

Our second
responsibility
in trauma care

**A new clause
in the social contract**

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For 62 years the Scudder Orations have recorded the progress and major concerns of trauma surgeons in the United States. Accordingly, I consider only one subject to be appropriate for this oration: the impact of cost containment on trauma care in the United States. I will explore the uncomfortable interface between two conflicting forces: our traditional responsibility to the injured patient and a new responsibility to society to provide such care at an affordable cost.

As masters of our own professional destiny, we should not await the interminable political process—which currently appears to provide an uncertain trumpet—to dictate to us how best to use the limited resources that society will allocate for management of the injured.

Premise

The increasing cost of health care in the United States mandates change in the health care reimbursement system. Resisting change invites failure and compromise of patient care. Events of the past decade prove that physicians alone are unwilling and unable to produce such change. Events of the past year similarly show that politicians alone, or even with the help of health care economists, are also unsuccessful at bringing about change. The problem is not as simple as it appears. Devising a successful system requires the combined efforts of clinicians, health care economists, health administrators, and representatives of national, state, and local governments. Success of such a team depends upon each of its components becoming educated in the discipline of the others. Few trauma surgeons are familiar with health care economics. Running a successful clinical practice does not automatically qualify one in health policy.

Historic perspective

Our historic responsibility is to serve but one master, our patient. The rising costs of medical care now make it impossible to provide optimal care to everyone. This requires compromise, an unfamiliar and uncomfortable condition to Manichean trauma surgeons. Some will protest that

compromise is unacceptable in the care of the injured in which the tragedy of failure so starkly contrasts with the success of returning an injured person to a long and potentially productive life. For this reason management of the injured remains one of the last bastions to yield to demands for cost constraints. We must accept however that a new clause has been added to our traditional social contract and we must find the best ways to meet both of these conflicting responsibilities to our injured patients and to society.

Some people believe that surgeons should concentrate solely on professional care and abrogate responsibility to others less qualified to provide the guidelines for our practice. This action, I believe, is both professionally degrading and contrary to the best interests of our patients. Who better than we can arbitrate the primary interests of the injured patient and those of society demanding constraints in care?

Economic perspective

An economic analysis of health care costs must start with definition of the immediate federal fiscal crisis.

For two decades the United States has been living beyond its means. Our freewheeling society clearly lacks the will, motivation, discipline, and education to cut expenses and save either at a personal, governmental, or corporate level.¹ The inevitable day of reckoning is at hand and most responsible citizens reluctantly acknowledge that drastic health care cost containment is necessary. To our shame we must admit to three dreadful facts for which my generation is largely responsible:²

1. Health care costs have increased beyond tolerable limits and we have failed to accept a system that restores balance.

2. An unacceptable number of our citizens are without adequate coverage for payment of health care.

3. Health outcome in the United States is inferior to that in countries that allocate far less of their gross national product to health care.

It is tempting to ascribe this unhappy situation to venality of one or another segment of participants in health care, but as is usual in a basic conflict, a fault is in the system, not in personalities. Scientific advances in trauma care have

Dr. Eiseman presented "Our second responsibility" as the 1993 Scudder Oration on Trauma on October 12, during the 79th Clinical Congress in San Francisco, CA.

Figure 1

	1960	1991	2000
Federal deficit	\$ 60 billion	\$300 billion	(est)
National debt	\$914 billion	\$ 4 trillion*	\$ 13 billion
Interest on debt		\$300 billion	\$ 1 trillion

*Interest payment on debt is 15 percent of federal government spending

outpaced knowledge in how to apply them at affordable costs.

If we are to help in providing solutions to the problem, we must understand how costs of trauma care contribute to the current national economic dilemma.

For more than 10 years the federal budget deficit and national debt have risen alarmingly (see Figure 1, this page). Both national and personal savings (see Figure 2, this page) have decreased as we spend more than we are willing to save. The combined public and private debt now is 180 percent of the annual gross national product.

As the national debt rises, so do requirements for interest payments. Servicing the national debt in 1992 consumed 19.9 percent of the entire budget. For 1993 the equivalent figure was 61 percent, and by the year 1997 interest payments on the debt will exceed personal and industrial income taxes. There are Jeremiahs who predict federal bankruptcy by 1997.³ We cannot avoid facing reality much longer.

Rising interest payments trigger an economically debilitating cascade of events. Funds that should be devoted to education and research and development are wasted in servicing our debt. As we fall behind in industrial development we develop a negative balance of trade. Both education and the per capita income of our work force decrease. With diminished take-home pay, demand for goods decreases, resulting in decreased tax revenues. An already bad economic situation is made worse as we create a vicious cycle of economic decompensation.

