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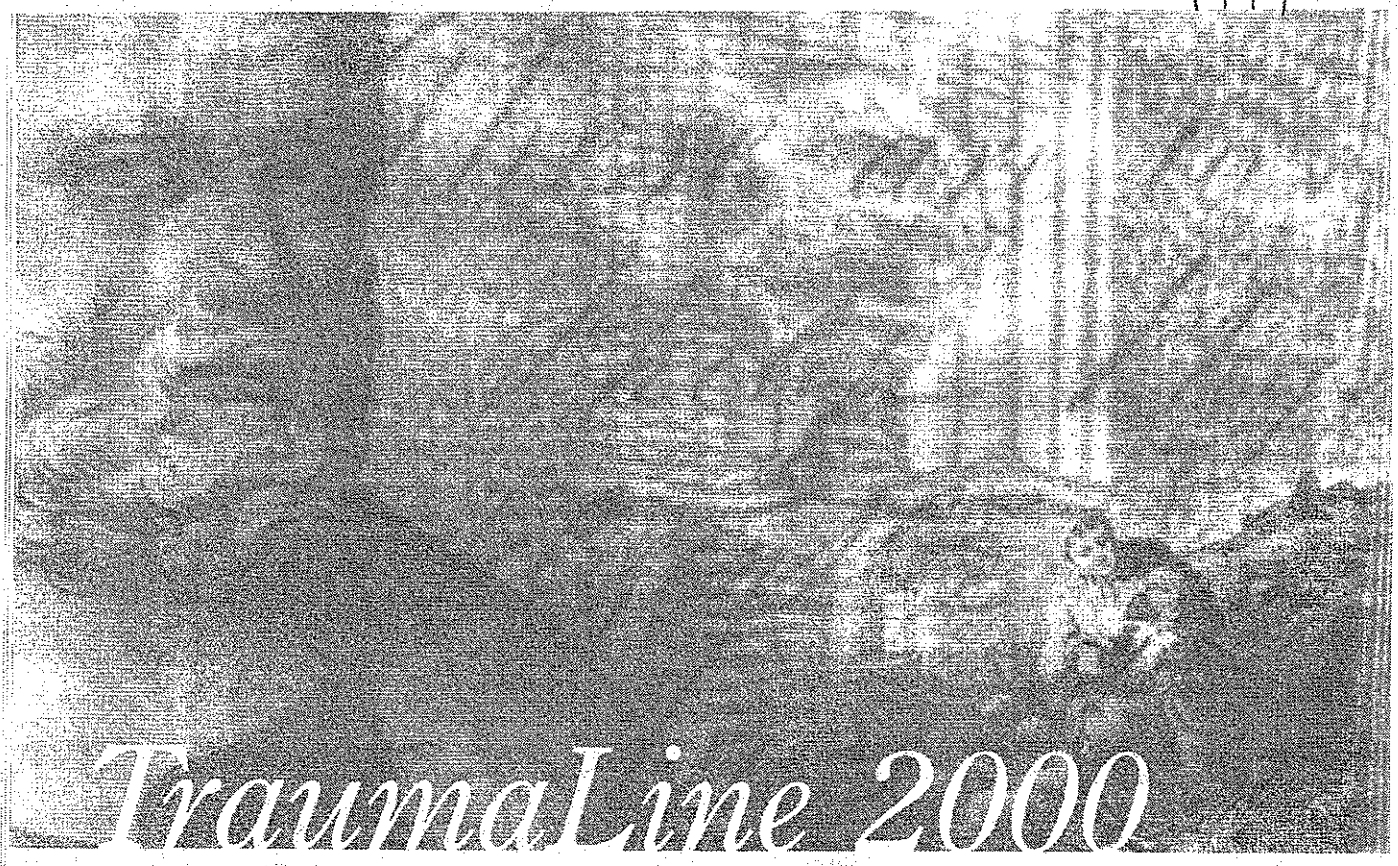

TraumaLine 2000

A history of change and a vision for the future

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Editor's note: *The following are excerpts from the Scudder Oration Dr. Mattox presented during the 1999 Clinical Congress in San Francisco, CA.*

At the dawn of a new millennium, medicine, surgery, and trauma care face some of the most complex changes of our more than 8,000 years of recorded history. This article will focus on the quantum changes we face at this turn of the century and the millennium. It will also: (1) propose five theorems relative to the current "TraumaLine," or series of seminal events pertaining to trauma care, focusing on perceptions of trauma changes and change agents and the impact of these diverse, complex, and discontinuous change forces on trauma and medicine at this TraumaLine 2000; and (2) propose a methodological approach to effect major health care change.

