that large hospital is highly patient oriented very much focused on the patient's physical, mental, and emotional needs. Other hospitals are beginning to follow the lead of Planetree: the University of California at San Diego has begun to build a 120-bed Humane Medicine Hospital, where the patient will be the center of medical concern, and there are now six or seven other examples of patient care facilities around the country that direct their attention toward the total physical, emotional, and spiritual reality of the patient. Medical journals are now being published on the subject of humane medicine, including the publications of the Holistic Medical Association, the quarterly journal *Qualitative Health Research*, and the Canadian Medical Association publication, *Humane Medicine*. These are wonderful signs of significant progress within the field of medicine.

I am currently a resident of the Big Island of Hawaii. There are about 130,000 people on the Big Island being served by two hospitals, one in Kailua and the other in Hilo. We are planning a third hospital in Waimea. It will be a 21st-century hospital, adhering to the ideas I have outlined here, and this hospital will be operational in 1995. This hospital will incorporate the concept of a "humane medicine." The rooms will not look like standard hospital rooms, but more like hotel rooms. These rooms will be designed to accommodate the presence of the patient's entire immediate family, so they can be with the patient when appropriate. We will even provide the patient with access to his or her pets, because we now know how important a pet can be to the process of recovery. The rooms will be decorated with art chosen by the patient, and, since it is known that favorite music can reduce the need for medication, such music will also be made available to the patient. The hospital will have floor-to-ceiling windows so that the patient can have a view. We will provide opportunities for fun and for recreation for the patients when possible. In short, patients will have access to pleasant sights, sounds, smells, and tastes. The hospital units will have small kitchens where family members or, perhaps, the patient can prepare ethnic or other special foods, since, on the Big Island, we have a wide diversity of ethnic groups with their characteristic cuisines. There will be few signs of high tech, but the hospital will certainly have available those appropriate technologies that have passed the rigors of outcomes studies. Rather than treating patients like children who are to accept what the health-care provider tells them, we will actively educate concerned patients about their problems and what the alternatives of treatment are; together with the physician, they will make the decision on what should or should not be done. We will operate on a case management basis with a nurse practitioner or a primary-care nurse who will be responsible for the patient's progress. The primary-care nurse will accompany the patient to the X-ray lab or to have an EKG taken; and that nurse will decide when a doctor, a chiropractor, or a kahuna should be called in. Decisions regarding the patient's needs will be made by the case manager. Patients will have access to their own charts and will be able to make comments on them. Patients will be told about the medications and dosages they will take. This will help reduce the accidents that sometimes occur. The hospital will encourage the practice of "integrated medicine" and will be open to the use of a variety of healing methods, rather than just those characteristic of the mainstream allopathic approach. The hospital will also work in the community to promote

preventive medicine, training and educating the 30,000 people that live in this corner of the island. Hospital policy will insure that patients will be identified by name rather than by room number or by illness. It will be a hospital that will be a truly caring, high touch hospital. I wish I could say more about this project, because it's very exciting, and it's coming along well. We will break ground next year. The North Hawaii Community Hospital may eventually be a demonstration project showing the nation what can be done by shifting the responsibility to the patient and recognizing the patient as a whole person.

So what can each of us do to translate this grassroots movement toward humane medicine into restructuring the national health-care system? We need open debate and discussion and a thorough study of these matters. I think it's important for each of us, as patients or potential patients, to support the changes that are taking place from within the system rather than allowing the government to impose its own rules.

The situation in health care is undoubtedly going to be one of the hottest topics in the 1992 election. The Democrats are already working on their proposals, and the Republicans will have to respond, because this will be a major issue. But it is not likely that the government will come up with answers that are truly meaningful for us. The kind of changes that need to take place must be accomplished from inside the medical profession—and, thank goodness, this is happening. These changes have great potential for solving many of the problems in the health-care system, and we need the support of each and every one of us in his or her own way to make this happen.

NOT JUST ANOTHER HOSPITAL

MY LIFE'S WORK has been in the field of medical technology. Medtronic, the company I cofounded, produces pacemakers and valves, oxygenators, blood pumps, and other medical devices. I strongly support the use of such technology. Technology and science in medicine, however, do not account for the whole picture. There is a human side that must be considered. A purely technological medicine excludes the mind and emotions from the healing process. That something important essential for healing has been left behind in the medical-technology race has become apparent. We now need to combine everything good and appropriate in technology with the human side of medicine.

I have a broad interest in health-care policy, having spent 41 years in the health fields, and I am now very concerned about what appears to be the declining quality of health care, which more and more people are perceiving as inadequate and inappropriate. I have a strong interest in the North Hawaii Community Hospital [NHCH] project, and I have high hopes that some of what I am about to present will manifest in that endeavor. I also hope that I may have some role in making the dream of this new hospital in North Hawaii come true.

What features should the design of North Hawaii Community Hospital have, and what corresponding style of health care should be practiced, so that in 1994 or 1995 that design and practice still will be at the leading edge? If we make the mistake of designing a hospital that is merely a hospital of today, we can be almost certain that that hospital will not fit the needs of the mid-1990s, and that it will be doomed to failure—financially and medically—even before we break ground. This is a very difficult time to be building a hospital because, for various economic reasons, small community and rural hospitals are failing all across the nation. Medical costs are spiraling upward and out of control; the quality of our medical results is dropping; people are increasingly dissatisfied with their health care. Over 50 percent of the people who undergo hospital experiences in the United States are not satisfied with the results. This is a much higher percentage than in the experience of some other countries, much higher than Canada's, higher even than England's. And yet the quality of our medicine is high; we have excellent scientific medicine. Something else appears to be missing or going wrong.