Sixteen years ago we described an analogous clinical entity that occasionally followed infection and severe trauma; we named it multiple organ failure, and it has been known since by its acronym, MOF.⁴ As one organ failed it threw an

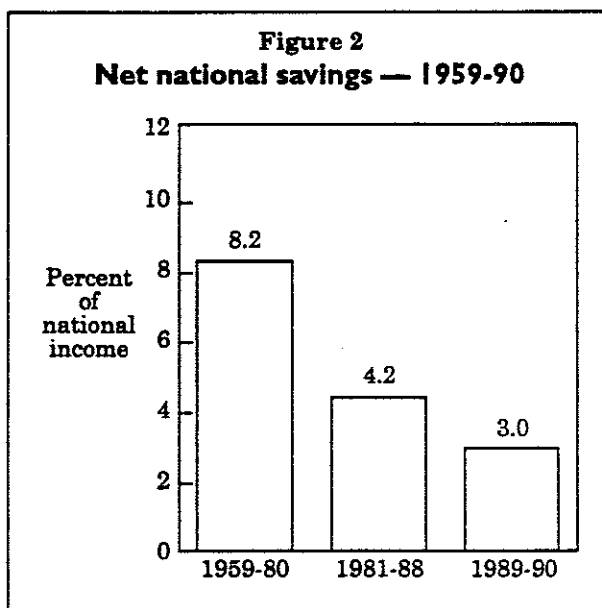
additional burden on another and ultimately the entire organism failed. The current fiscal problem has compelling similarities to the pathophysiology of MOF and could be considered multiple economic organ failure (MEOF) (see Figure 3, p. 26).

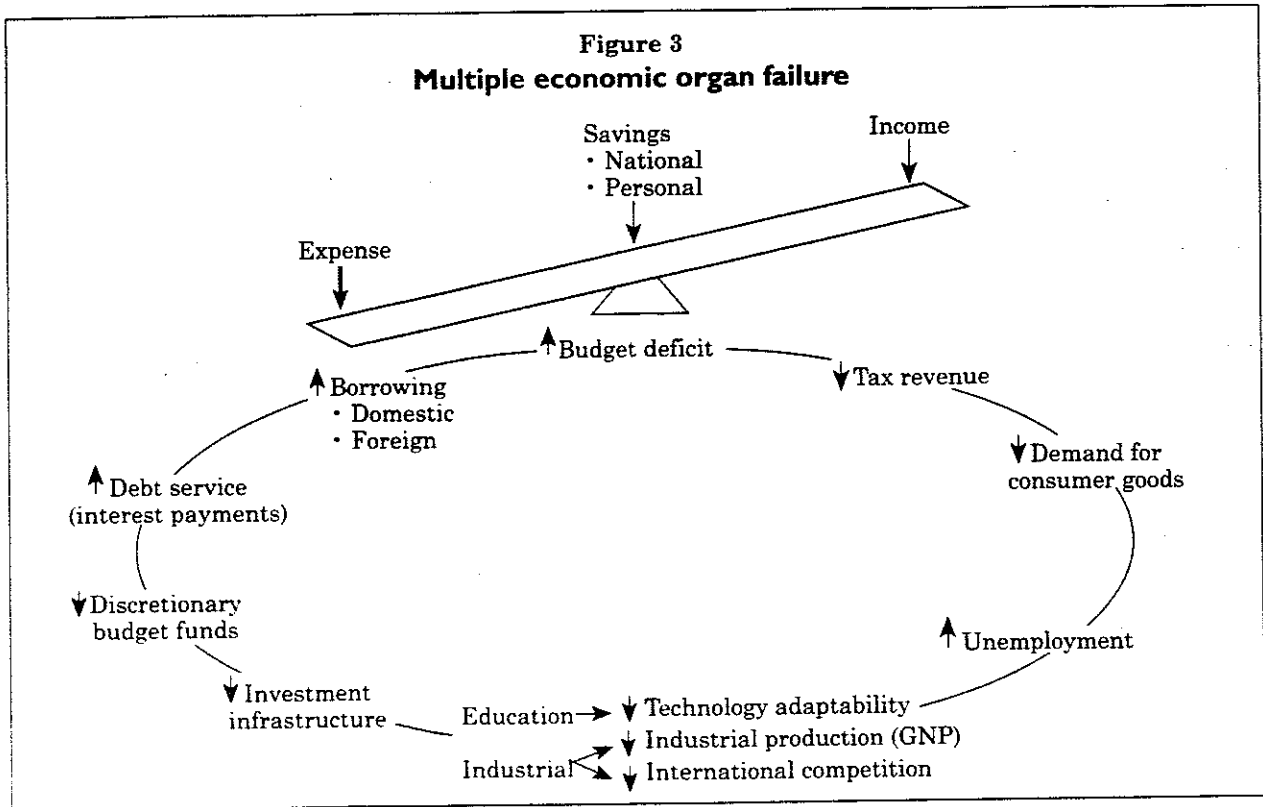
Let us examine how expenses for care of the injured contribute to the etiology of MEOF. Figure

4 (page 27) illustrates expenses in the federal budget. Our attention should center on the 51.9 percent of the budget in 1992 (\$766.2 billion) spent on entitlements.