Theorems and corollaries

Essentially, five theorems and attendant corollaries have been at work throughout history to bring about change in health care. These are described as follows.

1. Change may be continuous or discontinuous

Continuous change is slow, methodical, and monotonous, often leading to mediocrity. In the absence of new technology, methodology, or outside change agents, slow, methodical and almost monotonous progress is seen in society, government, religion, law, education, and medicine.

By 1950, all of the essential elements that we now think of as "medicine" were in place, including anesthesia, surgical instruments, antibiotics, X-ray imaging, hospital-based care for critical patients, emergency rooms, ambulances, and standardized educational modules. During the last 50 years, we have almost become lulled into complacent acceptance as these essential clinical elements of medicine have undergone steady, continuous change. However, changes outside the clinical realm have been considerable and have had significant effects.

The relatively immediate future, however, promises new and great challenges, effected by discontinuous change forces. These discontinuous change forces, if met with appropriate vision and leadership, will herald quantum progress, not catastrophe. Discontinuous change is sudden, sur-

prising. It often is the result of forces outside the established norm and leads to quantum alternatives. Many of the advances in medicine and surgery, in particular, spring from discontinuous change, often precipitated by an unexpected event or agent outside medicine.

As major paradigm shifts occur, the initial opposition to discontinuous change consumes more energy than all other aspects of change, and, so, people become more willing to change. Prime examples in clinical medicine include the debates on type and volume of aggressive fluid resuscitation and the focus on attempts to raise blood pressure in patients with posttraumatic hypotension. Disputes raged about location of intravenous site, type of instrument for rapid infusion, size of tubing, time to insert a line, and even the types of fluids that could restore blood pressure. With supernormal blood pressure as the objective, we were blinded to the dangers of cyclic hyper-resuscitation. Similarly, there was strong initial resistance to minimally invasive surgery, particularly laparoscopic cholecystectomy.

As another example, for centuries, the apprenticeship approach to medical education resulted in a proliferation of non-standardized "medical schools." Not only length of training, but also details of the curriculum were nothing short of a "random number generator." Just 100 years ago, Abraham Flexner spent five years reviewing and surveying medical education in the U.S. with sponsorship from the Carnegie Foundation. Flexner and his commission were the change agents that established a discontinuous change resulting in a change action—the establishment of hospital internships.

2. *Changes do not simply "happen"—they are caused*

While a change event may occur serendipitously, change actions do not; they have causes. Plastic was discovered by happenstance and was a significant change event. However, the subsequent change actions were deliberate and far-reaching.

Change requires an event and agent that result in an outcome. A triad interacts during times of change. An event triggers an agent to produce an outcome. A prime example of this triad is the discovery of penicillin by Fleming in 1929. The event was a mold that prevented growth of bacteria on an agar plate. The agent was Alexander Fleming, and the outcome was penicillin, which ushered in the antibiotic era—clearly a discontinuous change.

Change outcomes affected by change agents and events are often unexpected, external, and unrelated. As in the case of Fleming's discovery of penicillin, the change event was serendipitous. It was unexpected—not a defined objective of Fleming's research. Many of the technical trauma procedures, such as the medial rotation of the viscera for exposure of the abdominal aorta, were serendipitously discovered due to a desperate need. Often, change events are external to the focus of the discipline that capitalizes on that event. On other occasions, the change event is the result of internal evaluations. Change and chance favor the prepared agent who responds to change events with often daring new vision.

For instance, the assassination of the French President in 1894 (a discontinuous change event) had a profound impact on a visionary change agent internist Alexis Carrel, MD. In 1905, while at the University of Chicago, Dr. Carrel and Dr. Charles C. Guthrie, as a result of studying the injuries borne by the President, developed the technique of "triangulation" for vascular anastomoses. Subsequently, a change recognition occurred in October 1912, when Dr. Carrel was awarded the Nobel Prize for Physiology and Medicine.

Throughout history, the change agents who responded to events were visionaries with the courage to fail or, alternately, to capitalize on an opportunity for progress using "new" information and/or technology. How many advances have been lost or delayed because a potential change agent was blinded by traditional approaches and/or was not prepared to recognize or consider a potential for positive change? The application of a discovery sometimes takes decades to realize, so patience is a must. For instance, plastic was discovered in 1907, but synthetic fabric was not produced until four or five decades later.

