

HEALTHCARE: A COMPREHENSIVE VIEW

Speeding the transition to...
quality,
affordable, and,
sustainable
personal and societal health
through cross-disciplinary consilience
and cross-cultural collaboration

Russell Jaffe

**Edward Morris
and the Health Studies Collegium Task Force on Sustainable Health**

Fellows, Health Studies Collegium

Table of Contents

Introduction.....	1
1. Where we are and how we got here:	
Spending more while achieving less health	4
2. Rebuilding the 'ship' of healthcare:	
Healthcare improvements focus most productively on 'why, who and when' yet this is not yet a significant part of our healthcare debate	7
Part one. How disease-treatment’s preeminence limits us all	11
1. The hidden costs of disease-treatment:	
Current spending and the health value of these expenditures	11
2. Spending more and feeling worse:	
The prescient analysis we largely overlooked looks wiser than ever	15
Part two. An integral guide to charting our course: There is a better way	19
3. Applying the four-quadrant model to health:	
An integral health model from different perspectives	19
4. True health and healthcare: The Health Equation	22
• Health Enhancement Factors: Nutrition, Behavior, and Attitude	22
• Health Risk Factors: Toxic Burden and Distress Burden	24
5. Interpreting and applying the Health Equation:	
We know enough to do much better	26
6. How true healthcare can halve costs while improving outcomes:	
Spending more wisely; assessment tools to monitor our progress	29
Part three. Attaining consilience	34
7. Where the people lead, the leaders follow:	
Consumer-drive health is leading professionals and systems to evolve	34
8. Conclusion: If not now, when?	
Do we have the desire and will to be healthier ourselves, for our children, for our parents, and for our society	35
Appendices	36
Appendix 1. Background Sources and Documentation	36
Appendix 2. Health Facts	41
Appendix 3. Ten Ways to Save Your Life	42
Appendix 4. Ten ways to make your life more worth living	44

Introduction

America is in the midst of an historic transition from a principally disease-reactive system of care to one that is more truly health-based.

- Is this transition worthwhile?**
- How can we best understand, guide, and speed or retard this transition?**
- What are some of the likely consequences of this transition?**

These are the themes of this report.

Along the way, we will explore:

- 1. Why this shift is occurring.**
- 2. The economic impetus for the shift plus the economic risks and opportunities it brings.**
- 3. Other forces that are facilitating and retarding this process.**

What a successful transition means for America's health.

How have we been doing? Of 191 nations studied by the World Health Organization

America ranks 15th in overall health.

America ranks 17th in infant mortality.

America ranks 24th in life expectancy.

America ranks 32nd of 191 nations in the world in variance in life expectancy. This means a sizable percentage of Americans die prematurely. We devote vast portions of our personal and national wealth to disease treatment. We deserve a better return for our investment.

In terms of the overall efficiency of the disease treatment system, America ranks behind all of Western Europe as well as trailing Israel, Morocco, Chile, Saudi Arabia and Costa Rica. This is the assessment of the World Health Organization (WHO, Report on National Health 2000)—despite spending twice as much per capita on average as our European or Japanese neighbors. WHO based its conclusions on such measures as how:

- 1. Effectively a government spends money on health;**
- 2. Well the public health system prevents illness rather than merely treating it;**
- 3. Fairly the poor, minorities, and other special populations are treated.**

In the United States, spending far more of our national wealth on disease-treatment is not bringing us even close to our cross-Atlantic and cross-Pacific neighbors' levels of national health and well-being. How has this come to be?

The problem is not lack of knowledge. We know enough today to create truly health-based care systems. The problem is that we are not applying, in a systematic and integral way, what we know—and that the system does not facilitate our applying what we know—about the:

1. Causes of ill health.
2. Obstacles to health restoration or maintenance.
3. Principles of health promotion.

This analysis focuses on how we can be healthier and more productive as individuals and as a society. More robust health enables us to function with greater ease and productivity and to pursue our relationships, hopes, dreams, and creative impulses in effective ways. This is central to our founding fathers’ notion of “the pursuit of happiness.” Along the way to real health, we will confront and reduce social ills like violence, poverty, alienation, and environmental degradation. Sustainable high-level well-being is intimately linked to fair, flexible social structures and a healthy biosphere, or so concludes this analysis.

We will explore some of the assumptions that led us to our current focus on disease-treatment, and how they may be slowing our progress toward healthcare. The personal, social, and economic consequences of remaining with our disease-care system are reviewed. We will also investigate the costs and benefits of expanding to a system of true healthcare¹ as well as the operational issues, research opportunities, and choices that accompany this expansion. Finally, we will sketch a plan for speeding the transition.

Without this kind of contextual analysis, discussions about our nation’s health care system remain superficial, oriented to “rearranging the deck chairs on the Titanic” instead of determining what kind of “ship we can best sail, and with what navigation”. The analysis and tools of Ken Wilber are particularly relevant to understanding the communication and perceptual challenges, as will be detailed later. This model also provides constructive options for speeding a transition to health evoking values, public health priorities, and individual well being.

¹ The term “**healthcare**” is used here in an integral sense, embracing all factors that contribute to or diminish our individual and societal well-being. It represents the “consilience,” or synergistic blending, of multiple disciplines including biological psychiatry, psychoneuroimmunology, preventive medicine, nutritional immunology, medical informatics, and general systems theory (as they apply to medicine). It is, in effect, a 21st century updating of the medicine of Asclepius and Hippocrates, of Galen and Maimonides, of Paracelsus and John Hunter, of Claude Bernard and Sir William Osler, of Walter B. Cannon and Walter Alvarez, of George Crile and Alexis Carrel, of Hans Selye and Roger J. Williams. Many of these are Nobelists in medicine and physiology; all are recognized as giants in medicine. Contemporary supporters of these observations include:

- Nobel laureate Rene Dubos in *Mirage of Health* (Rutgers University Press, 1987).
- National Academy of Sciences member, past president of the American Chemical Society, and discoverer of pantothenic acid Roger J. Williams in *The Wonderful World Within You* (reissued, Bio Communications, 1998).
- Halbert L. Dunn in *High Level Wellness* (1961).

Health is herein defined, to paraphrase the World Health Organization’s definition, as the highest attainable mental, physical, and spiritual development for each individual. Primary to health are sufficient essential nutrients, minimization of toxicants, and adaptation to life stresses (so that they do not become health impairing distress) through insight, building self-esteem, and living in harmony with one’s nature. This is so our biological machinery can function more effectively, productively, and efficiently over an extended time. Too often the ills of aging are the product of correctable nutrient deficits and toxin excesses that are not included in the diagnostic and therapeutic plan for that individuals care. The excess human suffering and unnecessary costs are among the reasons why this is not the better choice.

What are the roots and assumptions of today’s disease-treatment system? How did it become so dominant in America, in contrast to Europe and the Pacific Rim where a pluralistic approach to health and disease exists?