Entitlements are what our elected representatives decide are inherent economic rights of certain population subgroups. Entitlements include subsidies for farmers, support of the elderly (Social Security), veterans benefits, and a variety of programs for children. These are our competitors for entitlement budget dollars.

Physicians who take exception to equating health care to other entitlements must realize that spokespersons for every other special interest feel equally as protective about their areas of concern. Representatives of the American Association of Retired Persons (AARP), the Farmers





Union, or advocates of children's rights are heard with the same respect and courtesy by congressional committees as are our representatives from the American College of Surgeons or the American Medical Association.

Entitlements have grown faster than any other segment of the budget, except the national debt. Health care, for which we spent \$671 billion in 1990, cost approximately \$850 billion in 1993 (see Figures 5a, 5b, page 27, and Figure 6, page 28).

The skyrocketing cost of health care, which is out of proportion to that of other countries, comprises such a significant part of manufacturing costs of domestic goods that it makes them less competitive abroad and contributes to our increasing negative balance of trade and national debt. This obviously explains the legitimate concern of both industry and labor.

Current health care reform focuses on the federal government, but as we who practice trauma

surgery appreciate, state and local governments spend almost an equivalent amount for health care as does the federal government. Even the combined contributions of federal, state, and local governments comprise only 42 percent of health care costs (see Figure 7, page 29); the remaining costs are met from nongovernmental sources.

Costs of trauma care

No single figure represents the cost of trauma care in the United States. This depends on the definition of trauma (major, minor), definition of costs (direct and indirect, such as compensation and death benefits), and collation of costs from a wide variety of payors. Even within the federal government, payment data for trauma care is widely diffused among several departments and agencies.^{5,6}

Effective management and cost containment depend on accurate accounting cost figures. I sug-

gest that the College's Committee on Trauma urge the federal government to collate and publish annual trauma care payment data.

In 1985, the total health care costs for the 57 million injured persons in the U.S. were estimated to be \$158 billion. Direct costs were estimated to be \$44.8 billion, of which 55 percent was for hospital costs and 15 percent was for physician fees. In that year the federal government supposedly spent \$8.9 billion in Medicare and Medicaid payments for trauma, and allocated an additional \$13 billion to Social Security and the Veterans Administration for death and disability benefits due to trauma.⁷

In 1989, Rice estimated that approximately 25 percent of overall health care costs resulted from injury.⁵ This seems excessive.

A significant fraction of trauma is preventable. In contrast to the pharmacologic methods for preventing many diseases, injury prevention should prove cost effective.^{8,9} Correcting the disgraceful gun possession laws is certainly a first step in preventing major inner city trauma.

The accounting system

If we are to have a responsible role in health policy reform, we must educate ourselves in the discipline of health economics and decision policy analysis. We must avoid the intellectual arrogance we decry in health economists who are ignorant of our specialty, and become familiar with the language and techniques of their discipline.

The essence of health care economics is to achieve a favorable balance between costs and beneficial health outcome. Both the numerator and denominator of this ratio must be precisely defined.

Health costs can be separated into direct costs, which are those spent in the management of the sick or injured patient, and indirect costs, which are all others. The latter includes costs of administering the system (currently 21% of the health dollar),¹⁰ and costs associated with litigation (11% of the health dollar).¹¹ Minimizing indirect costs is a universal target for health reform, but is not the subject of this discussion.

Benefits

Measuring benefit of treatment is difficult, but it is essential to logical health care planning.¹²

Figure 4
Federal budget — 1992
(billions of dollars)

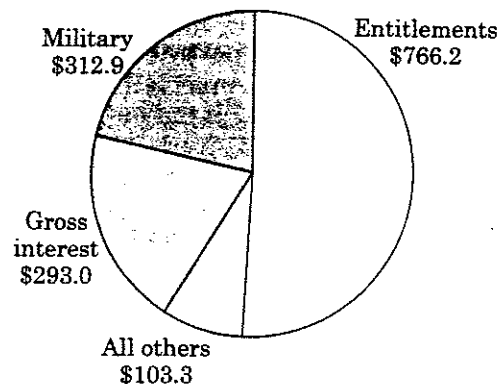


Figure 5a
Health care costs

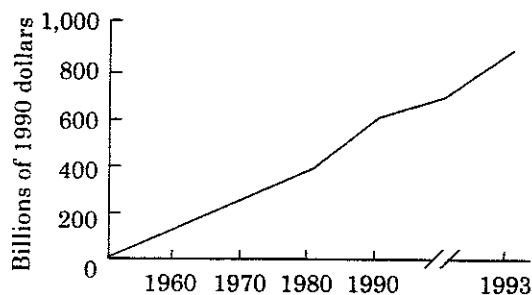
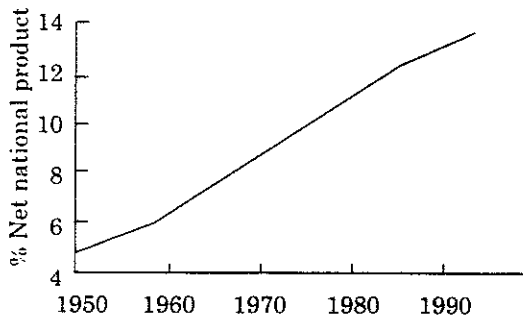