3. *Advances in medicine are often a function of advances in trauma*

For more than 8,000 years, care of trauma patients has been the weather vane of all medicine, forecasting new lifesaving modalities, and predicting impending problems. As has happened

throughout history, the evaluation and treatment of trauma have been the sentinel catalysts and harbingers of the evolution of medicine in general. In truth, trauma datelines have reflected societal evolution. Today is no exception. Medical breakthroughs developed for trauma have positive impacts on all aspects of medicine, including:

- Ambulance transport.
- Wound care.
- Understanding fluid and electrolytes.
- Developments in renal failure and renal dialysis.
- Blood transfusion and blood banking advances.
- Resuscitation advances.
- Heart and vascular surgery.
- Surgical critical care advances.
- Systems approach to public health issues.
- Regionalization of specialized health care.
- Peer verification of categorized health care facilities.
- Development of staged approaches to complex problems ("damage control").
- Evidence-based medicine.
- Prognosis and outcome expectations.

Trauma advances often predate advances in the rest of medicine. Even the most cursory review of medical advances points to the fact that most developed for trauma care existed many years and sometimes centuries before that technology or treatment was extended to other areas of surgery and medicine. Suturing heart wounds predated the first successful mitral commissurotomy by at least 25 years. Reconstruction of vascular injuries and complications relating to vascular injuries predated vascular surgery for non-trauma etiologies by decades. And, ambulances were used in warfare for trauma transport long before they were incorporated into municipal hospital transport.

Crises in trauma care correlate and often precede crises in medicine. Likewise, the surgeons at the forefront of trauma care have often encountered problems relating to treatment and health care delivery issues long before the same or similar problems were encountered by other disciplines in medicine. Some examples include:

- Infectious complications following surgery.
- Complications of hypoperfusion.
- Viral infections following blood transfusions.
- Coagulopathies.
- Inflammatory mediators.
- Multiorgan failure and systemic inflammatory response syndromes.
- Interdisciplinary conflicts.
- Problems with economically driven "managed health care."
- Medical legal consequences.
- Barriers to payment schemes, i.e., insurance.
- Issues of access.
- Problems encountered with management-driven "critical/clinical pathways."
- Effects of punitive agenda-driven total quality management.
- Effects of market-driven decision making.
  —Mass purchases.
  —Patient exclusion.
- Helicopters as prehospital transport vehicles.
- Effects of excessively aggressive cyclic hyperresuscitation.

When trauma care has made quality advances, medicine and society have benefitted. When "trauma in trouble" heralds economic, access, quality, and procedural problems, similar issues will soon be encountered in all health care areas. A systems problem in trauma care delivery is a predictor of health system breakdown in general. The delicate ecosystem of health care, including education, research, public health, hospitalization, funding, and infrastructure, can be modeled and predicted as accurately as other biologic ecosystems. Where the various aspects of injury, including prevention, prehospital transportation, emergency center evaluation, operative and critical care, and rehabilitation are healthy, the entire health system tends to thrive.

4. *Current health information is politically motivated*

Current health information and the policies developed from it and disseminated to the public is often politically and economically motivated. For millennia, health policy was a matter determined first by patients, then by the shamen, and ultimately by the medicine guild, the universities, and, until the mid portion of the 20th century, by professional organizations. Economists, social scientists, the business community, and government now determine health policy. Decisions are more often than not based on a profitable bottom line,

rather than a quality outcome. The power brokers of current health policy use marketing strategies to develop an infrastructure of apparent support. Recall the press frenzy around the "health care reform" meetings of highly select persons during the early years of the Clinton administration. A prearranged political and economic agenda was to reduce costs and develop "managed competition via managed profit plans." Clinically active physicians and medical professional organizations were basically excluded.

The fastest way to destroy a culture is to destroy its language, and a new "language" for health care emerged. Witness the economically and politically driven alteration of the health care lexicon; patients have become consumers and customers, physicians have become health care workers and providers, hospitals have become pavilions, nurses have become extended practitioners, and insurance companies have become managed care organizations. No wonder patients, families, and even physicians are confused.

In the United States, 14 percent of the gross domestic product (GDP) is spent on health care, an excess compared to other countries. These data are overstated and inflated when compared to what are considered direct health care costs in other countries. While physicians' orders influence well over 75 percent of health expenditures, much of the costs shifted to products and services are hidden in innovative allocations. If one uses the direct health costs reported by other countries, the comparable percentage of the GDP spent on direct health care in the United States is probably as low as 7 percent. Areas of cost shifting include:

- Regulatory compliance.
- Double- and triple-billing for services, such as X-ray and laboratory interpretation.
- Defensive surgery and medicine.
- Periodic outside voluntary and regulatory site visits.
- Medical-legal costs.
- Continuing medical education (CME) and other indirect costs.