How did we construct a medical system whose basic therapeutic philosophy defers “cleaning up the swamp” (of disease causes) in favor of endless preoccupation with “fighting the alligators” (of disease)?

True healthcare focuses upon early and protective strategies designed to avoid, mitigate, or correct the underlying causes of illness. It includes:

- 1. Working with the individual in his or her social dynamic. This includes participation in care rather than mechanistic application of care in the absence of engagement by the recipient**
- 2. Employing his or her best available modes of understanding and adapting. The involvement needs to be appropriate for the interests and understanding of the individual. The concept and goal are important rather than the technical intermediate details.**
- 3. Increasing our core capacity for unified love and compassion. Sir William Osler said, “The secret to caring for the patient is *caring* for the patient.” This principle of practice is less active today than it has been in the press to make our care system more efficient. As a priority, it is companionable with any care delivery system. It is not currently an important priority. This lack may substantially undermine the benefits we derive from our system of care.**

In other words, true healthcare is comprehensive and integrated, personal and customized, family and community, down to the level of an individual’s genotype and phenotype. By contrast, what we will call herein “disease-treatment” (the system of conventional U.S. medical care) focuses primarily and narrowly on diagnosis (descriptive labels for given conditions) and rapid reduction of symptoms as its goal and measure of success.

Transitioning from disease-treatment to healthcare will not require completely displacing the current system. Rather it means preserving and building upon the best qualities of disease-treatment, while expanding beyond them to include modalities that are safer, cheaper, and better suited for non-acute conditions. To transition from the disease-reactive system to a health-based, proactive, best outcomes approach means expanding from:

- 1. Reacting to symptoms, to caring for causes of ill health.**
- 2. Late-stage acute intervention, to early-stage health promotion.**
- 3. Institution- and expert-led care (working “on” people), to patient-led care (working “with” people).**

4. Higher risk, higher consequence, and higher cost therapies, to therapies that employ an empiric, best outcomes, minimum risk/ cost approach.²

5. Research, practice, and productivity priorities that focus on the mechanisms of disease, to ones that evoke basic health enhancement mechanisms.

6. The medicalization of all health-related matters, including birth and death, to establishing an appropriate distinction between disease-care needs and life's natural processes.³

7. The dominance of a single, disease-oriented philosophy, to a pragmatic case-by-case blending of multiple modalities based on best outcomes, established evidence, and least cost.

Can such an “integrated” healthcare system be achieved and sustained? We believe that it can. Herein are information and approaches to support this premise. Furthermore, *the expansion from disease-treatment to healthcare can be funded out of savings, i.e., from eliminating unproductive aspects of our current system, if common sense, prudence and wisdom are applied.*

1. Where we are and how we got to disease-treatment hegemony

The disease-reactive bias of today's system grows largely out of our great successes in the arenas of acute illness, trauma, and surgical care. During the first half of the 20th century, substantial advances were made in combating acute infectious and public health-related diseases. Equally dramatic reductions occurred in both maternal and infant mortalities, due largely to improvements in public health—better sanitation, work conditions, nutrition, and social networks. The professionalization of health care reinforced the trend to institutionally-based, medicalized therapies. These are largely therapies that are single-variable and thus meet a particular and limited scientific model *i.e.*, double-blind testing to the exclusion of randomized controlled trials or cross-cultural and historical empiric and pragmatic information. This excludes appreciation of the value of the placebo effect which is now being rediscovered as a potentially significant aid to healing—indeed, the placebo phenomenon may be key to an innate human healing response. Today, replete with technological wonders and

² This means cultivating the gamut of safe, effective approaches. Such a complementary approach is common in Europe and much of the Pacific Rim. Nutritional, behavioral, physical, energetic, and attitudinal approaches deserve rigorous appraisal in the United States as well, given the wealth of anecdotal and empirical evidence now available. Blending holistically oriented treatments—which typically entail lower cost and risk, while achieving better outcomes, and which often have decades or centuries of application behind them—with the sophisticated acute-stage treatments of modern medicine will yield a new generation of innovative and appropriate therapies. The issue is not high-tech versus low-tech. The issue is whether therapeutic approaches are functionally predictive and produce best outcomes, versus hewing arbitrarily to one approach or another.

³ For example, France and Belgium have largely “demedicalized” pregnancy and birth (*i.e.*, in that majority of cases that have no complications). In the process, they have achieved substantially lower costs and healthier outcomes for mother, child, and family. Another example is the end of life. Heroic efforts to extend life through medical interventions often marginally prolong life while adding significant suffering and expense. Death with awareness and dignity should be included as a choice for the end of life. These natural transitions and challenges, common to every human, do not need to be medicalized to achieve best outcomes. See *The Demedicalization of Childbirth* by Michel Odent (Marion Boyars, 1989).

magic bullet therapies, we are understandably awed by our own successes in acute care, pharmacology, surgical inventions, and diagnostic technologies.

Awed, that is, to the point of narrow-mindedness. Today the challenges of need and care have shifted from acute to chronic disease, conditions that now consume fully 90% of our care resources. For the most part, these conditions defy therapies woven from symptom-driven, late-stage, high-cost procedures. These chronic conditions include:

1. Cardiovascular disease, *e.g.*, hardening of the arteries (atherosclerosis, ASHD); coronary artery disease (CAD), heart attack (myocardial infarction, MI), and stroke. Heart attacks were so rare in the 1920s that they were a publishable medical anomaly. In less than two generations, they became our most common cause of death (albeit in slight decline since the late 1960s).

2. Cancer, *i.e.*, loss of control of cell growth. Affecting about 3% of the adult population in 1900, cancer affects 33% of adults just 100 years later. Even when corrected for lifespan, the increases in cancer and the resources devoted to fighting it are staggering. Indeed, cancer is now overtaking heart disease as our primary cause of death.

3. Autoimmune illnesses, *e.g.*, the more than 700 conditions where the body's immune defense and repair system is sensitized and self-reactive (rather than resilient and self-protective).⁴ Considered rare in the 1930s, autoimmune ills are now spoken of by many scientists as an epidemic of epidemics.

4. Chronic depression/ mood disorders, which are harder to quantify but appear to be more frequent and pervasive (rather than just better diagnosed) than several generations ago.

We continue to marshal an arsenal of remarkable “magic bullet” therapies and procedures against these chronic conditions—despite the overwhelming evidence that they are dishearteningly resistant to such treatments, and a waste of the treasure expended thereby.