Figure 5b
Health care costs
Percent of net national product



The currently popular term "cost-effective" has, through sloppy application, all but lost its meaning. Much more precise terms, such as "cost-benefit," "cost-utility," and even "cost-minimalization" have their own meaning.¹³ The latter term, incidentally, simply means cheap.

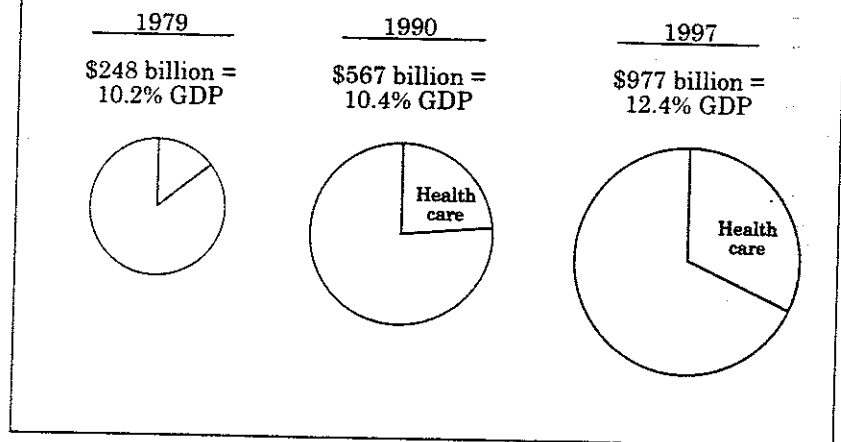
Without doubt the most blatantly misused term in measuring health care outcome is the word quality. It is an Alice in Wonderland word that means whatever its user wants it to mean. Lifted from the industrial management literature and much used in selling automobiles, it has ubiquitously slipped into hospital administrative parlance, where it has been equated with everything that is good. Like a presidential pardon or a laundry detergent, the word quality when lightly applied is supposed to remove all stains. Quality has become equated with length of hospital stay and other measurements of economic benefits. Though important to hospital fiscal officers, this is unrelated to the reason patients come to a surgeon following injury or serious illness and therefore peripheral to quality as defined by a physician. We should not use this term in judging management outcome and limit it solely for judging the economics of medical care.

Outcome measurement

Outcome expectancy, even from common diseases, operations, and injuries, is highly variable. Dr. Eddy showed that these inconsistencies were primarily due to lack of uniformity in patient selection, time and methods of follow-up, and even errors in statistical technique.¹⁴ Purported differences in prognosis ascribed to treatment were often flawed by imprecise controls. Improperly performed meta-analysis—pooling of data from various sources—is notoriously inexact.

I became aware of these discrepancies in outcome measurement in 1980 when editing the book *Prognosis of surgical disease*.¹⁵ Neither the

Figure 6
Health care as proportion of total federal entitlements



prestige of an alleged "p value" nor the impressive size of an "n" ensure credibility. If we are to participate in health policy reform, we must produce data on expectancies that will bear critical analysis. It is therefore worthwhile to review some areas in clinical decision analysis where trauma surgeons should improve their formal skills in decision and outcome analysis.

Who evaluates outcome? Outcome assessment depends on who makes the judgment, unless survival alone is the standard of measure. The patient is primarily interested in survival, freedom from pain, residual deformity, and self-esteem. His or her family, employers, insurers, and government each has its unique bias. Although the caring clinician should have a global perspective, published assessments ordinarily record only the easily quantifiable factors, such as duration of survival, body weight, patency of a vascular graft, alignment of various previously displaced bones, or, occasionally, whether the patient has returned to gainful employment. Health economists are increasingly going to demand more sophisticated outcome expectancies that include factors of societal productivity. This action is uniquely pertinent following trauma, which frequently involves young persons with many potentially productive years ahead.

When is evaluation measured? Full recovery following injury takes a long time, and meaningful assessment of treatment must be equally prolonged. Trauma surgeons must emulate specialists in rehabilitation medicine in reporting functions measured in months and years following injury. Short hospital stays, so economically appealing to hospital administrators, certainly do not measure success by criteria of primary importance to either patients or physicians.

Combined duration and quality of life following injury. Accurate assessment of management outcome following trauma requires combining subsequent duration and quality of life. Weinstein combined these factors in a widely accepted term, quality adjusted life years (QALY).¹⁶ At each measurement interval, a numerical evaluation is assigned the patient's quality of life according to an accepted scale. As an example, 10 might be assigned for perfect quality and zero upon death. Criteria for measuring quality of life following operation or injury is an evolving social, psychological, and economic science. Almost every recent issue of *The Journal of Medical Decision Making* contains studies of its delineation and methods for its recording.