A very big part of the problem is economic: health-care expenditures are going up 10 percent or more per year, and that is an intolerable rate of increase. I have spoken before about the healthcare system in the United States being in crisis; now I would say that the health-care system is in a state of catastrophe. It is failing rapidly in several states. The number of the uninsured is growing. So in this difficult time our hospital has to take a different approach. I would like to look for a moment at what we can do in the design and operation of the hospital in Waimea that will help us cut costs.

One of the major costs in health care today stems from litigation. Twenty to twenty-five cents of the health-care dollar is going toward defensive medicine, lawsuits, and liability insurance. I think that if people are happy and satisfied with their health care, when the long-term outcomes are good, then the rate of litigation will drop. We do not necessarily require national controls on the size of settlements; if patients are happy and satisfied with their health care, they don't sue. That is just a simple fact.

Another important and expensive element is the so-called "B-factor," or the "bureaucracy factor." By "bureaucracy" in this case, I mean the large numbers of people who are generally needed to do the billing, bookkeeping, accounting, and reimbursements. If we can install the best computer hardware and software systems so that the record-keeping, billing, and reimbursement processes are simple and as inexpensive as we can make them, additional costs will be saved. By doing the job right, we can reduce the B-factor considerably.

A third area for cost cutting is in the regulatory environment. Regulatory costs amount to about \$750 million annually. Now we cannot do a lot here about the national regulatory environment, and by that I mean the FDA, OSHA, the FCC, and all the other federal and state regulatory agencies that a hospital must answer to in one way or another. Obviously, some regulatory environment is necessary, and if we obtain cooperation with the state and local governments, I think we can reduce the regulatory costs as we go about our business of operating the NHCH. Let us look at other areas for cost reduction.

Iatrogenic diseases are diseases that are caused in some way while a person is staying in a hospital. With the kind of high-quality medical staff that we have in this community, and with a real caring environment, I expect that the incidence of iatrogenic problems will be far lower than at most hospitals.

There are also things that are being done to cut costs in the main area of medical treatment, namely, the "outcome studies." This is going on all over the nation. There are some 65 commercial companies that are devoted just to doing outcome studies. Outcome studies ask the question, What are the long-term results of our medical procedures? What is their cost-effectiveness? The people working in outcome studies soon discovered that certain traditional medical procedures produce little if any improvement in quality of life for the patient. In fact, there are some recent outcome studies that show that there are certain drugs and therapies, given routinely to people in hospitals, that get them out of the hospital in good shape—but over the long term, the persons receiving those drugs and therapies have a higher death rate than those given placebos. There are cases of this that are quite clear-cut. Therefore, as we consider procedures we want to carry out in our own hospital, we have to keep an eye on outcomes. There may be some accepted medical procedures that we have today that will not be done in the future, and that may cut costs. It's not going to cut costs as much as some writers think it will, but there will be some savings in that area. If we do all the right things in designing and setting the programs for this new hospital, I think we can control the costs and demonstrate a substantial saving while producing high-quality health care. As I said, our national health-care system in the United States is in catastrophe. It could be that, in developing the right approach in this hospital, we will be a survivor after the rest of the system has collapsed, and people will look and say, What are they doing there at North Hawaii that is turning out so well?

Another reason we have to have a hospital that is different is that the times are changing, and rapid change is seen especially in the way hospitals operate. There is a very strong movement toward more ambulatory care and even toward doing procedures at home or at least outside of the hospital setting. Services are available in most areas of the United States that will provide home health care, even handling intravenous or tube feeding.

With home health care, the patients and their families are getting much more involved in healthcare decision making, and this is a very significant change. More ambulatory and outpatient home care means that the patients in the hospital are very sick people. I think that in our hospital, even though it will be only a 50-bed facility, we can find ways of taking care of some of these sicker patients, keeping them closer to their homes, instead of sending them to Honolulu.

I have thought of a number of ways in which this hospital could and should be different:

First of all, this hospital must be patient-oriented. The hospital is not a machine shop where human body-machines go for repair. The hospitalized patient may also like to have a view out the window, an attractively furnished room, decent food, open visiting hours, access to his or her medical records, and a pleasant and understanding relationship with the medical staff. I also hope that this hospital will practice what I call "integrated medicine." The medical staff will be open to various healers and healing modalities that might not have had a place in the medical school curriculum and use those methods that are effective for turning on the healer within people. There is, after all, only one effective healing mechanism in the world and that is the healing capability we have built into our bodies. It is a marvelous mechanism, but it has got to be turned on and not suppressed. "Integrated medicine" is a term that I would like to have used for treatment methods that may not be amenable to double-blind studies, but do have outcomes-positive, long-term ones. We have done great harm by requiring that what is used in medicine conform to a statistical standard. I think that the important thing is the outcome: what level of long-term quality of life results for the patient? Integrated medicine has a positive long-term impact on patients' quality of life.

In that area of integrated medicine there are a couple of current expressions that I really do not like, namely, the terms "provider" and "consumer." The hospital or clinic is a provider of health care, and the patients are consumers. These terms evoke a sense of crass commercialism that is not appropriate to the healing situation. I hope that in this hospital here we can return to truly human relationships between patient and nurse and doctor, and not reduce the process of care giving to cash-dollar negotiations.

I believe that the NHCH should play a major role in teaching harmony in life. Part of this harmony arises from the state of health of the body—that largely mechanical, chemical, electrical entity—but the other, equal voice in that harmony is the mind. The stimuli that affect the mind—pleasant sensory input, human relationships, faith healing, whatever it may be—affect the mind and in turn the body and brain. If we don't combine all of these in a harmonized, integrated way, we do not have complete health. I feel that a major function of this hospital should be to educate the public on the harmony and health of body and mind.

These are some of the differences that I think could and should be incorporated into the hospital design.