A deep dilemma is that the conventional medical establishment, and many of those who rely on it, seem to assume that:

• *If* advanced technology, which succeeds so well in acute medical crises, cannot help in chronic cases, then,

⁴ Examples of the 700+ autoimmune diseases or syndromes include:

- most migraine headaches and multiple sclerosis of the nervous system;
- much of asthma and pneumonitis of the lungs;
- myocarditis, vasculitis, and much atherosclerosis, of the blood vessels;
- rheumatoid arthritis, lupus, and Sjogren’s syndrome of the joints;
- AIDS of the immune system;
- thyroiditis, adult diabetes and similar endocrine disorders;
- glomerulonephritis and renal failure of the kidneys;
- myositis and chronic inflammatory diseases of the muscles;
- eczema and psoriasis of the skin; and hundreds of other immune dysfunction conditions
- and ITP (thrombocytopenic purpura) of the bone marrow/ blood clotting system.

- **How** can the more innovative, subtle, simple, nutritional, lifestyle, and attitudinal remedies possibly be effective?

Appropriate use of advanced health technologies is essential to saving lives. However, recent breakthroughs in genetics, molecular biology, neurobiology, nutrition, biochemistry, and the behavioral sciences suggest more integrated approaches. Further, the tremendous synergistic convergence of these and other scientific disciplines, a phenomenon E. O. Wilson has termed “consilience,” now compels us to reassess our beliefs. We need to redefine our understanding of chronic illness, as well as of the physical challenges associated with natural, non-medical life transitions like birth and aging.

Following the example of wise corporate managers and prudent homemakers alike—not to mention the ancient wisdom of the Physician's Oaths of Hippocrates and Maimonides—let’s examine in detail the outcome-oriented, common-sense approaches urged by today’s healthcare needs. Let’s remind ourselves that:

- An ounce of prevention is worth a pound of cure.
- A stitch in time saves nine.
- The best defense is a good offense

and physician’s primary responsibility:

- First of all, do no harm.

We simply cannot continue our present course. Dr. George Lundberg, past editor of the *Journal of the American Medical Association*, has warned of “imminent financial and operational meltdown of the existing system” if we try to do so (JAMA 267:251, 1992).

The signs of “meltdown,” of course, are obvious to many of us as we observe the results of a decade of cost containment and managed care. The national forum is crowded with proposals to reduce medical costs, typically via strategies like rigid cost control, care rationing, care management, cost shifting, voluntary restraint, and reduced waste. Some strategies have had success. Costs are now being lowered through:

1. Improvements in administration
2. Reimbursement review and revision
3. Care management
4. Restriction of access to disease-treatment (*i.e.*, via managed care)

Unfortunately, most such proposals are fundamentally misguided. This is because they base their promise of success on changing the “hows” of care:

1. How it is managed

2. How it is delivered.

3. How it is financed. (Time 17, Feb, 1992 pg. 20, JAMA, 267: 2509-2520, 1992.)

In other words, they focus on “rearranging the deck chairs.” A systemic approach can be fruitful; a peripheral emphasis on efficiencies is not likely to be any more successful in the future than it has been in the past in America, Canada, or elsewhere.

As such, these mechanistic solutions are far from sufficient to cauterize the open wounds of ever higher costs and ever greater suffering. Despite the substantial cost-containment efforts, disease-treatment costs continue to escalate three times faster than the underlying inflation rate. Meanwhile, health quality in terms of personal and societal well-being is falling, rather than rising, in the face of these still geometrically increasing costs.

2. Rebuilding the ‘ship’ of healthcare

The path to quality, affordable healthcare, accessible to all Americans, will not likely be found in the “hows” of disease-treatment. Success is much more likely to result from a substantial strategic reassessment of the “what/when” factors of care:

1. What kind of care we deliver.

2. When we deliver it.

Along with active patient and societal engagement, changing the kind of care we provide and when we provide it—i.e., expanding beyond disease-treatment to encompass the full range of disease-preventing and health-supporting measures—is the most likely solution to our dilemma of inexorably rising costs without correspondingly better health. This expansion requires a fundamental advance in our current philosophy of health, disease, and therapeutic intervention.

The disease-based philosophy of care takes health for granted until symptoms of disease emerge, then responds with therapeutics designed to suppress the symptoms. Quality healthcare that is affordable and accessible to all Americans can be developed and sustained only if we expand from disease-treatment to healthcare. Fundamental in method, resource efficient, and clinically effective, this health-based approach is a flexible, “no losers” solution. It has the ability to resolve the clinical, financial, and political quandaries that comprise the current crisis. It is compatible with either public or private systems of care, and can be clinically central to administrative and delivery systems of all types. By embracing the strategies of disease prevention and health promotion, it provides a sustainable avenue of access to:

1. Substantial improvements in national health.

2. Dramatic reductions in the expense of disease.

3. Reduced, sustainable value in the proportion of national wealth devoted to healthcare.

4. Marked additional rise in national productivity.

If America were to begin this transition today, we project that over the next three decades the fraction of Gross Domestic Product (GDP) devoted to disease-treatment will reduce from 13.4% in 1998 (and growing) to 9.5% in 2058 (and stable). Cost-effective therapies will thrive, while therapies that are less effective or pose greater demonstrated risk will be discarded. Among other results, such a transition will create substantial economic opportunities, as well as discontinuities, as the more effective and efficient elements supplant the less effective and efficient ones.

John Knowles, MD, past president of the Rockefeller Foundation, prophesied our current dilemma decades ago when he wrote, “America is spending more and feeling worse” (Daedalus, Spring 1978). A healthy America can yet reverse this paradox and renew itself. An unhealthy America will slip into social and economic decline.

True healthcare will be integrated and “integral.” By this we mean it will be comprehensive, balanced, and inclusive. It will address *all* of the major factors that promote good health (which we call “health enhancement factors”), as well as all of the major risk factors that can undermine health (“health risk factors”). It will extend from environmental health to human genes; from societal stability and adequate, sustainable living standards to individual well-being; from megacities to backyard vegetable plots.

America has the opportunity, and the capacity, to create a model healthy society for the 21st century. Our wealth and knowledge enable it; our economic and health pressures require it. We can work together to establish a sane, human-centered, sustainable system that reconciles the best science and technology with common sense and caring.

The discussion is organized as follows:

Part one: How disease-treatment's preeminence limits us all

1. The hidden costs of disease-treatment

2. Spending more and feeling worse

Part two: An integral guide to charting our course⁵

3. Applying the four-quadrant model to health and healthcare

4. True health and healthcare: The Health Equation

5. Interpreting and applying the Health Equation

6. How healthcare can halve costs while improving outcomes

Part three. Attaining consilient cross-disciplinary communication

7. Where the people lead, the leaders are likely to follow

8. Conclusion: If not now, when?

⁵ This articulation is consistent with and builds from:

- E.O. Wilson's consilient approach to science, healthcare, and public policy (*Consilience*, Knopf, 1998).
- Ken Wilber's integral approach (*The Integral Vision: Body, mind, soul, and spirit in self, culture, and nature*, Shambala, 2000; *The Marriage of Sense and Soul*, Random House, 1998).
- Abraham Maslow's psychology of health and Clare Graves' work on personal and societal development, as exemplified in Don Beck and Chris Cowan's view of spiral dynamics (*Spiral Dynamics*, Blackwell, 1996).