QALY can be easily recorded in a follow-up record using the Markov technique (see Figure 8, page 29). The area beneath the curve joining the data points over time represents quality adjusted life years.¹⁷ I suggest this technique be used more widely by trauma surgeons, as it is a reminder that there is more to outcome than simple survival.

Laboratory tests. Cost analysis compares incremental expense with resulting utility. It questions whether an additional expense buys equivalent benefit—a common problem involving costs of high technology health care.

Comparison of costs and benefits of laboratory studies exemplifies how wise choices can minimize expense without compromising outcome. This requires familiarity with the purpose of diagnostic tests, their performance characteristics, and how to sequence them.

Diagnostic laboratory tests help to confirm or deny a previously suspected diagnosis derived from a history and physical examination. The probability of the diagnosis primarily dictates

Figure 7
Payment of direct medical costs of injury

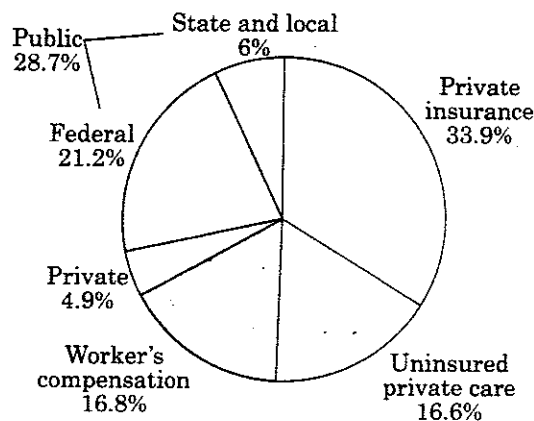
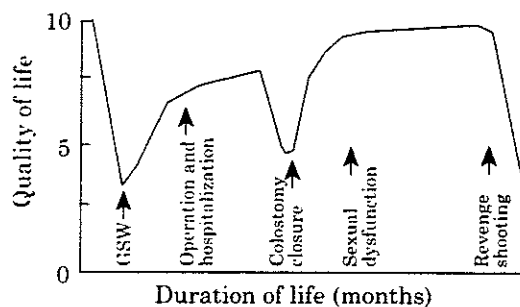


Figure 8
Markov method
Quality adjusted life years following gunshot wound sigmoid requiring colostomy



the choice of tests and their sequencing. Test performance characteristics are stated numerically in terms such as sensitivity, specificity, positive and negative predictive values, and, in some cases, receiver operating characteristics (ROC).¹⁸

Skill in using a diagnostic test is like catching a fish: one must suspect the whereabouts and habits of the fish, select the best lure, and cast the fly at the proper moment in the proper place.

Neither a piece of cheese dangling on a hook nor a blind cast is cost-effective.

The object of test sequencing is to make a diagnosis in the shortest possible time at the least cost and risk. In the past this was largely an inexact, expensive, and intuitive process. The logic of cost-effective test sequencing has been defined elsewhere.¹⁹

If two tests are available, there are three possible sequences from which to choose. If three tests are available, the options number thirteen; with seven tests there are over 47,000 sequencing combinations. Proper sequencing depends on the probability of the prior diagnosis (index of suspicion) and the test performance characteristics for each possible diagnosis. This demonstrates how understanding the logic of clinical decision making provides better care at less expense.

Decision analysis, algorithms, and guidelines. Some physicians resent clinical decision analysis as violating the purity of the art of clinical practice, but when the combined forces of industry, labor, and government demand justifying expenditures according to their methods of decision making, the time for argument has passed. Familiarity with principles of clinical decision analysis is now a clinical necessity.

Algorithms and decision trees are simply graphic illustrations of the logic of the decision process using performance data on which management options are selected.²⁰ As purchasers of health care impose cost constraints, they will rely increasingly on management guidelines to avoid wasteful strategies.²¹ Qualified trauma surgeons should be ready to provide such guidelines.²² Only those who have had to make life-and-death decisions for a critically injured patient while under time constraints and conditions of uncertainty will have the necessary perspective and credibility.

The trauma care system

It is a cruel twist of fate that the trauma care system physicians conceived, delivered, and suckled through much effort finds itself soon after its birth threatened with extinction because of unforeseen external forces.²³ Programmed to function on liberal volumes of governmental economic substrate in a fee-for-service environment,

its energy source threatens to be drastically curtailed. Survival will require basic change. Those responsible for directing trauma centers are like managers of former Soviet Union government monopolies suddenly finding themselves in a competitive market-driven economy.