A simple example of cost shifting can be observed in the administration of a tetanus shot. A single dose of tetanus toxoid costs a fraction of a penny to manufacture. In past years, a physician or hospital purchased multidose vials. When a patient receiving a tetanus shot presented to the office or hospital, the injection was given, the patient reassured, and a reasonable charge assessed. Today, with a regulatory mandate for single-dose vials and complex packaging and disposal requirements, the wholesale price for a single shot of tetanus toxoid is approximately $28. The patient and/or payor is charged for supply reimbursement, the majority of which is beyond the physician's control.

By some estimates, 33 to 50 percent of health care costs stem from these regulatory, medical-legal, defensive, administrative, and other indirect costs. Hospital management journals repeatedly report that the up-front administrative fees for health maintenance organizations (HMOs) range from 18 to 25 percent of the total revenues received by the health plan. Virtually none of this up-front profit goes toward biomedical research and education, but rather into the pockets of the managers and stockholders of the plan. Significant portions of this profit are from federal, state, or local taxes intended for elderly, indigent, or young patients. Factor the profit motivation of the HMO or other insurer into estimates of the GDP assigned to health but not directly used in patient care, and the resulting figure of only 7 to 8 percent of the GDP being spent on direct patient health care (both acute, chronic, prevention, and wellness) is not unreasonable.

In other words, the 14 percent of the GDP figure that the government reports being spent on health care would be considerably less if the following items were subtracted:

- Health costs spent either on defensive medicine on the part of hospitals, health systems, and physicians or indirect medical-legal expenses considered as the "cost of doing business."
- Certification costs for physician CME and costs related to hospital voluntary compliance with agencies.
- Double- and triple-charging when multiple fees are sent for interpretation of laboratory, imaging, and other evaluations.
- Administrative costs for managed care organizations.

Additionally, perceptions exist that there are too many specialists and too few generalists. During the late 1980s, numerous external forces seeking to control escalating health care costs developed strategies to reduce what was perceived as too

Historical traumalines

A rapid overview of recorded history reveals many discontinuous changes that influenced society and trauma care. This listing is not intended to be exhaustive, but merely to demonstrate some of the many changes affecting the TraumaLine 2000 hypotheses.

15 billion B.C.—Universe formed
4.6 billion B.C.—Formation of our solar system and its earth
3.6 billion B.C.—Life develops on earth
75 million B.C.—First placenta mammals (primates)
70 million B.C.—Ice Age begins
1 million to 500,000 B.C.—Trauma depicted in drawings
6000 B.C.—Cities and civilization form; warfare and fermentation of alcoholic beverages begin
3000 B.C.—Edwin Smith Surgical Papyrus written
2000-1000 B.C.—Beer regulated; bow and arrow
1750 B.C.—Code of Hammurabi
1250 B.C.—Moses receives the Ten Commandments
500 B.C.—Chemicals and catapults in warfare
1088—First degree-granting university
1151—Gunpowder in warfare
1160—Fire and plague (health) insurance
1300—Urine exam administered
1350—Black Plague
1370—Steel crossbows used
1455—Gutenberg Bible
1509—Medical license issued
1528—Paracelsus wrote *Die Kleine Chirurgia*
1583—Life insurance policy issued
1596—Water closets invented
1597—Field hospitals and dispensaries
1614—Galileo faces the Inquisition
1628—William Harvey publishes *De Motu Cordis*
1653—Johan Schultes publishes *Armamentarium Chirurgicum*
1656—First general hospital
1674—Antonie van Leeuwenhoek creates microscope

many specialists prescribing too many expensive tests and procedures. The Pew report supported this theory and recommended that medical schools and graduate medical education (GME) focus on markedly increasing the number of primary care physicians and "physician extenders." It is now acknowledged that many parts of the Pew report were faulty, and we do not have a wholesale excess of specialists. In any event, two separate issues have evolved. First, with the marked increase in nurse and general practitioners, there may now be too many primary care providers. Second, if an excess of specialists does exist, over 70 percent of this glut is in disciplines outside surgery.

Many adverse outcomes have occurred because surgeons have been passive observers instead of prepared change agents. We have been underrepresented, unprepared, and unwilling agents during the major external economic, political, and social changes of the last 40 years.

Downsizing and reductions of specialty care are required to achieve cost control, and quality can be improved during this reduction in costs. In construction of a paradigm, if the observation, description, hypothesis, experimental design, data collection and/or data interpretations are flawed, the conclusions are often also incorrect. Based on a faulty observation and hypothesis, society accepted an incorrect conclusion for centuries that the sun revolved around the earth. I propose that some of our current observations, hypotheses, and conclusions regarding health care are equally faulty. Therefore, our approaches to funding, access, and delivery are incorrect.