Time Magazine says:

“There are two kinds of prices in America today, regular prices and health-care prices. The first kind seems to follow some sensible laws of supply and demand. But America's medical bills are something else. They flow from a surreal world where science has lost connection with reality, where bureaucracy and paperwork have no limits. . . .”

—Athena Toufexis, *Time Magazine*, 25 Nov 1991, cover story

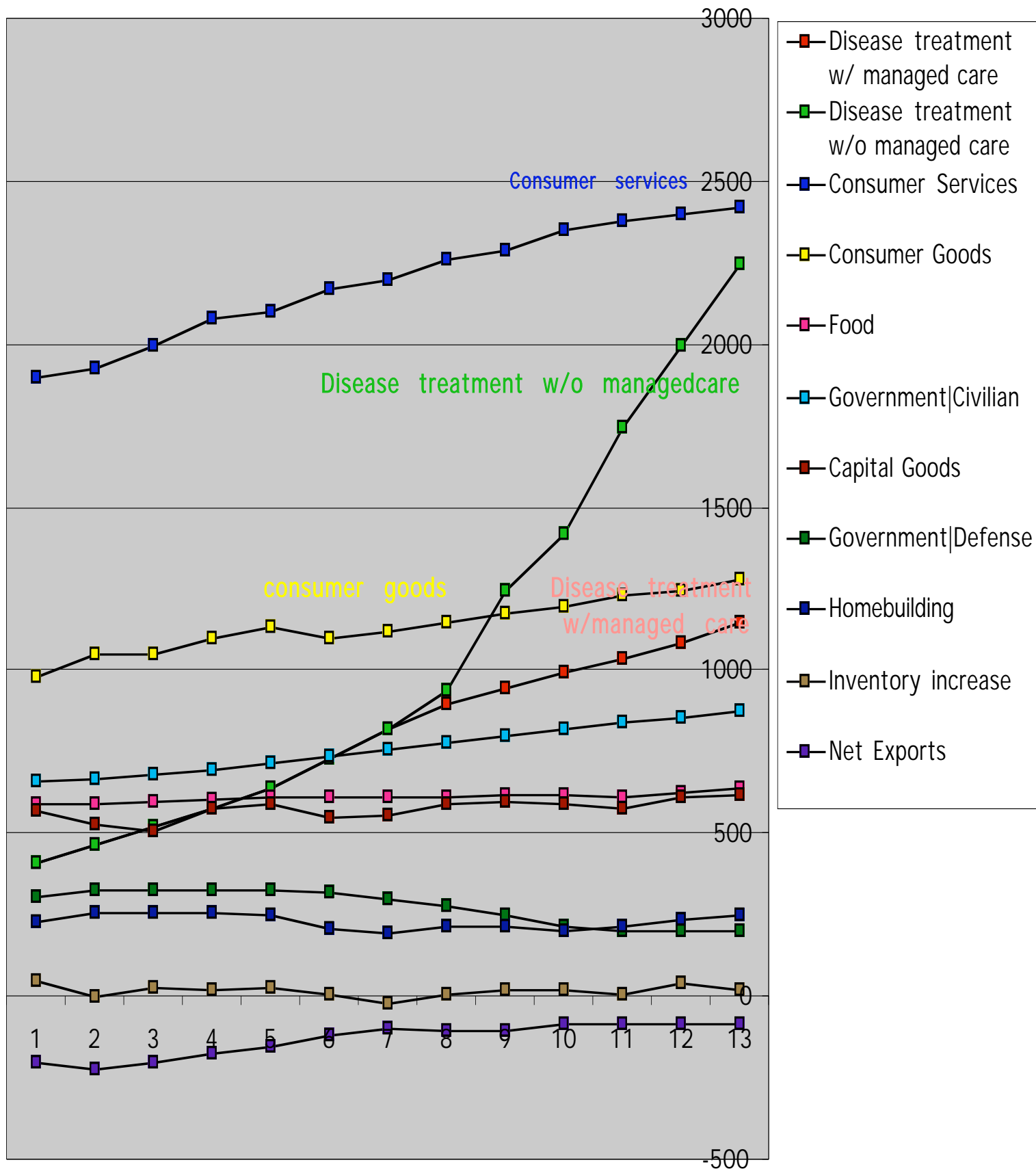
Part one. How disease-treatment's preeminence limits us all

Part one addresses two issues related to the relative value we receive from disease-treatment compared to healthcare approaches: disease-treatment's hidden costs, and its negative impacts on our national health.

1. The hidden costs of disease-treatment:

Current spending and the health value of these expenditures

All Americans, even those who don't utilize the mainstream medical system, are affected by the spiraling costs of disease-treatment. Total expenditures for disease-treatment more than double every five years and are projected to exceed \$1.4 trillion in 2001, almost twice the \$767 billion spent in 1991. These expenses destabilize the economy as a whole: the inflationary costs of medical services, technologies, and products propel overwhelming government expenditures, which in turn siphon growth capacity away from other sectors through lower wages and costlier investment capital. Thus, disease-treatment's rising expense, compared to other GDP components, drains vital economic growth potential. This is illustrated in Figure 1 on the next page. Expenditures for the major elements of America's Gross Domestic Product (GDP) show the increasing absolute and relative amount of resources devoted to disease-treatment (health care) from 1986 to 1998.



Despite the last decade’s cost-containment efforts, disease-treatment is projected to cost 14.9% of GDP in 2002, according to the Congressional Budget Office (CBO). If this geometric growth rate is left unabated, our estimates show that disease-treatment will comprise 32.3% of the GDP by the year 2022⁶. Further projected escalations in disease-treatment expenditures through where an unsustainable 62.8% of GDP will be consumed by disease treatment if current trends continue.

From 1960 to 1990—while U.S. wages remained flat—the share of pre-tax corporate profits absorbed by disease-treatment benefits and insurance premiums rose 61% (in constant dollars) while the share of after-tax profits rose 108%. While this situation has worsened since 1990, as recently as 1970 corporate America devoted just 20% of pre-tax profits (and 36% of after-tax profits) to comparable costs. In further contrast, until the mid-1970s disease-treatment costs increased at about the same rate as the Consumer Price Index (CPI).

Figure 1. Expenditures for the major elements of America’s Gross Domestic Product (GDP) show the increasing absolute and relative amount of resources devoted to disease-treatment (health care) from 1986 to 1998 (estimated).

Despite this extraordinary national expenditure (not to mention the longest economic expansion in history), the number of Americans without health insurance had risen to 44.3 million by 1998, slightly more than 20% of the U.S. population. Meanwhile the number covered by private employment-based coverage has fallen dramatically. With the cost of health insurance premiums now escalating 10+-% annually, we are likely to see further dramatic increases in the number of uninsured as corporations withdraw their disease-treatment benefits so they can remain viable in the global marketplace.