Dr. Eastman and the members of the American Association for Surgery of Trauma's Committee for Trauma Center Economic Study recently documented the extent and nature of the economic challenge.²⁴ At last count 63 trauma centers have closed for economic reasons.²⁵ Fifty-three percent of class I/II trauma centers are in serious economic difficulty and 92 percent of inner city trauma centers are operating at a financial loss.

Before adapting the trauma care system to demands of health care reform, we should be making certain we are backing a winning horse. Is there solid evidence that trauma centers improve patient outcome commensurate with their high costs? Eastman cites more than 30 studies concluding that treatment in trauma centers improved by 50 percent chances of survival following injury.²⁴ This frequently quoted figure comes from studies of acknowledged enthusiasts for the system, whose valid controls are notoriously difficult to come by. Their studies will be viewed with suspicion by those who finance trauma centers and require continuing proof that additional investment improves both duration and quality of life and performance following injury. The existing policy for mandatory recording of outcome is not an academic luxury, it is an economic necessity for continued economic support.

The immediate challenge is to preserve the benefits of trauma centers at an affordable price. Participants in funding trauma care must understand that good trauma care is expensive.

The unique economic features of trauma care are too familiar to surgeons to require repetition.^{23,24} Cost shifting from one payor to another has obvious temporary appeal but does not answer the basic societal problem that is our concern.

At the moment we cannot predict the demands of anticipated health care reform, but contingency plans are based on likely predictions. It appears that there will be universal access in the future (that is, payment for treatment of every

injured citizen), and that treatment will involve some form of competitively managed health care. Some form of capitation or global fee combining hospital and physician payment is almost inevitable. Accepting these assumptions, what are options for providing trauma care?

Trauma center closures

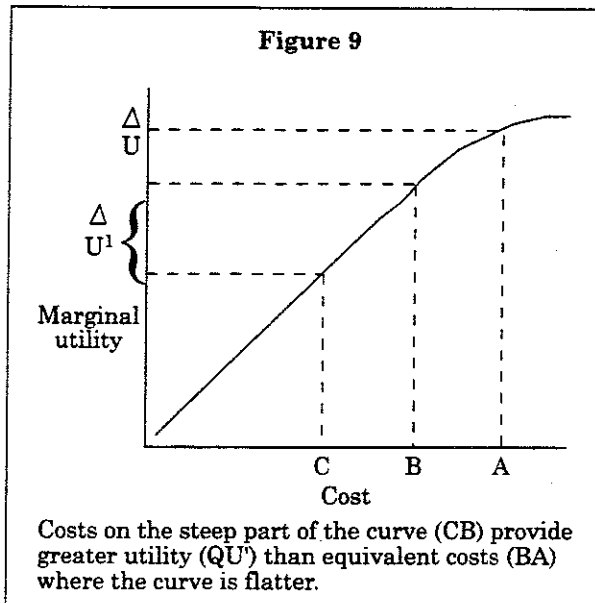
An immediate requirement for health care reform will be closure of economically unsound trauma centers.²⁵ Initial enthusiasm to acquire the presumed prestige of a trauma center enticed otherwise sound businesspersons into disastrously inaccurate pro forma predictions of income. The anticipated "halo effect" of attracting full-pay nontrauma emergencies to offset deficits from injured indigents often failed to materialize. In addition, hospitals lacking trauma centers that were supposed to triage the injured and send them to trauma centers kept patients who had full-pay insurance.

There are 6,640 hospitals in the United States and 370 have been judged qualified to treat major trauma. About 450 hospitals claim to have trauma centers. Of these, 126 have Level I centers, 180 have Level II, and 89 have Level III or IV centers. There are 17 pediatric trauma centers. The status of verification and certification of these centers varies.

Deciding the optimum number and location of units that will, at a minimal cost, furnish optimum benefit is a familiar problem in managerial microeconomics, which measure the incremental benefit obtained from each dollar spent. The first dollar characteristically buys a great deal; each subsequent dollar buys proportionally less until an equilibrium is reached in which additional expenditures produce no greater benefit (see Figure 9, this page). Such planning is as applicable to trauma centers as it is to closing military bases, or to deciding on locations for grocery stores. The principles of marginal utility are but another example of how sound economic planning can improve efficiency in health care reform.

Trauma centers and HMOs

On the reasonable supposition that future health payments will be based on managed health maintenance organizations (HMOs), it is



prudent to review the existing relationship between HMOs and trauma centers.

For fiscal reasons, an HMO strives to keep enrollees within its system as much as possible. Seriously injured patients, however, are taken by ambulance directly to trauma centers outside the HMO network. Since there is universal agreement that the early care of the injured is best provided in trauma centers, it is logical that HMOs should contract with trauma centers for such life-saving care. The occasional unreasonable insurer who insists that prior approval must be given by some administrative factotum, even for life-saving first aid measures, must be universally condemned.