Because of the hypothesis that specialists, including surgeons and trauma/critical care surgeons, contributed to the excessive spending of the GDP on health care, regulators and private enterprise concluded that health care costs must be controlled by downsizing; that is, reducing the number of specialists and reducing the amount of money that went to specialists and redistributing it to the generalists. The contention that society desires a reduction in access, a reduction in specialty care, and a reduction in regionalization of specialized facilities is not supported by hard data. Issues of quality have been replaced by motivations for profit.

In the 1950s, businesses started offering health insurance as a benefit of employment, and the pa-

tient became largely disenfranchised from directly contributing to health payments or distributing the risks for high-cost care, including trauma care. It could have been predicted that with advances in technology and treatments, including antibiotics, cancer therapy, transplantation, complex surgery, and trauma/critical care, the payors would want to reduce their costs. Profit and controls became more important than access, quality, and outcomes, with no strategy to ensure continued quality care in the face of drastic cost reductions or reallocations. Nowhere was this dichotomy more apparent than in attempts to balance the budgets of the nation's busiest trauma centers.

Today, the health management complex, including the state and federal governments, often puts cost controls ahead of access, quality, and portability. Precertification, adverse selection, and mandatory discounting are instruments to restrict access. One might even suggest that the resource-based relative value scale used to calculate Medicare payment is one form of putting economics ahead of patient safety and quality care.

5. *Changes in delivery are modeled on changes in trauma*

Despite external barriers, the American College of Surgeons' Committee on Trauma (COT) has established standards for trauma centers and trauma surgeons' education. This systems approach was literally an outgrowth of the inner-city safety-net hospitals in major U.S. cities, coupled with dedicated private and university hospitals supplementing city and county hospital systems.

Funding for safety-net hospitals is most often and consistently from local taxing authorities, with supplements from Medicare, Medicaid, and various insurers. The local government becomes the guarantor of "indigent insurance." If this type of health care coverage is taken into consideration, the overstated figure of 44 million uninsured Americans drops to far less. As has been shown by the trauma systems in our larger cities, the trauma model does work, using local solutions to local problems, with supplements from the other community hospitals and other reimbursement sources. Developed because of the increasing social violence and an epidemic of motor vehicle accidents (MVAs) in America, this model provides

Historical traumalines

1692—Queen Mary II founds Greenwich Hospital
1843—Ether used as anesthesia
1852—Appleton publishes *A Treatise on Diseases of the Chest*
1861-1865—U.S. Civil War
1866—Gregor Mendel writes laws of heredity
1872—178 hospitals in U.S.
1894—French President Sadi Carnot assassinated
1895—Roentgen discovers X rays
1896—Browning revolvers manufactured
1905—"Triangulation" for vascular anastomoses
1907—Invention of Bakelite, an early plastic
1910—Flexner publishes report on medical education
1912—Carrel awarded Nobel Prize for Physiology and Medicine
1914-1918—World War I
1928—Fleming discovers penicillin
1938—National Institutes of Health awards research grants
1938—Blue Cross/Blue Shield forms
1940-1945—WWII results in first Mobile Army Hospital
1945—U.S. drops atom bombs on Japan
1954—DeBakey replaces abdominal aortic aneurysm and creates Dacron tube graft
1963—President John F. Kennedy assassinated
1960-1975—Vietnam War
1965—Medicare Federal Health Insurance Act
1968—Family practice becomes specialty
1980—467,679 physicians in U.S.
1984—AIDS identified in U.S.
1986—*Grateful Med* released
1987—NIH launches human genome research program
1989—Tiananmen Square student demonstrations
1990—126 medical schools in U.S.
1999—World population hits 6 billion
1999—Colt Gun Company agrees to cease production of "Colt 45" revolver

solutions to health care dilemmas. Because of this local subsidy of health programs, especially via teaching and community hospitals, we are not stepping over dying bodies of the uninsured, who some would lead us to believe have no access to quality health care.

Contemporary health access and delivery crises are frustrations shared by the public. Although finding expedient solutions, the contemporary trauma system has exposed numerous disparities in our health care delivery logic. The trauma system has produced a type of discrimination, in that the highest quality of trauma care is frequently found in the hospitals designed as safety nets for the indigent and those without formal coverage. Current frustrations include understaffed, underequipped, and underfunded facilities. In addition, repeated harassment from faceless managed care administrators and oppressive hassles from government regulators continue. Many surgeons just give up on trying to navigate the barriers purposefully constructed by those who wish to restrict access and reduce costs.