HCFA: Health Insurance Association of America, Trend Analysis Report, 1991.

As for American global competitiveness, the major difference between the United States and Japan or Western Europe is the difference in proportion of national wealth devoted to disease-treatment. A recent CBO report notes: “business’ rising health care costs are ultimately passed on to workers through lower wages. Thus, one reason that real wages and

⁶ Price increases in health care continue to rise two to four times as fast as any other component of our consumer price index (CPI). In the past two decades, the share of GDP consumed by health care has more than doubled, from 7.1% to 14.3%. Assuming current realities (a medical inflation rate of 11.5% and a CPI inflation rate without medical care of 3.0%), Bob Maver, FSA, calculates the share of our GDP devoted to disease-treatment will be:

Year	Medical Care (%GDP) w/o managed care	Medical Care (%GDP) w/ managed care	Medical Care (%GDP) w/ this model
2002	26.9%	14.2	18.2
2012	44.9%	22.1	17.9
2022	64.3%	32.3	16.5
2032	79.9%	42.6	14.8
2042	89.8%	55.1	12.2
2052	95.1%	62.8	10.0

Clearly, with or without managed care, primary delivery of disease-treatment services results in unsustainable increases in costs without commensurate increases in health.

salaries hardly rose over the past 20 years is that employers' contributions to health insurance absorbed more than half of employees' gains in compensation."

General Motors, for example, spent \$3.2 billion in 1990 for its 1.9 million employees, dependents and retirees. This is more than the company spent on steel to build its 1.9 million automobiles. The difference in competitiveness between the U.S. and Japanese automotive industries can be accounted for entirely by the difference in health costs. America automotive manufacturers spend over \$3,000 per worker and retiree for disease treatment benefits, compared to \$500 for comparable expenditures in Japan. This means that each American automobile includes an implicit "disease-care tax" of \$2,500. Furthermore, based on analysis of such diverse variables as life expectancy, infant and maternal morbidity and mortality, geriatric quality of life, and workman's compensation rates, the Japanese and Germans are a healthier work force than their American counterpart.

In the steel industry, where America's competitiveness is again sorely challenged, a 1984 study found that U.S. companies spent an average of \$1,580 per working employee on medical benefits (not including their costs for retirees), compared to \$900 in Germany, \$500 in Japan, and \$400 in Britain. Japanese and German companies rely on their National Health Systems to provide retiree care. The data clearly show that American industry could be substantially more competitive without this regressive "disease-care tax".

Table 1: Employer spending for employee compensation

Salary and Benefit Cost	Change (%) 1970-1990 [in constant dollars]
Salary and wages	1%
Retirement benefits	32%
Other fringe benefits	42%
Health Benefits costs	169%

Disease-treatment costs' impact on national saving "will reduce investment and substantially cut future incomes—by almost 2.5% in 2002 and even more thereafter." (Business Week, 14 Dec 1992, page 24.) Yet while we spend substantially more per capita than Japan or Western Europe, their people are healthier on the 17 major indices monitored by the World Health Organization. Later in this paper, we will examine how other countries have implemented the constructive elements of what is defined below as the "health equation" much more successfully than have we.

Analysis of additional trends gives further reasons for concern. Given our aging society, the host of newly emerging diseases, and our growing population of underinsured, uninsured, and

who are uninsurable, the actual increase in medical costs over the next five to twenty years may far outpace current projections.

Why have the cost containment efforts of the last decade produced so few actual reductions in disease-treatment costs? Uwe Reinhardt, James Madison Professor of Economics at Princeton University, along with economists from Rand Corporation and HCFA, points to several alarming, and accelerating, trends. For each dollar of disease-treatment cost reductions or binding fee limits, 50% or more is lost—through legitimate upcoding (the process of upgrading the codes applied to services rendered), unbundling (charging for individual services rather than the same services as a group), and increased volume of services provided. Add to these trends the fact that we have largely overlooked the best strategy for achieving cost-effective and outcome-effective care—focusing “upstream” on the causes rather than “downstream” on the symptoms—and the cost containment failures become understandable.

In sum, continuing our present course is likely to have the following outcomes:

1. Continued escalating costs of care
2. A continuing cap on wage increases, as employers seek to cut the costs imposed by rising medical insurance
3. Legislated national care, imposing even greater demands on ever-dwindling resources
4. Development of a two-tiered system, with superb care for the fortunate few and mediocre care (at best) for society-at-large. This can lead to social discontinuity and avoidable yet general excess of suffering. We all deserve better.

2. Spending more and feeling worse

Dr. John Knowles’ observation that “America is spending more and feeling worse” is truer than ever. Current statistics reinforce its validity:

- Each year, more than 1 million heart attacks kill over 350,000 of the 50 million of us with heart and vascular disease despite outstanding cardiac-care technology.
- Before 1900, even corrected for life expectancy, heart disease and cancer were quite rare. By 1950, one in five Americans could expect to contract cancer; in 1970, the figure had reached one in four; in 1990, the figure increased to almost one in three and is still rising. Clearly, we are not winning the “War on Cancer.” Cancer is now surpassing heart disease as the leading cause of death among adults.
- More than 20 million Americans have one or more of the 100 forms of arthritis. Another 42 million Americans have an autoimmune or immune-deficiency disease. Over 25 million citizens report themselves to be chronically fatigued. And 30 million of us have depression or a thought disorder that impairs our daily function. Allergic and immunologic disorders afflict over 30 million people. These conditions have been increasing three to ten times faster than

population growth for the last generation, yet they were essentially unheard of just a century ago.

- **Trauma and violence continue to add a toll of over 100,000 deaths a year. Injury and violence account for 75% of all adolescent deaths; over 80% of this carnage is avoidable or preventable. Homicide and suicide among adolescents have doubled in the last generation.**

- **One third of all young people smoke cigarettes regularly, and an equal proportion report binge drinking. One sixth of all young people report regular marijuana use, and more than 2% report current cocaine use.**

- **As a population, America is 5.2 billion pounds overweight and still gaining. The average man today weighs four pounds more than even his all-too-high weight in 1960. Obesity is a significant risk factor for certain cancers, heart disease, adult diabetes and vascular disease.**

- **Emergency room visits reached an all-time high of 361 per 1000 population in 1992 and hospital admissions were 136 per 1000 population.**

To add further concern, we are seeing a renaissance of the chronic conditions that plagued our grandparents' generation. Tuberculosis, for example, is again on the rise in many urban areas. Today's strains are often resistant to antibiotic therapy, making their management problematic.

Our analysis links these public health diseases, in large measure, to a decline in air, food, water, and environmental quality, coupled with eroded immune defense and the "super-strains" of bacteria which resist antibiotics and thrive under these conditions. In other words, people have become more hospitable and less resistant to these agents.