Physicians will never withhold treatment awaiting such notification. Those who pay for health care must refuse to deal with HMOs that encourage such shortsighted policies that are clearly contrary to the patient's best interests. Trauma surgeons know that early operation on a severely injured patient is merely an extension of resuscitation. A prearranged contracted price, using general management guidelines and the right of periodic review of costs, might appropriately be a part of such arrangements, but the principle must be held inviolable by trauma sur-

geons that first aid, resuscitation, and diagnostic measures not be delayed for economic reasons. This seemingly obvious policy currently is causing controversy in parts of Southern California.

A second, more rational decision point is possible transfer to an HMO hospital a few days after initial operation when the patient has stabilized. Such transfer decisions can be made by surgeons representing the HMO and the trauma center.

In deciding the timing of transfer, it is wise to recognize that the majority of costs are incurred in the first few days of care following injury. Painful though this may be to HMO fiscal officers, it is a fact of life inherent in trauma care. The problem of interhospital transfer is analogous to that many of us have faced concerning management of combat casualties, except in civilian practice the motive for transfer is one of economics. Interhospital transfer of a seriously injured patient is inherently hazardous. Should transfer from a trauma center to another community hospital be agreed upon, the legal liability must be with the HMO, which might curb unjustified enthusiasm for transfer.

There can be little question that the best interest of a seriously injured patient is to remain in the trauma center for his or her entire care. Before HMO fiscal officers reject such an idea, they should run comparative cost analyses between total care for an injured patient in a trauma center with comparable cost within any phase of the HMO's system. Such contracts exist for the care of the severely injured between a leading HMO in the Denver, CO, area (the Sloan's Lake Medical Group) and the trauma center at the Denver General Hospital. It so happens that both the HMO and the trauma center are directed by two trauma surgeons well known to the international trauma community, Henry C. Cleveland, MD, FACS, and E. Eugene Moore, Jr., MD, FACS. They have shown in a comparative fiscal analysis that it is better for the patient and less expensive for the HMO to subcontract the patient's entire care to the Denver General Hospital.

The Denver hospital sends one global bill covering both professional fees and hospital charges. As a result, hospital fees are 31 percent below that of the average community hospitals caring

for equivalent injuries. The amenities may not be quite so elegant, but the Denver General Hospital, as with so many municipal hospitals throughout the world, is not only the best place to be for the badly injured, but is the cheapest place for care.

I detail this system with parental pride. My only role in its creation was having had some slight influence on its two progenitors during their more formative professional careers as residents and later as professional colleagues in Denver.

Trauma centers must prove cost-effective at each level of patient care to compete for HMO financial support, for at any time after initial care, the HMO has a legitimate option to return the patient to a community hospital within its network.

Cost-effectiveness in trauma centers

I was astounded to find how few trauma centers had performed cost-effective analyses, had established cost centers, had tight surveillance of costs, or even had critically analyzed how they could most effectively cut costs with minimum effect on patient outcome. Apparently most trauma center directors continue to be unrealistically confident that the obviously outmoded fee-for-service system will persist in their privileged specialty.

A preliminary step in gaining tight fiscal accountability consonant with good care would be to establish cost centers within the trauma center. Compartmentalization for accounting purposes might be varied, but could be established for the following cost centers:

- Capital equipment and facilities
- Prehospital care
- Emergency department
- Operating room/anesthesia
- Intensive care units
- Post-ICU hospitalization
- Rehabilitation

In addition, professional fees and activities should be analyzed for cost-effectiveness to include emergency physicians, surgeons and surgical specialists, radiology and imaging personnel, intensivists, and consultants.

Cost center analytic techniques are well known to hospital administrators, and it is pre-

dictable they will soon be focused on trauma centers as they begin to compete with lean and hungry efficient HMOs for financial support.

Methods for cutting operational costs in hospital care, as in industry, involve the microeconomics of health care. Most items have relatively small individual charge, but when repeated thousands of times annually, they assume cumulative importance. So it is for the \$48 arterial blood gas determination, the \$500 for a repetitive abdominal CT scan, the \$35 charge for needless purchase of a disposable blow bottle, or the \$300 charge for a frivolous consultation of a medical specialist. Such costs can no longer be tolerated.

Simply collecting and critically analyzing such information will improve cost-effectiveness (Hawthorn effect). Donald Trunkey, MD, FACS, professor and chairman, department of surgery, Oregon Health Sciences University, Portland, OR, has instituted an educational program based on such computer-generated data for his students and residents, which is certain to raise their awareness of their responsibilities to meet new societal demands for cost-efficiency.

As in any cost containment study, maximum benefit comes from identifying costly expenditures that by alteration result in major savings. An example might be justification of payment for an on-call specialist, such as a neurosurgeon. Factors for consideration would include the frequency of the specialist being called, the comparative response time of a paid standby versus that of a nonpaid on-call consultant, or the clinical relevance of such a specialist in terms of long-term patient survival.

Extraordinary care

Trauma surgeons are all too familiar with the tragedy of devoting extraordinary energies to patients certain to die from their injuries.²⁶⁻²⁸ This issue constitutes a significant economic burden in every trauma center. The problem is twofold: The first is the clinical problem of determining what should be called the "futility point." The second is determining an ethical and legal solution to limit end-stage gestures of care.