The next question: Is it possible, then, that if we do these things at the NHCH, we could make it a model for the State of Hawaii and for the nation? I think that the answer here is Yes, if we can really demonstrate high-quality care, positive long-term outcomes for the patient, and patients who are happy and satisfied with the results. The results are not always going to be what they may have hoped for. That is not possible. Medicine is not perfect. If patients are satisfied that everything reasonable has been done, and they have participated in making the decisions on what to do, however, we will become a model health-care institution.

The answer is again Yes, if we can demonstrate cost-effectiveness. Many aspects of integrated medicine are not reimbursable, they are not on the DRG charts, and they are not listed on insurance policies. The time nurses and doctors spend with patients, while tremendously important, is not compensated for in health-care plans. I believe we can become a model for Hawaii and the nation if we can design a hospital so that the staff, the doctors, the nurses, and technicians are happy and are satisfied with what they are doing. And I think the answer is also Yes, if we become an effective force in the community, working with other clinics and hospitals to educate the people of the Big Island to live a harmonious life. If we can do these things, we will be one of the survivors as the system collapses elsewhere.

The next question that comes to mind is, What advantages are there in developing this hospital on the Big Island? Certainly one of them is that we are starting from the bare beginnings; we do not have an established institution and bureaucracy so that we have to change things from what they are. We can produce a system here by 1995 that others will not reach until the year 2000 or later. Another great advantage we have here is that the government at both the state and county levels is well attuned to health-care issues, and to the kind of patient-centered, integrated health care we are discussing. This is the first state in the nation to have total medical coverage for everyone, and that in itself is a model for the rest of the nation. Another advantage we have here is the nature of Hawaii's medical profession; it is already very patient-oriented. Because most of Hawaii has the character of a small

community, the health-care professionals know their patients; they run into them in the grocery store. Doctors here, therefore, get immediate feedback on what their "outcomes" are. These are big advantages for making our system work here. In addition to this, we have a citizenry in North Hawaii that is very positive about this hospital; they are excited about the meaning of this hospital to them as residents of the area, and what it means to them in terms of personal health care and the health of their families.

We need to be masters of change, leaders in bringing about this new view of health and healing. We cannot just build a hospital for today; we need to move toward a hospital of tomorrow. We will have a good and important hospital here in North Hawaii—not just another hospital.

FOOTNOTES

* This article is based on the edited transcription of a special presentation given by Earl Bakken to the Archaeus Project membership on March 7, 1990, titled, "Project 2010: A Vision of Medicine in the 21st Century." It has been revised and updated several times since then to reflect new data on health-care costs and quality. This lecture is also available on video- and audiocassette.

1. Social Security: Visions and Revisions (New York: Cambridge University Press, 1986), p. 178.

3. The results for 1990 are in: spending on health care grew 10.5 percent to \$666.2 billion, or 12.2 percent of the GNP. Costs are expected to hit 14 percent of the GNP in 1992 (The Wall Street Journal, Monday, Dec. 30, 1991). Government health programs accounted for 42.4 percent. Spending on health absorbed 15.3 percent of federal expenditures in 1990, up from 14.7 percent in 1989; 11.4 percent of local and state spending went for health, up from 11 percent in 1989.

4. This in spite of the fact that we are able to salvage 24-week babies at a cost of around \$400,000 each—babies that frequently have developmental disabilities requiring lifelong care. The importance of non-technological approaches to delivery is demonstrated in an article by John Kennell, MD; et al., "Continuous Emotional Support during Labor in a US Hospital" (JAMA 265, 17 [May 1, 1991]: 2197- 2201). See also the editorial commentary (p. 2236), "Doula at the Bedside of the Patient in Labor."

5. Uninsured patients accounted for more than half—52 percent—of outpatient visits and 30 percent of inpatient stays at public hospitals in 1988 (The Wall Street Journal, Wednesday, Jan. 30, 1991)

6. It should also be noted that uninsured patients have an in-hospital death rate 1.2 to 3.2 times higher than privately insured patients; they are 29 to 75 percent less likely to undergo high cost procedures, and are 50 percent less likely to have normal results on biopsies.

7. In 1989, hospitals provided \$11.1 billion in care for which they received no compensation, up from \$3.9 billion in 1980. In the interim, 761 hospitals shut down ("Law on Treating Poor Patients Faces Key Test," The Wall Street Journal, Thursday, May 2, 1991).

8. See Lynn Payer, *Medicine and Culture* (New York: Henry Holt, 1988), *passim*.

9. See Ken Dychtwald and Joe Flower, *Age Wave: The Challenges and Opportunities of an Aging America* (Los Angeles: Jeremy P. Tarcher, 1989). They note that 12.7 percent of the U.S. population is over the age of 65. This figure will reach 22 percent by the year 2050 (Janis R. Remer, "Long-term Care: Coverage Options," AAPO Journal [December 1991/January 1992]: 9-15). For the effect of increasing costs on retirement see "Rapidly Rising Healthcare Costs Threatening Retiree's Future, Study Says," in *Hospital News*, January 1992, p. 18.

10. For a comparative study of malpractice litigation trends in the United States and Canada, see Peter C. Coyte, et al., "Medical Malpractice-The Canadian Experience" in *The New England Journal of Medicine* 324, 2 (January 10, 1991): 89-93. "Despite a lower frequency of litigation and cost of insurance in Canada, growth rates in both frequency of claims and size of awards are similar in the two countries, and average awards are not very different."

11. See "Less Litigation, More Justice," *The Wall Street Journal*, Wednesday, Aug. 14, 1991.

12. The costs of administering the nation's health care system totaled between \$96.8 and \$120.4 billion in 1987, or between 19 to 24.1 percent of total health expenditures—an increase of 37 percent from 1983. This comes out to about \$400 per person in the United States; \$156 per person in Canada (Steffie Woolhandler and David U. Himmelstein, "The Deteriorating Administrative Efficiency of the U.S. Health Care System," *The New England Journal of Medicine* 324, 18 [May 2, 1991]: 1253-1258). Don Larson, writing for the *Reece Report* (June/July, 1991) puts medical paperwork costs at \$202.9 billion, or twice the total net pay of the nation's 594,000 doctors.