What has caused this ongoing decline in the quality of our living environment? The most significant changes in the last two generations are:

- 1. We have changed the menu and generally decreased the quality of what we eat. This was largely done to improve the shelf life and transportability of food. Low-fiber, high-protein, high-fat, high-sugar, high-chemical diets provoke arteriosclerotic heart disease and strokes, hypertension, cancer, obesity, and autoimmune disease. We have given priority to storability, transportability, and appearance. These measures are certainly inappropriate guides to healthy nutrition. Individual Americans have the option of making healthier nutritional and lifestyle choices, unlike citizens of most other nations. The rise in chronic conditions that are caused or substantially enhanced by dietary choice shows that most of us don't.⁷**

⁷ Put simply, America needs to re-learn the fundamental importance of nutrition to health and to make of access to healthy products a national priority. We need to understand the direct link between what we eat and who and what we are...how healthy, energetic, and productive we are. Americans can be taught the essentials of nutrition, beginning in elementary school and continuing through graduate studies, especially medical curricula. Physicians in particular must come to understand the fundamental importance of nutrition to prevent and reverse disease. Farmers must be retaught and motivated to use biocompatible techniques in order to yield nutrient-rich, uncontaminated food. Healthy soil, water and air are essential to this task. Similar approaches should be used for dairy, beef, and poultry; vegetable, fruit and fish farming to teach producers how to raise and process healthy

2. Intensified, synthetic chemical-dependent farming strategies, aimed at short term increases in crop yield, have depleted the soil of essential nutrients while leaving toxic residues in the soil and water, rendering the crops we consume correspondingly less nutrient dense. The long term effects of depleting the nutritive value of America's topsoil have been largely unappreciated.

3. Food processing and long-distance transportation further deplete food nutrient quality. The average tomato, for example, is harvested long before it is ripe and travels, on average, 2,000 miles from farm to consumer, undergoing artificial ripening en route.

4. Pollution of the air, crops, and soil from biocides exposes many of us to high levels of toxins. These bioaccumulate in our bodies and interact to suppress our immune and hormone functions.

5. Food additives that enhance taste, processing ease, and shelf preservation further increase our intake of immunotoxic chemicals. We did not anticipate that chemicals that prolong shelf life might also induce immune or allergic reactions. We now know that this is too often so for artificial food colors, flavor enhancer, and preservative additives.

6. High-tech living priorities that sacrifice peace of mind, exercise, rest, and enjoyment eventually impose a heavy burden of health-eroding stress overload (distress)⁸.

products free of toxic chemicals, dyes, additives, hormones, etc. (See: Environmental sustainability and the redesign of agrosystems, Prof. Stuart Hill, McGill University, Macdonald Campus, 1993.)

Fast-paced, stress-filled living in a polluted world causes over consumption of many essential nutrients from human bodies. While the change to nutrient-rich whole foods will not be possible overnight or universally, the need for nutrient supplementation will have to be taught and consistent use of biologically safe and active supplements encouraged. In addition, reimbursable access to such supplementation is cost effective when compared with current drug and procedure reimbursement priorities.

The result of improving the nutrient quality of food, reducing the toxins present in the food, water, and air supply, improving the consumption habits of the average consumer, and regular supplementation with nutrients where needed will greatly improve the nutrient health status of most individuals. This improved nutrient status of the populace will result in reduced risk of cancer, heart disease, birth defects, premature senility, osteoporosis, maturity onset diabetes, and many other chronic, autoimmune disease conditions. In addition, proper nutrient support should greatly reduce lesser but still significant problems of fatigue and chronic susceptibility to infections and illness. The end result will be greatly reduced medical care costs and far less lost work time for the majority of citizens.

True actuarial risk rating would provide premium incentives for those with lower risks and higher premiums for those with higher risks. In addition, a health tax credit for non-use of high cost, high consumption disease treatments would incentivize people to make the right choices.

⁸ For too long American society has rewarded a frenetic, workaholic, sedentary lifestyle that values time spent on work and gives too little priority to relaxation, exercise, family and social interaction and rest. To increase behavioral competence and personal, sustainable productivity, America can, instead, educate its citizens on the importance of the latter. From kindergarten to college, from the farm to the assembly line, from the office to our legislatures we would be wise to provide for a healthful balance of work, rest, and play activities.

Health and physical education programs in schools, senior centers, day care, teen and continuing adult education centers, community colleges, universities, and community centers, workplaces, and rehabilitation centers must encourage physical fitness for life. Low impact aerobic exercise, weight training, tai chi, calisthenics and other approaches to individual fitness need be valued choices. While Americans made great progress toward healthier lifestyles in the '70s and early '80s for almost the last decade polls by the Lou Harris and Gallup organizations have seen reversals in these trends. National, visible information and motivation campaigns can help restore Americans to healthier habits.

The sciences of nutrition, biochemical physiology, behavioral medicine, and molecular biology provide us with abundant data on how to live healthfully, and the market in quality-of-life products (e.g., organic foods, water filtration systems, and air filters) is more abundant and affordable in the United States than anywhere else. Yet, in the midst of technological wonder and consumer abundance, most of us live with ongoing deficits in our diets, sensory lives, values, and attitudes.

Why are we spending more and feeling worse? In our kitchens, factories, schools, doctors' offices, and farms, we are not applying what we already know to avoid, reverse, and repair the underlying causes of chronic ill health. Most health professionals still behave as if they are unaware that prevention—through disease avoidance, whole foods, immune system enhancement, balanced lifestyles, etc.—depends on informed and proactive nutritional, behavioral, attitudinal, and environmental choices⁹.

Equal emphasis should be placed upon teaching the importance of allowing time for relaxation, enjoyment, and rest. Schools should incorporate relaxation response training periods in the daily schedule and provide instruction in activities which can provide for such lifelong habits. These would include music, dance, art, photography, crafts, nature walks, and reading for fun. Health education counseling and exercise programs should be made available in all places of employment. In both schools and corporations, time management skills can be taught as a way of helping people to achieve balance among the work, play, and rest activities of their lives. A media campaign can glamorize and promote the importance of family time, relaxation time and to show the link between all these aspects of behavior and health.