The challenge is particularly demanding in management of the severely injured, where time constraint decisions of life and death must be

made on the basis of incomplete data, and where it is often difficult to reverse a prior decision to persist in treatment. Each trauma center should be required to develop its own policies addressing this issue. Although the decision must not be made for economic causes, it does have fiscal implications.

Society's responsibilities

A good contract commits both signatories to responsibilities and actions. If our cost-containment contract with society is to succeed, society must keep its share of the bargain. Three key elements to which society must agree are as follows:

1. *Cutting costs will compromise care.*^{29,30} Although some savings can be achieved without significant impact on clinical care, major cost reductions will decrease health care expectancy. Cost containment is not a positive or even a zero-sum game. Some patients will suffer, be they persons with end-stage renal disease, the elderly suffering debilitating disease with little chance of recovery, or neonates so deformed and underweight that their survival is statistically impossible. Cost cutting will also result in treatment delay, be it for the much criticized and costly CT or MRI scans following closed head trauma, or the immediate availability of a coronary artery bypass operation for an elderly person with debilitating angina. Mammograms and other expensive screening techniques will only be available—or at least paid for—at times judged optimum by physicians and statisticians, not upon the instant demand of a concerned patient. In the harsh world of trauma care there may be occasional deaths and otherwise avoidable disabilities resulting from the compromise inherent in cutting costs. Government, industry, ethicists, media personnel, and the public at large must understand and accept this reality and share the consequences with the medical profession. The most obvious evidence of such understanding will be legal protection for less than perfect outcome caused by limited care.

2. *Universal health care requires new funding.* A primary objective of health care reform is universal health care coverage. Thirty-seven million people are allegedly uninsured or underinsured. The current per capita health care cost in the

United States is approximately \$3,000. Multiplying this figure by 37 million equals \$111 billion required annually for health care. Even if payment was cut in half to \$1,500 per person per year, the cost would be \$52 billion. It is unrealistic and sophistic to pretend that such funds can be obtained by stringent cost cutting or by cost shifting from other entitlements.

Before physicians initial our part of the new social contract, we must be assured that the federal government and others who pay for health care have a financially sound plan for meeting their obligations.

3. *Incentive for trauma surgeons.* An incentive must be maintained to attract and keep worthy surgeons in a physically, intellectually, and emotionally demanding speciality, such as trauma surgery. In medicine, as in professional athletics, certain specialties, due to intensive marketing, have been extraordinarily overpriced. We have our equivalents of the National Basketball Association and the National Football League, complete with overpaid "showboat" specialists. Trauma surgeons are not among them. Under the relative value fee schedule, trauma surgeons' fees will be cut more than almost any other specialty.³¹ This inevitably will affect the quality of recruitment and retention and, thus, outcome expectancy following injury.

Incentives extend beyond financial rewards. A unique feature of trauma surgery is the satisfaction a surgeon achieves in facing a crisis in which every intellectual and physical effort is strained: Where he must gather essential data quickly, make life-and-death decisions on the basis of incomplete evidence, and then act definitively. Inevitably, the surgeon is sometimes wrong, and when he is, only he, his spouse, his chief, and his colleagues understand the emotional price he pays. This is not being needlessly dramatic, it is reality.

Everyone involved in trauma care policy must try to minimize the administrative and bureaucratic complexities, which like barnacles foul the bottom of clinical medicine, slow its progress, and destroy the quick, clean response of the surgical tiller put hard over for a course change. Let us ask society not to destroy the joy and satisfaction that come with successfully meeting the challenge of caring for the injured.

Initialing the contract

We should admit that policy in health care will be dominated by nonphysicians. Our advice will at best be peripheral, but in a final paragraph in our "contract" we should ask nonphysicians to understand the unique complexities of trauma surgery. Successful dialogue will require that we learn their language, just as we ask them to understand ours.

Trauma surgeons, in concert with other traditional clinical specialists, are facing an unanticipated dilemma: Our sole responsibility for the optimum care of our patient is being challenged by a second responsibility to society to do so at an affordable cost. The two forces are in conflict, leaving us with a new professional challenge.

Because economic demands underline the need for compromise, we have confirmed that they are of sufficient societal importance to justify such a fundamental change. We have two options, either to allow others to dictate policies and procedures that guide our clinical practice, or, as responsible physicians and citizens, to assume a leadership role. Knowing the character of trauma surgeons, there is no question of which path we will choose.

To meet these new responsibilities we must educate ourselves in the complexities of health care economics, which is not simply an extension of the economics of office or hospital practice.

It is increasingly clear that government, industry, or health care economists cannot find what they hoped to be a simple solution to an extraordinarily complex professional problem. I hope that this oration will help trauma surgeons define how we can best position ourselves to provide such leadership. □

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