13. There is one lawyer for every 335 people in the United States as against one for every 9,000 in Japan ("Law," *The Wall Street Journal*, Wednesday, Aug. 14, 1991). The United States has approximately 70 percent of all the lawyers in the world.

14. See Troven A. Brennan, et al., "Incidence of Adverse Events and Negligence in Hospitalized Patients," *The New England Journal of Medicine* 324, 6 (Feb. 7, 1991): 370-384.

15. See "The High Costs of Dying," *The Wall Street Journal*, Wednesday, Feb. 26, 1992.

16. The treatment of HIV infection consumed nearly 1 percent—\$5.8 billion of the annual health-care budget of the United States in 1991. By 1994, this figure is expected to double (JAMA 266, 8 [Aug. 28, 1991]: 1055).

17. The current cost of treating the victims of violent crime is \$3.5 billion (*HealthWeek* 5, 21 [Nov. 4, 1991]).

18. The national cost of dealing with the effects of crack and cocaine on newborns is about \$500 million. See Ciaran Phibbs, PhD; David A. Bateman, MD; Rachel M. Schwartz, MPH, "The Neonatal Costs of Maternal Cocaine Use," *JAMA* 266, 11 (Sept. 18, 1991): 1521-1526

19. Medicaid will cost \$90.3 billion in 1991, 31 percent more than in 1990 ("Medicaid Is Beginning to Look More Like Part of the Problem with the Health Care System," *The Wall Street Journal*, Thursday, Aug. 8, 1991).
20. For a recent review of the Oregon rationing plans and its revisions, see "Setting Health Care Priorities in Oregon: Cost-effectiveness Meets the Rule of Rescue," *JAMA* 265, 17 (May 1, 1991): 2218-2225.
21. Health expenditures in the United States increased from 11.6 percent of the GNP in 1989 to 12.2 percent in 1990. Government at all levels spent 14.8 percent of its revenues on health care in 1989, compared with 5 percent in 1965—the year that Medicare started ("U.S. Spending On Health Care Keeps Growing," *The Wall Street Journal*, Tuesday, April 23, 1991). The percentage of the GNP spent on health care is predicted to reach at least 13 percent by 1996 (*Hospital News Minnesota*, Aug. 8, 1991). Others calculate that this percentage has already been reached ("A Simple Solution to Keep Health Care Costs from Soaring," [Reece Report, June/July, 1991]).
22. The cost for an average comprehensive medical plan for corporations is expected to increase by 24 to 32 percent in 1991 (*HealthWeek*, June 3, 1991).
23. From 1989 to 1990, health spending by businesses spiraled to 8.3 percent of wages from 2.2 percent ("U.S. Spending on Health Care Keeps Growing," *The Wall Street Journal*, Tuesday, Apr. 23, 1991).
24. This figure is now closer to \$1100 ("Health-Care Costs Add \$1,086 to U.S. Car Prices," *The Wall Street Journal*, Thursday, Feb. 6, 1992).
25. Corporate medical bills rose 21.6 percent in 1990 after a 1989 jump of 20.4 percent. Medical-plan costs per employee rose to \$3,161 in 1990 compared to \$2,600 in 1989. At the current rate, medical benefits could reach \$22,000 per employee by the year 2000 ("Costs of Medical Care Continue to Soar, Defying Corporate Efforts to Find Cures," *The Wall Street Journal*, Tuesday, Jan. 29, 1991).
26. The elderly account for \$1 in every \$3 spent on Medicaid, even though they represent only one in every eight beneficiaries—and get their basic medical coverage from the all-federal Medicare program (*The Wall Street Journal*, Thursday, Aug. 8, 1991).
27. *Setting Limits: Medical Goals in an Aging Society* (New York: Simon and Schuster, 1987).
28. A March 1991 Supreme Court ruling against the limitation of punitive damages will not be helpful.
29. Gerald B. Hickson, MD; Ellen Wright Clayton, MD, JD; Penny B. Githens, MS; and Frank A. Sloan, PhD, "Factors That Prompted Families to File Medical Malpractice Claims Following Perinatal Injuries," *JAMA* 267, 10 (March 11, 1992): 1359-1363.
30. *Health of Nations*, New York: Basic Books, 1987.
31. See Stanton Peele, *Diseasing of America* (Lexington, Mass.: Lexington Books, 1989).
32. According to William B. Schwartz and Daniel N. Mendelson, "...the era of easy reductions in the number of inpatient days, with the associated attenuation of rising costs, is largely over" ("Hospital Cost Containment in the 1980s," *The New England Journal of Medicine* 324, 15 [April 11, 1991]: 1037-1042). It is our belief that additional significant reductions can be achieved through the use of nontechnological, cyberphysiological approaches to patient care and recovery
33. This talk was delivered at the colloquium "Mind-Body issues in Current Medical Practice," organized by North Hawaii Community Hospital, Inc., and Archaeus Project and held at the Mauna Lani Bay Resort Hotel on the Kohala Coast, Island of Hawaii, Nov. 3, 1990.
34. According to a survey by the employee-benefits consulting firm A. Foster Higgins & Co., companies spent about \$2,683 per employee on HMO health care in 1990, 17 percent less than the \$3,214 spent per employee under traditional indemnity plans. Nevertheless, the cost of HMO coverage per employee rose 15.7 percent in 1990 as against 21.6 percent for traditional plans—both coverages increasing at a rate well beyond the rate of inflation (*The Wall Street Journal*, Monday, Aug. 12, 1991).
35. "The Patient-Centered Health-Care Environment," organized by North Hawaii Community Hospital and Archaeus Project and held at the Royal Waikoloan Hotel on the Kohala Coast, Island of Hawaii, Aug. 11, 1990.
36. See Appendix for a picture of the patient-centered hospital that is largely derived from Planetree ideas. For information on the "Planetree Perspective," write to Planetree, 2040 Webster Street, San Francisco, CA 94115, or inquire about audio- and videotape presentations of the Planetree Model Hospital Project and Resource Center, available from Archaeus Project.