Payment and/or support for trauma care from the government and other payors are often less than 50 percent of the actual costs, and sometimes as low as 10 to 15 percent of the costs of providing care; yet individual members of society expect to achieve immortality because of the care they receive at regional, specialized centers of excellence, including trauma centers.

Specifically, in the area of trauma, reimbursement for services rendered under lifesaving and desperate conditions is grossly inadequate and under-supported. In recent testimony, a trauma surgeon from Miami, FL, stated that payments for trauma patients covered only 14 percent of the expenses. Some managed care organizations reimburse at rates from 30 to 70 percent less than Medicare rates. Consider the intense and focused evaluation and stabilization in a resuscitation area of an emergency center, a complex operation performed by several trauma surgical specialists involving multiple areas of the body, and a prolonged and complex stay in a surgical intensive care unit. The total work hours consumed in providing emergency and operative services are incalculable.

Two months ago, I received a series of phone calls from a clerk reading from her guideline book about a patient with whom our practice had no pre-arrangement. The patient required vascular, neurosurgical, orthopaedic, and general surgery operations and intensive care, and the plan administrators were asking that I arrange discounts (and double discounts) on both hospital and physician fees, which were already less than 25 percent of the time and service given to this patient. The patient survived and will fully recover, but the financial support for her care is still in limbo. No business can long endure when expenses continue to exceed income. I remind you that 150 million Americans are covered by some managed care plan, and virtually all of these plans inadequately address and/or cover trauma care.

Three weeks ago in Houston, the fourth largest city in the U.S., every hospital that could receive critical patients, including pediatric, trauma, and cardiac cases, requested "drive-by" status due to nonavailability of adequately staffed intensive care unit beds and overflowing emergency departments. With intensive communication among several major hospitals, three pediatric ICU beds were arranged and four adult surgical intensive care unit beds were mobilized, although the nursing staffing ratio did not meet the accepted standard in any of the hospitals. At this time, our hospital (Ben Taub General Hospital) had *no* unoccupied patient gurneys. When administration sought "agency nursing" to assist with the patient overload, none was available.

The discontinuous change forces reflected by continuing problems in the trauma and safety-net hospital systems are a harbinger of the continuing and future frustrations throughout the House of Medicine. Trauma centers, particularly safety-net hospitals, are unheralded profit centers for community, university, and for-profit hospitals. The costs incurred in such trauma facilities are considerably lower than in other hospitals, particularly for-profit hospitals. Should these inner-city, quality-care hospitals—which educate much of the health personnel in all disciplines and professions—not exist, the costs in the non-safety net hospitals would increase considerably in areas of education for nurses, clerks, technologists, and physicians, and patient care costs for those with traditional insurance or managed care. Several cities in this country have developed alliances among

the local medical schools, medical societies, private hospitals, the business community, and safety-net hospitals. The "Houston plan" just discussed, for instance, sets forth such a health alliance and is based on Houston's community support for the trauma programs.

Trauma systems (particularly in the nation's safety-net hospitals) are a model for new "HealthLine 2000" solutions and approaches. Many of the major discontinuous changes that have occurred in the research and educational environments have sprung from models suggested in trauma care. Fellows of the American College of Surgeons, with our experience in trauma systems, are prepared to participate in HealthLine 2000 and offer visionary solutions to many other health issues. Or, we can wait for others to set the process and agendas.

In 2000, we are approaching a $5,000 per capita per year expenditure for health care. For many safety-net hospitals, a $500 per capita per year expenditure (1/10 indemnity insurance expenditures) is not uncommon. This amount is incredibly inadequate, and I am not recommending it as a national target. I am merely demonstrating what has been achieved out of necessity and can serve as a model for future planning.

Crossroads, choices, and decisions

We stand at the cusp of a new century, a new millennium, and this time coincides with greater external and internal threats than ever to the guilds of medicine, surgery, and trauma care. In the attempt at health care reform approximately six years ago, most of organized medicine, the trauma community, and our patients were not even at the table. As a result, we have experienced on a daily basis the oppressive effort to manage care from a solely economic approach. We have also witnessed the futility of attempting to apply "medical McCarthyism" via bureaucratic quality management and cookbook critical pathway approaches and treat this profession like a fast-food franchise. Not only are surgeons frustrated with this take-it-or-leave-it attitude, but our patients are frustrated with lack of access, lack of choice, lack of voice, and lack of portability. Nowhere else in society are the provider and the receiver of a service so disenfranchised from participating in the decisions regarding availability and costs. A backlash is building, and managed care will surely, in the not-too-distant future, be of historic interest only.

But what is to follow its demise? It is unlikely that we will return to the days of barter or a fee-for-service medical economy. "What's next?" is a question that plagues every forward-thinking individual in health care, especially those of us in trauma care.