⁹ Americans need incentive and positive role models brought home by media campaigns to appreciate the cause and effect integration between activity patterns, consumption choices, mind and health. In fundamental ways, self-image is a family matter so, first and foremost, assistance must be offered to families so that children can be raised with high self-esteem. Beginning in elementary school and continuing through graduate and medical studies, people can first be taught the steps to self-esteem and how to enhance it in those around them. From parents and teachers, grandparents and surrogate parents alike, children need attentiveness, patience, positive reinforcement, gratitude, inclusion, praise and feelings of success in their efforts. School administrations should make this type of interaction with children a priority, for teacher, administrators and support personnel. Corporations can create climates supportive of self-esteem and administrative styles compatible with this. Significant learning and work productivity increases are consequences of such actions. Businesses can expand the use of ergonomically balanced work sites (free by design of noise, crowding, poor lighting, insufficient ventilation, and involuntary exposure to toxins), flex time, home-office work, and other approaches to decreasing the stress of the work day. Both public and private sector employers should bring vacation allowances up to world standards. The usual two to four weeks, depending on length of employment, now offered in America is vastly less than that given in all other industrialized countries. Simply having more time off from stressful work situations can greatly help to decrease stress overload, increase employee productivity, and reduce the costs of stress-induced disease.

In addition, skills for handling stress and negative emotions can be taught, beginning in elementary schools and continuing throughout life. This includes an appropriate mix of physical and mental exercises. Health counselors in schools and corporations can provide additional support via individual or group therapy. Both in schools and corporations resources for stress reduction should be provided, ranging from work breaks and recesses to discussion and support groups.

Medical care facilities, both public and private, can be environments which reduce stress for those in need of healing rather than increasing it, as is often the case today. Senior citizen centers and nursing homes can expand elder care programs like foster grandparents, arts and pet therapy programs, and senior volunteers to provide loving, caring interaction with the elderly and the young who are so often both physically and emotionally abandoned and, quite literally, untouched. The human burden and social costs of stress overload can be an educational priority at all levels. In addition, skills to minimize exposure to undue stress can be learned. From home to schools to workplaces, leadership can be exerted to promote healthy choices in regard to workload, pace, and attitude. Education should also teach those in both the public and private sectors that "more (intensity) is not always better." Quality of work should replace quantity of hours spent as the basis for reward.

Part two. An integral guide to charting our course

Part two defines sustainable health, addresses the opportunities of a consilient or integral view, and lays out practical paths to its attainment.

3. Applying Wilber's four-quadrant model to health and healthcare

Health enhancement factors are those that increase resilience and resistance. This promotes good health. Health risk factors are those that increase our exposure or hospitality to disease-provoking elements and act to undermine good health. Sustainable health involves increasing the enhancement factors and decreasing the risk factors.

The philosopher Ken Wilber has synthesized a four-quadrant model for approaching virtually any subject in a comprehensive and inclusive manner. In a remarkable series of books, Wilber has applied this model to psychology, religion, and several other topics. We believe Wilber's model applies equally well to health, where it can serve to assure that all the factors important for health are taken into consideration.

Wilber's Four-Quadrant Model

	Interior	Exterior
Individual	Interior individual	Exterior individual
	Inner consciousness	Physical body, organism, and brain
	Mental, emotional, spiritual experience	Behavior
Collective	Interior collective	External collective
	Culture, values, worldviews	Natural environment
		Human physical and socioeconomic systems

The two right hand quadrants deal with exteriors. These are the visible surfaces of reality. Things in the right hand quadrants can be observed from the outside using the senses and instruments that extend the senses. The two left hand quadrants deal with interiors as experienced through subjective consciousness. The two upper quadrants deal with individuals, and the two lower quadrants deal with collectives¹⁰.

¹⁰ **Upper Right Quadrant:** The Upper Right quadrant in Wilber's model is the individual viewed "from the outside" in an objective, empirical, scientific fashion. It includes genes, tissue structures, organs, and biochemical processes. It also includes observable behavior.

Lower Right Quadrant: The Lower Right quadrant is the shared world that can be approached through observation of exteriors. It includes the natural environment in which

Applying Wilber's four-quadrant model to health and healthcare helps to clarify the extraordinarily wide range of enhancement and risk factors that need to be included in the equation adding up to true health.

Today's medical system operates primarily in the Upper Right quadrant. Medical training and practice focus overwhelmingly on dealing with "its": the physical organism of bones and tissues, organs, and biochemical processes. The primary tools of conventional medicine are drugs, surgery, and other forms of physical intervention in bodily processes. To the extent that conventional medicine addresses human behavior, it does so primarily through physical aids or controls and techniques of behavior modification.

The methods in this quadrant are powerful. They are a major health enhancement factor in many situations, but they also present risks, as we see in today's high levels of iatrogenic illness. Revolutions underway in biotechnology and information technology will produce still more powerful treatment methods in the future. But as important as all this is, this quadrant is only one-fourth of the full picture of the determinants of health and illness.

The Lower Right quadrant contains an enormous range of health enhancement and risk factors. The entire natural environment is in this quadrant, as is the whole range of human institutional structures. Human life is nested in and supported by the larger web of life, although the natural environment also confronts us with risk factors from microbes and allergens to floods, to which we are more or less well-adapted.

The nutrient content of our foods and our exposure to pesticides and other contaminants in our food and water is determined largely by the institutions associated with agriculture.

Our indoor environments are proving to be the primary source of exposure to toxic emissions, and the level of those exposures is determined largely by institutions that produce construction materials, paints, glues, carpets and fabrics, household cleaning chemicals, office machines, HVAC systems and many other products. We are largely ignorant of the synergistic effects of the over 100,000 industrial chemicals that we are putting into the environment, and are constantly surprised by the emergence of new health-related problems stemming from them, such as endocrine disrupters.

human systems are embedded, human technological systems, and observable socioeconomic structures. Right Side elements can be referred to in the third person (the realm of "its"), whether they are bodily organs, technologies, or institutions.

Upper Left Quadrant: The Upper Left quadrant is the individual viewed "from the inside" through individual subjective consciousness (the realm of "I"). It includes all forms of inner mental, emotional and spiritual experience.

Lower Left Quadrant: The Lower Left quadrant contains the patterns in consciousness that are shared by individuals who live within a particular culture or subculture (the realm of "we"). It includes shared values, worldviews, meanings, semantic conventions, and other cultural elements.

The institutions of healthcare are also in the Lower Right quadrant. The public health system, for example, is probably at least as large a health enhancement factor as the far more expensive system of hospital-based treatment. Equity of access to healthcare institutions is another major health variable. If you have a potentially fatal but treatable illness, and are one of the tens of millions of people in the United States without health insurance, institutional arrangements barring your access to medical care may be just as lethal as any pathogen.

On the other hand, institutional arrangements geared toward the World Health Organization's vision of "Health for All" are a major health enhancement factor. "Health for All" highlights the fact that all of our institutional arrangements create health stressors and/or supports, depending on the extent to which they are based on violent or peaceful resolution of conflict, injustice or fairness, exploitation or cooperation. Poverty is the most important health risk factor of all in much of the world, including parts of the United States.