APPENDIX: Notes on a Cyberphysiological Hospital

This paper represents the collected thoughts of the Archaeus Project Board of Directors on what a "cyberphysiological hospital"-the hospital of the 21st century-should be. This thinking was done with special reference to the planned North Hawaii Community Hospital; however, the ideas expressed here have application to almost any small, rural, acute-care hospital. The Archaeus Project Board of Directors includes Earl Bakken, president of AP and cofounder of Medtronic, Inc.; Dennis Stillings, vice president of the board and director of AP; Gail Duke, managing editor of AP publications and board secretary; Georgine Busch, treasurer of AP and private accountant; Pat Drury, executive director of the Minnesota Coalition on Health; and William D. Manahan, MD, president of the American Holistic Medical Association and Director of the Wellness Center of Minnesota.

OVER THE COURSE OF TIME, Western medicine has evolved into a dominant mechanistic/materialistic scientific discipline, which has tended to treat the sick person as the possessor of a peculiar mechanical device (the body) composed of several more or less discrete parts (the organs and tissues), one or more of which are in need of repair. The psychological self of the person has been left out of the healing equation as irrelevant to these repair procedures.

Traditionally, this has not always been the dominant way in which medicine was practiced. Perhaps because, in those earlier days, little or no scientific and technological medicine was available, medical practitioners had to rely heavily on the patient's own recuperative powers during treatment, a treatment that, more often than not, was of more psychological benefit to the doctor than of actual physical benefit to the patient.

As Western medicine became more fascinated with the progress and triumphs of science, it gave itself over to the lure of the scientific method. In less than a hundred years, this fascination has produced many great wonders of medical technology. In the hurry and hustle of developing a comprehensive scientific medicine, however, the tradition of the bedside manner, of giving psychological support to the patient, and of evoking the natural healing forces of the body, was lost to a very large extent. While such an approach is still practiced by most or all those physicians we remember as great, such focus on the psyche and consciousness of the patient has not played any great role in the general education and practice of the average physician.

The cyberphysiological approach to health and health care seeks to remedy this situation by integrating the best of Western medical technology with a patient-centered, humanistic approach. This combination will be the new "integrated medicine" of the 21st century.

Cyberphysiology

INTEGRATED MEDICINE is cyberphysiological medicine in that the psyche² (consciousness or mind) of the patient is considered to be a major factor influencing the course of medical treatment.

An integrated medicine, then, will provide a cyberphysiologically supportive environment and use cyberphysiological principles in the application of medicines, surgery, and medical devices to facilitate patient recovery. A hospital dedicated to an integrated medicine will use cyberphysiological principles in four areas.

The Four Areas of Cyberphysiological Medicine and Health Care

IN DISCUSSING the hospital of the future, we will address four areas of cyberphysiological application:

AREA I: THE HOSPITAL ENVIRONMENT

AREA II: TREATMENT

AREA III: EDUCATION AND COMMUNITY RELATIONS

AREA IV: STAFFING AND OPERATIONS

I. The hospital environment

While there has been great popular focus on the role of consciousness in health, as represented by such practices as hypnotherapy, meditation, biofeedback, yoga, psychoneuroimmunology, autogenics, and many other cyberphysiological practices and disciplines, not so much attention has been paid to the "little things" that impinge on and strongly influence consciousness on a day-to-day basis.

One pioneering effort to study and apply the influence of the hospital environment on the patient has been undertaken by the Planetree Model Hospital Project³ at Pacific Presbyterian Hospital in San Francisco. The efforts of Planetree and the success of the project have stimulated a trend toward this type of design, so that this way of creating patient-friendly hospitals is now firmly established and by no means novel. The following are some of the patient-centered changes in hospital environments that have been suggested by Planetree representatives and others:

- Windows with a pleasant outdoor view in every room (with the bed turned so that the patient can look out—something that is not always provided for). This implies that a hospital be designed to take advantage of surrounding views. At Pacific Presbyterian Hospital, for example, there is a fabulous view of San Francisco Bay—visible only from the windows in the hall leading to the freight elevators!
- The use of skylights in rooms and halls. Long, desolate hallways through which the patient may be rolled on a gurney or in a wheelchair have a threatening feel. Such bleak hallway images are often used in Hollywood films to convey a sensation of helpless terror.
- Carrying out a "Hawaiian blessing" on the finished hospital building. The use of a feng shui⁴ consultant for the architecture and interior design of the hospital might also be considered. Feng shui is a mystical, yet practical, Japanese discipline involved with the ordering and orientation of buildings, their interiors, and the associated objects. Forms of feng shui may be found throughout South Pacific and Pacific Rim cultures, including Hawaii. Feng shui is used by the Japanese in the design and construction of modern office buildings both in Japan and in the United States. It was a subject of considerable discussion at a recent meeting on hospital interior design. In deference to this cultural practice, and taking into consideration that patients at North Hawaii Community Hospital often will have come from cultures using such practices, feng shui should perhaps be investigated and applied.
- Windows that can be opened, but also locked and controlled if necessary.
- Satisfactory noise control.
- The doors of patients' rooms should be designed so that the patient can close them by remote control to accommodate a desire or need for privacy. This assumes the patient-centered belief that the person should have some control over interruptions, unless the need to interrupt has high priority. Routine tests should be deferred, within reason, to suit the patient's readiness to endure them.
- The installation of futons, mats, cots, hide-a-beds, or sofa-beds in the rooms to accommodate various family members who might wish to stay overnight.
- A selection of toiletries and related articles so that a visiting family member or care partner⁵ can assist in grooming the patient. Concerns over appearance often produce anxiety in patients, and it is not to be reasonably expected that hospital staff will have time to be much involved in this.
- Kitchens for patient or patient-family use on each unit, including refrigerator space, cooking and eating utensils, microwave or regular ovens, and hotplates or stovetops.