James Carrico, MD, FACS, in his 1998 Scudder Oration (ACS *Bulletin,* 84(5):14), asked the key question, "Who speaks for the trauma patient?" He suggested that except for the ACS and its COT, there were too few. I contend that today the answer to this question is even more problematic.

TraumaLine 2000 is facing discontinuous change forces/events, including:

- Managed care.
- Adverse selection and exclusion.
- Maldistribution of specialized facilities.
- Societal expectations of immortality.
- Significant futility issues.
- Tremendous cost and policy conflicts.
- Increase in MVA injuries.
- Increase in MVA dead at scene.
- Decrease in managed care coverage of MVAs and other emergency conditions.
- Total quality management for trauma is point-of-service and service-directed.
- Providers and consumers of health care are unaware of the value of services.
- Annual predictions that Medicare is going broke.
- Perpetual threats to restrict GME funding.
- Regulatory and managed care insinuations that residents are second-rate physicians.
- Multiple programs to cookbook the practice of medicine through guidelines often developed by committees devoid of physicians active in the clinical practice of the generated recipe.

The prepared and visionary change agent has an opportunity to take advantage of the change events and make quantum TraumaLine2000 and HealthLine2000 impacts and advances—a truly discontinuous change in health care, with the standards in trauma care being the template of change.

Summary

Societal changes are having a profound effect on our continuing ability to provide quality trauma care, particularly in the inner-city safety-net hospitals that provide services to the uninsured. The regulatory and managed care industrial complexes make it increasingly difficult for patients to gain access to care and for physicians to care for patients. Yet, physicians continue to be blamed for increasing health care costs and the bureaucratic response is that physicians, therefore, must be controlled in order to reduce costs. The fact that many of the costs are fixed regulatory/legal industrial complex costs and administrative costs continues to be omitted from the data.

The complexity of the methodologies that managed care plans, Medicare, and other insurers use to determine payments for medical services ever increases. The resource-based practice expense relative value units (RVUs) are becoming more complex and result in a common theme—more work with less income.

Sadly, "You ain't seen nothing yet." Health Insurance Portability and Accountability Act requirements have not yet been fully implemented. When they are, they will create tremendous new data reporting mandates, increasing the physician bureaucratic hassle factor significantly. One must further ask, "What is the problem for which this is the solution?" Many of the nation's physicians asked the same question of other programs such as the resource-based relative value scale, relative value units, CPT coding, and diagnostic-related groups. Certainly, there has been resource shifting from direct patient care to fund the tremendous infrastructure needed to fuel this regulatory industrial complex, but has the overall quality of care actually improved with these programs?

It should not go unnoticed that because of these issues the American Medical Association's 1999 Congressional Agenda for Organized Medicine and the 1999 report of the Governors to the ACS (two days prior to this Scudder Oration), already have been widely circulated. These issues are on the minds of physicians, nurses, and patients alike and have direct impact on the challenges of TraumaLine 2000 (see boxed agenda, this page).

AMA agenda	*ACS agenda*
Managed care reform	Managed care
Antitrust relief	Physician reimbursement
Fraud and abuse	Physician workforce issues
Regulatory relief	GME
Health insurance reform	Professional liability
Medicare reform	Credentialing
New knowledge for clinical practice	Surgeon education
Public health incentives	New technology

In both formal and informal health care gatherings all across America for the past 10 years, discussions of these topics have focused on methods of optimizing quality patient care. On April 15, 1999, David Hoyt, MD, FACS, Chair of COT, testified before a congressional spending subcommittee in favor of trauma system development funding for fiscal year 2000. During that presentation, he reported that the COT has developed a methodology to improve care through a model program. He further documented that this model has resulted in both regional and national reductions in trauma mortality and morbidity, and also affected other areas of health care outside of trauma. As stated throughout this talk, as goes trauma care, so goes the rest of medicine. Problems in trauma reflect current or imminent problems in other areas of health care.

A new century and a new millennium are here. The symptoms of a societal disease are heralded by the crises in trauma care and the apathy that accompanies the denial of a problem. We face numerous new potential external change events, each of which could yield positive or negative effects.

- Mandated health economic reform.
- Emphasis on production concepts.
- Emerging Web-based medical information and record evolution with computerized pathway and managed care plans.
- Microanalysis of compliance with widely publicized and distributed cost controls and outcomes.

• Installation of video cameras to "document mistakes."