- Niches in walls for crash carts, medicine carts, and other typical hospital clutter.
- Wood trim and wood finishes, instead of plastic and chrome, wherever possible and appropriate.
- Use of full-spectrum fluorescent lighting.
- Use of rheostats on some lighting so that the light may be subdued at appropriate times of day.
- High ceilings—10 to 12 feet.
- Use of colors and patterns in linens, curtains, and floor coverings.
- Use of several small, private rooms in clusters, rather than two- or four-person rooms. Multiple-patient rooms may also exist for those who prefer them. The choice should be available.
- A unit or other area available so that ambulatory patients may enjoy pet Visits.⁶
- A comfortable, "homey" area where ambulatory patients can meet with friends and family members.
- In that area, chairs available that are at the patient's level when the patient is in a wheelchair. Chairs often force visitors to sit below the patient so that eye contact is difficult. A supply of appropriate folding chairs might be stored nearby so that the usual shortage of chairs for visitors is avoided.
- Patient-controllable audiovisual devices (radio, TV, VCR) available with an eye to cultural preferences. Earphones can be used in multiple-patient rooms.
- A hospital-wide system for automated medical records with voice-activated bedside terminals to save administrative time.
- Nursing stations designed to be open to the hospital unit, rather than barrier-like structures separating patients from staff.
- Use of filtered or reverse-osmosis-processed drinking water.
- Individual room temperature controls.
- Gardens or, at least, window boxes outside all windows. Bird feeders might be nice. Flowers in all rooms unless there is a medical or patient-preference reason why there should not be.
- Negative-ion generators, if sufficient positive experimental evidence exists that they are beneficial.
- A rotating collection of art for walls, appropriate for different cultures. There should be a catalogue of available works for interested patients to choose from. It has been found that patients react badly to abstract art.⁷ Art works should therefore be chosen that give a sense of familiarity and a connection to the world outside the hospital. Materials and space for art therapy should be considered.⁸
- A special "retreat" area to which patients and staff may retire to be alone, to meditate, or just to have a private conversation.
- Special attention to areas of the hospital for children. Professional designers often have a notion of what will please children that is not shared by the children themselves. Input on design from children might be sought.

- An attractive brochure should be prepared and distributed that orients patient, family, and care partner to the nature of the facility and its philosophy and practice of care.

Some patients may be irritated by having to choose this or that amenity and simply may not care that much about visitors, art, or looking out the window. Staff should not press their beliefs in this regard on such patients.

1. Cyberphysiology may be defined as the study of the effects of the interactions of consciousness (the mind or psyche) with physiological processes normally thought to be autonomous. Medical treatments that take these effects into serious consideration may be described as "cyberphysiological." For a thorough discussion of this concept, its technologies and applications, see Eugene Taylor, *Cyberphysiology: The Science of Self-Regulation* (St. Paul, Minn.: Archaeus Project, 1988).

2. The term mind carries a great deal of philosophical baggage and, for that reason, is not the best term. The word consciousness is not much better, popular though it is these days. Clearly, those healing processes that seem to proceed from the patient's own psychological responses are not all conscious. The preferred term ought to be psyche, defined as that organ of the individual from which psychological processes originate—both conscious and unconscious.

3. Information on the Planetree Model Hospital Project and the Planetree Information Resource Center may be obtained by writing to Planetree, 2040 Webster Street, San Francisco, CA 94115; tel no.: (415) 923-3696.

4. Pronounced "fung schway."

5. A "care partner" is a person (spouse, lover, friend, or relative), who will assist in the care of a patient. The tasks carried out by this care partner may be fairly elaborate. The training of such people is part of the Planetree Model Hospital program.

II. Treatment

The importance of cyberphysiological treatments and certain alternative therapies is being gradually recognized. Some of these have already been listed, such as psychoneuroimmunology and hypnotherapy. Certain hospitals have granted chiropractors, acupuncturists, and naturopaths resident privileges and have profited thereby. These alternative practitioners have, in turn, made referrals to hospitals. An integrated medical approach will take an open-minded view of these "alternative" or "complementary" approaches, particularly when the patient population may contain many individuals who, for personal or cultural reasons, hold great store by herbal medicine, acupuncture, homeopathy, or the various shamanistic or laying-on-of-hands therapies. It is good PR, especially in Hawaii, to give cognizance to traditional therapies. Almost any therapy will have at least a cyberphysiological effect, since it is a form of attention to the patient and is also something he or she may be more comfortable with. Deferring to the use of certain alternative approaches may also result in the patient becoming more comfortable with technological medicine and the hospital environment.

In addition to using various cyberphysiological and alternative therapies and disciplines, regular procedures and treatments also may be carried out in a cyberphysiological fashion. For instance, it is now well established that what is said—positive or negative—in the presence of the supposedly unconscious, anesthetized patient, whether in the OR or in the recovery room, may have an effect on the outcome of the procedure and consequent patient satisfaction. Personal assurances from the surgeons are also tied to fewer complications and to a speedier recovery. Such positive patient-physician interaction is also apt to generate fewer malpractice complaints.

III. Education and community relations

The hospital has a role to play in the community parallel to those of church and school. Patient education and empowerment within the confines of the hospital should be extended into programs of community education in preventive medicine, wellness, and access to the latest information on health and medical developments. Such programs and activities might include:

- School outreach programs, such as primary health education for children. These programs would include familiarization with the hospital (through school tours) and its services, and related audiovisual presentations to train children in "patienthood"—what to expect as a patient in a hospital and how to interact with nurses,

physicians, and the hospital administration. It is also known that children are especially adept at acquiring cyberphysiological skills, including visualization for pain control and self-healing. Programs introducing these techniques should be made available.

- Community education programs designed to take into account cultural and language differences and illiteracy. Programs having a good "box-office" draw include presentations and workshops on self-assessment, personal insight, relaxation techniques, self-hypnosis, and problems of "lifestyle," weight, and fitness.
- A community health-information service including referrals to private medical and medical-related (i.e., massage, biofeedback) practitioners. Questionnaires would be sent to such practitioners that would give indications as to competency, certifications, philosophy, and probable compatibility with any particular patient.⁹ These completed forms, bound in ring binders, would be available to members of the community so that they could make informed judgments about accessing other health resources. The community resource center also would make available medically related audiovisual educational tapes, key reference books, a bulletin board of notices of recent medical advances in the treatment of common diseases and innovations in wellness theory and technique, and a judiciously selected collection of periodicals.¹⁰
- Establishing linkages with religious groups to exchange space for programs.
- Networking with existing self-help and support groups, including "Twelve Step" organizations,¹¹ providing space for literature and for meetings.
- Formal training programs for family and care partners with a model care unit set up for such training. Training in biofeedback, self-hypnosis, meditation, and stress management for patients and family (and hospital staff) also might be included.

IV. Staffing and operations

The strongest indication so far of the value of the Planetree Model Hospital Project has been the unusually high level of patient and staff satisfaction. The "cyberphysiological hospital" requires a highly conscious and dedicated staff, and that staff is as deserving of cyberphysiological care and "strokes" as are the patients. The cyberphysiological approach involves the interaction of the psyche with the body and with other psyches as well. Consequently, staff morale becomes part of the total health-care picture in a real way. Hospitals have instituted retreats, on-the-job counseling for stress management, and even massages to boost staff morale and prevent burnout (and turnover). Attention must therefore be paid to patient-staff interactions, nurse-doctor relationships, and other interpersonal aspects of the hospital environment.

There is a special problem of housing costs and the general cost of living in Hawaii, particularly in relationship to lower-paid professional staff. For this reason, it has been suggested that low-cost staff housing be provided by the NHCH. Hospital provision of childcare services also should be considered, especially in cases where no family member is available for child care.

Results of business-provided child care include reductions in employee turnover, sick days taken, and absenteeism due to family emergencies. In the hospital context, where both day and night work assignments exist, such considerations are especially important.

Other suggestions include:

- Highly automated, state-of-the-art computer hardware and software for record keeping. In a cyberphysiologically oriented hospital, records might be kept that are not normally kept by traditional hospitals. Since bureaucratic and administrative paperwork costs absorb a significant percentage of the health-care dollar, special attention should be given to choosing a system for handling patient and financial records.

- The use of primary nursing.¹² There should be continuing patient and care partner involvement (including, at least, phone access) with the primary nurse for a period following discharge. The time involved in this follow-up should be built into the nurse's schedule.
- Recruitment of staff, especially nurses and technicians, who understand and agree with the philosophy of sharing power with the patient.
- Coordination of testing and sample-taking one blood sample per day if at all possible.
- Maximum use of fresh foods, with consciousness of cultural preferences. The patient and his or her care partner should be trained in nutrition and special dietary requirements. With kitchens in each unit, there would be an excellent opportunity for such training.
- No restrictions on visiting hours other than those imposed by the patient and the primary care nurse. No special restrictions on children unless indicated.
- Full access for the patient to his or her chart and medical record and encouragement to express his or her own opinion on current health status and quality of care.
- Use of patient evaluations as part of planning and also in determining staff compensation.
- Clear performance expectations by top management and support of these expectations by the use of internal incentives. The importance of patient autonomy should be stressed, along with the fact that nurses, doctors, and other staff are to be patient advocates. This suggests a need for experimental per-episode funding so that emphasis is on managing the whole course of the patient's recovery and not just on the short-term efficiencies of operation. Savings on a shorter length of stay and reduced readmissions will be captured by the hospital.
- A 24-hour patient complaint/help line to access housekeeping, dietary, and other relevant departments of the hospital.
- Strict rules, monitored and enforced, against any disrespectful verbal or other behavior by staff toward patients or each other.
- Financial counseling of the patient and family at the beginning of and throughout the hospital stay in order to diminish patient and family anxiety about money matters.¹³
- Standards, recorded and checked, on such things as amount of time patients are away for various other services, such as X-ray sessions and lab visits. Managers of services should be held accountable for preventing patients' having to wait too long in the halls.
- Permission for staff to dress in colors and prints—normal clothes. Use of ID badges.
- Translators available on a 24-hour basis for all languages commonly encountered among patients. Arrangements should be made for obtaining services in other languages within one day after admission.
- Structured social activities for ambulatory patients and patients in wheelchairs: arts performances, lectures, storytelling, arts and crafts displays, participation in religious services.
- Compilation of "survival tips" from patients and nurses to pass on to other patients with similar needs and conditions. Such tips include observations and "tricks," not easily communicable in a formal manner, on how to get through certain procedures and recoveries; for instance, holding a pillow to the chest to reduce pain when one has to cough following chest surgery.

- Training in chronobiology¹⁴ for staff, especially nursing staff and ancillary service managers. Care would be planned to incorporate chronobiological principles.

9. Planetree also provides a form for alternative, health-related practitioners of acupuncture, massage, hypnotherapy, etc.

10. The importance of public education in health matters and the practical consequences are detailed in Stanley J. Reiser, MD, "Consumer Competence and the Reform of American Health Care," JAMA 267, 11 (Mar. 18, 1992): 1511-1515.