Additional nonmedical external change agents are altering the very foundation laid by the earliest shamen of the Egyptian papyri as well as the founders of the ACS, including Dr. Scudder. These change agents include informatics, automation, artificial intelligence, instrumentation, big business, insurance companies, government, robotics, and a regulatory mandate for zero tolerance with minimum database in a contracted fragmented super-specialized assembly line. These change agents can create major alterations in the way medicine is practiced, either toward automation by nonphysicians or a return to professional quality, empathy, and individual patient/physician interaction.

A different course is the choice that rests with each of us as individuals, as organizations, as governments, and as a society. Do you/we have the courage to fail? The willingness to take risks? The vision to recognize the potential benefits of discontinuous change events?

Recommendations

Therefore, I offer the following recommendations:

1. The Federation of Trauma Organizations, developed by the American Association for the Surgery of Trauma to address composite trauma issues and strategy, should reconvene immediately and position itself to respond to the current and impending change forces.

2. Each of us should intensify efforts to encourage the business community, organized medicine, and government to face the reality of managed care problems as typified by trauma care frustrations and begin to assemble a strategic health care infrastructure to address health care financing in the post-managed care era. A change agent, a visionary with courage, must emerge to unify the House of Medicine into a single force and speak for our patients, much as Mr. Ralph Nader has done for the consumer. We need a cheerleader for direct patient care.

3. The COT ought to become the "change agent," much as Dr. Flexner was when he created his report on medical education just a century ago. From this leadership position, the COT should mandate that the ACS serve as the change agent for an expanded vision—a vision to take the forces of managed care forward, not try to turn them around. We cannot, at this point, go back; rather, we must take health care forward into the new millennium with our goal being quality care for realistic costs.

The mechanism of that expanded vision is a combined presidential, congressional, professional, and public-based commission on medicine, composed of the American College of Surgeons, American Association of Medical Colleges, the U.S. Congress, the National Association of Public Hospitals and Health Systems, the Institute of Medicine, appropriate foundations, the General Accounting Office, the American Surgical Association, and all other major professional and health care associations. By common agreement, no agency or individual will take credit for formation of this commission and all will simultaneously announce its formation.

This idea is not new or unique. Already Dr. Francis Moore has recommended a similar strategy to the American Surgical Association, but with a more limited scope. My view is that limited organizational task forces have limited impact. The national commission on medicine would be all-encompassing. It would look to the system solutions that have been successfully demonstrated in our trauma center/systems model, especially as manifested by the nation's safety-net hospitals, which serve as profit centers for the remainder of the health industry. Without the involvement of all agencies, this commission will not produce a change product.

A list of potential items and issues the commission should address includes:

A. *Education issues*
- —Allied health
- —Continuing medical education
- —Graduate medical education
- —Postgraduate education
- —Public education

B. *Health care delivery/societal issues*
- —Access
- —Adverse selection/exclusion by HMOs
- —Alternate health strategies
- —Denials
- —Disaster preparedness

—Disease management
—Disease prevention, wellness, and early detection
—"Dislocations" of health care
—Downsizing strategies
—Emergency conditions
—Ethics
—Evidence-based medicine
—Futility
—High-risk medical conditions
—Local (city, county, regional, and state) solutions to health costs
—Managed care evolution, access, agendas, and liability
—Pre-existing medical conditions
—Regulation
—Safety-net hospitals as profit centers
—Societal expectations
—Specialty care access
—Teaching facilities
—Terrorism, weapons of mass destruction
—Veterans affairs health

C. *Health economic issues*
—Emerging technology
—Financing indigent health care
—Fraud and abuse
—Health advertising
—Gene therapy
—Government calculation of relative values
—Local health tax as "insurance"
—Medicare problems
—Medicaid managed care
—Medical industrial complex
—Minimally invasive therapy
—Molecular therapy
—Prepayment plans
—Prioritization programs
—Risk sharing
—Uninsured population
—Portability
—Federal health care financing

D. *Workforce issues*
—Credentialing, certification, and licensure
—Health extenders, nonphysician health providers
—Military medicine issues
—Primary vs. specialty care
—Projected needs and excesses

E. *Research/informatics issues*
—Cloning
—Databases
—Funding methodologies
—Genome project
—Ownership of patient, physician, and health information
—Priorities in research
—Security of the medical record
—Telemedicine

Closing remarks

Modern advances have and will generate frustrations. However, these change events should inspire a prepared change agent to affect a visionary outcome.

It is obvious that the last 30 years have brought more technological, ethical, genetic, political, economic, and philosophic change events to impact on trauma care than the last several million years combined. These together are the change events of TraumaLine 2000. Let us use these change events to create a positive discontinuous change outcome. I trust that together we will take advantage of the discontinuous societal change events to continue to create quantum better health care for our patients.

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