11. For example, Alcoholics Anonymous.

12. In primary nursing, one nurse is assigned to all functions for a given set of patients, as opposed to functional nursing, where each nurse is responsible for a limited number of functions, such as taking blood pressure or blood samples. Patients are far more comfortable with the former than with the latter.

13. In a poll by Northwestern Mutual Life, 60 percent said that they had no confidence that their insurance would cover a major illness a few years from now; 19 percent named out-of-pocket costs as their number one worry when it came to their health (USA Today, Monday, Mar. 11, 1991). Clearly, reassuring the patient about these matters is important.

14. Chronobiology may be defined as the study of biological time structures, the biological rhythms that accompany life processes (not to be confused with the pseudoscience of biorhythms). These rhythms have profound implications for the practice of medicine. Chronobiologists have found that timing may be of immense importance in the detection, treatment, and prevention of disease. The reader is referred to the booklet, Chronobiology: A Science in Tune with the Rhythms of Life (Minneapolis: privately published, 1986. Available from Archaeus Project).

Discussion

The North Hawaii Community Hospital

The hospital we are considering here is the one being planned for Waimea on the Big Island—the North Hawaii Community Hospital (NHCH). This hospital will be a 50-bed, acute-care facility located in a small community having a semiarid climate with a temperature that varies from about the high 70s down to—on occasion—the low 50s, or even the 40s. The hospital will be within a short distance of the Kohala Coast resort area. The nearest major medical center is, at present, at least 50 miles away. The hospital will be jointly financed (50-50) by state and private funds. It will be privately operated. The hospital will be conventionally administrated and will have the usual small-hospital technologies. It will not be used for long-term or tertiary care. (These provisions may change over time.) Both the medical professionals in the area and the general population may be regarded as sympathetic toward holistic, or "integrated" medicine.

The population is multicultural, with a wide range of income and lifestyles. It is also strongly family- and community-oriented. The cost of living, and particularly cost of housing, is very high.

Taking this background information into consideration, we have made some suggestions in this paper on the features this hospital should have that would (1) best adapt it to expected major changes in the practice of medicine, and (2) produce the sort of patient-focused environment that we believe promotes healing.

Some basic considerations

In reviewing an earlier version of this document, William D. Manahan, MD, director of the Wellness Center of Minnesota, raised the following issues:

Fifty-bed, acute-care hospitals tend to be just primary-care hospitals that do minimal secondary and no tertiary care. My first point would be to be absolutely clear [about] what types of problems the [NHCH] will be taking care of. Will people with heart attacks go there or will they need to be transferred to a larger hospital? People with head injuries? People with strokes? People with severe pulmonary problems who may need to be on a respirator for short periods of time? Will subspecialists be practicing at the hospital or would they mainly come in on a consultative basis from elsewhere?

The small hospitals here in Minnesota struggle with attempting to figure out what they can do well [while not sending] all their business to other hospitals. Should they do obstetrics? Who will do the C-sections? Will they only do routine obstetrics, but [send any patients with] complications elsewhere? These are questions that have to be carefully explored (1) legally, (2) with regard to payment from third-party payers, and (3) with the comfort of local people going to the hospital [in mind]. For instance, if all the women employed by the hospital go elsewhere to have their babies, then probably that hospital should not be doing obstetrics. What orthopedic procedures will be done?

My thought is that the mission of the hospital should focus on a couple of areas, such as geriatrics, obstetrics/newborns, or chronic-disease problems [likely to respond positively to educative efforts in wellness and to lifestyle changes]. If the hospital tries to be the usual 50-bed acute-care facility, I believe it will really struggle. Acute-care medicine is becoming so technical, so difficult, and so rapid [in its progress], that the average small hospital is unable to do it well.

Implementation

Perhaps the most difficult aspect of creating a cyberphysiological hospital is getting the ideas implemented. The notion of a patient-centered hospital environment is rapidly gaining adherents. It is clearly the direction in which hospital care is going. Carrying out these ideas will require a sympathetic architect working with an appropriate interior designer and landscaper who have an awareness of the basic ideas for a cyberphysiological hospital. These people should consult with designers who already have experience in creating cyberphysiological hospital environments—such as those who have worked with the Planetree project. These concepts should be well understood by NHCH board members, and a committee formed to see that the agreed-upon ideas are realized in the design of the new facility. It is also very important that a project director for NHCH, Inc., be hired in the very near future. Identifying and recruiting the appropriate people should be at the top of the hospital planning agenda.

Costs

While hard data is, as yet, unavailable, indications are that the costs of building a cyberphysiological hospital are but marginally higher than the costs associated with constructing the average facility. Part, all, or even more than all, of these additional costs might be recovered by (1) quicker recovery of the patient and fewer complications, (2) reduced turnover of personnel, and (3) reduced post-release utilization of the emergency room and fewer desperate calls in the night by patients, as a direct result of the education of patient, family, and caregivers about the patient's needs.

Great concern for costs was not what gave us the modern hospital and its inherent problems, nor was this concern what led to a somewhat less than humanistic treatment of patients. Cost is not the whole issue involved in creating a patient-centered hospital environment—it is also a matter of doing the right thing."

15. The reader is referred to the presentation by Larry Dossey, MD, "Mind and Medicine: Implications for the Hospital" available on audio- and videotape from NHCH, Inc., and Archaeus Project. This presentation was made at the NHCH, Inc., and AP-sponsored colloquium, "The Patient Centered Health-Care Environment" (Aug. 11, 1990, the Royal Waikoloan Hotel, Hawaii).

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This bibliography has been compiled in relation to the issues raised in the foregoing papers according to suggestions made by members of the Archaeus Board of Directors and by certain medical professionals who are active members of Archaeus Project.

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