The Upper Left quadrant of interior individual consciousness is increasingly recognized as important both for maintaining health and for causing and curing illness. Research in psychoneuroimmunology has convincingly reaffirmed what empiric and wisdom-based healthcare systems have long asserted, i.e., that emotions, intentions, and other interior states affect physical body states. Many doctors know from experience that mental outlook and psychological attitude can have a major impact on recovery rates and ultimate health outcomes. Nurses, more than other healthcare practitioners, often know from experience the role that things as simple as comforting words and caring touch can play in supporting recovery. Interior practices like meditation have been shown to have strong physical correlates (changes in brainwaves, heart rate, etc.). Visualization and mental imagery, affirmation, and prayer have measurable affects on health maintenance and treatment outcomes.

The Lower Left quadrant includes all the cultural or intersubjective factors that influence health. There is considerable evidence, for example, that social support from family and friends plays a major role in maintaining good health and assisting recovery from illness. The beliefs, values and emotional and spiritual character of the communities and subcultures to which we belong influence our own mental and physical states. Changes are occurring in our shared cultural expectations about the appropriate role of individuals in maintaining their own health, seeking out relevant health-related information, performing self-care, and taking greater responsibility for their interactions with healthcare professionals. The cultural acceptance or derogation of people with particular illnesses can have direct and indirect health effects, as we see with AIDS, leprosy, and many other examples through history. Ultimately, our shared beliefs about what health is may turn out to be the greatest single factor affecting health.

4. True health and healthcare: The Health Equation

Using this integral model as a framework, we can express the full equation of human health as follows:

$$\text{Health}^{11} = \text{All Health Enhancement Factors in Quadrants 1, 2, 3, and 4}$$

minus

$$\text{All Health Risk Factors in Quadrants 1, 2, 3, and 4.}$$

Health enhancement factors are those that increase resilience and resistance, especially nutrition, behavior, and outlook. For example, recently science has begun to show how intimately our attitudes and beliefs—which are learned from experience and hence relearnable—relate to our health or ill-health. Health risk factors are those that increase our exposure to or hospitality to disease-provoking elements.

In practical application (as opposed to a framework for ongoing research), the challenge is to identify all of those health enhancement and risk factors in the four quadrants which we understand fairly well today, which are most susceptible to personal control, and which provide the greatest scope for health improvement.

Once we have identified this subset of health factors, we can express the health equation more specifically and usefully as:

$$\text{Health} =$$
$$[\text{Nutritional} + \text{Behavioral} + \text{Attitudinal Competencies}] - [\text{Toxic} + \text{Distress Burdens}]$$

The validity of this formula is supported by breakthroughs in molecular biology over the last two generations, by the outcome effectiveness of their clinical application, by wisdom-based and experience-based cultures, and by the absence of scientific evidence to contradict this formula.

We can take this formula one step further. We can use it to develop an aggregate standard health unit (SHU) to quantify the total or component health of each person. This is a rigorous expression of the concepts included in homeostasis.

Health Enhancement Factors: Nutrition, Behavior, and Attitude

We have come far in identifying the essential “background” factors crucial to human health. Over 100 such factors have been identified in this past century alone. These factors are so integral to the web of life that they operate largely unseen, subtly yet profoundly influencing humans’ health status. They primarily include nutrition, behavior, and attitude.

¹¹ Note that this definition of “health” is fully consistent with that of the World Health Organization: the highest attainable mental, physical, and spiritual development for each individual.

• **Nutrition, light, and energy**

Factors in this category include:

1. Amino acids: There are seven essential and six conditionally essential amino acids. We need them to survive, yet we must take them in from our diet (where they are often available in only marginal amounts) because we are unable to synthesize them in our cells. Amino acids are the building blocks for protein and serve as alternate sources of energy for our cells as well as for some nerve transmitter chemicals.

2. Fatty acids: There are at least five families of essential fats. We require them to function properly, yet, again, we cannot make them in our cells and must acquire them from our diets. Processing of foods often substantially reduces the amount of these trace nutrients available to us.

3. Minerals such as magnesium, zinc, copper, chromium, manganese, and molybdenum are among those we require from our diet for the cell catalysts (enzymes) to work properly and for cell messages to be properly communicated. Too often, our diet is marginal or deficient in these nutrients.

4. Light, from healthy near-UV (UV-A) to mid-spectrum green to infra-red, is required to activate vitamin D and various immune defense cells and factors, including some of our natural anticancer mechanisms. Light waves travel through the skin to do their job. While we do not require much to satisfy essential requirements, the 20 minutes of daily sun needed is still more than many people get. Artificial light is fine for reading but does not provide adequate spectral breadth and intensity for these important biological functions.

5. Touch is important to human health and well-being. Just as essential nutrients have become less readily available in our diet, nourishing touch has been less available in many modern lifestyles. Absence of touch increases mood disorders and decreases immune defense and repair competence.

6. Bioelectrical currents are important for maintaining and repairing bones, joints, and skin and other organs. Lack of rhythmic exercise reduces the internal bioelectrical flow. Acupuncture may work by directing specific microelectrical currents through specific collagen (structural protein) fibers.

Understanding these essentials opens up the possibility for diagnostic and therapeutic advances—such as natural, innovative products that lower our disease risk and enhance our recovery capacity. Just as jewel weed neutralizes poison ivy toxin, innumerable benign, effective anti-toxin and essential factor strategies exist. Positive nutrition, for example, requires eating whole foods, as fresh, nutrient-rich, and uncontaminated as possible, to make sure we get the enzyme-activating vitamins, minerals, dietary digestive enzymes, cofactors, and fiber essential to health.

Unfortunately, the superb education provided our physicians is largely devoid of information about therapeutic nutrition, detoxification therapies, and other biological response modifier approaches. They, and we, deserve better. This requires a broadening of

the educational scope and research priorities to better conform to current knowledge and needs.

- **Behavior: Whole-life strategies**

Understanding the essential health enhancement factors points the way to other healthy lifestyle choices. Attaining positive behaviors requires the cultivation of health promoting habits in our work, recreation, and rest activities. These include:

1. Developing strong, a supportive social networks;
2. A healthy balance between the time spent on work and the time spent on rest and relaxation;
3. An appropriate pace in the tasks of daily living;
4. A health enhancing variety of social and recreational activities, including time spent both alone and with others.

- **Attitude: Positive outlook, learned and relearnable**

Finally, attaining a positive attitude requires the development of self-esteem and skills to cope with the stresses of daily living. Skills and techniques with proven value include:

1. Contemplation, constructive mental focus or prayer
2. Active meditation
3. Autogenic exercises or relaxation response training
4. External assistance through counseling, support groups, biofeedback, and physical therapies

A realistic positive outlook has, at its core, a sense of hopefulness and helpfulness from which life's challenges can be seen as opportunities rather than dangers. While oft rediscovered, a timeless truth it remains.

- **Health Risk Factors: Toxic Burden and Distress Burden**

Toxic burden means the accumulated toxins and immunotoxins accumulated from:

1. Food (pesticide residues, additives, solvent residues and preservatives, including hormone mimics and some plasticizers)
2. Water (industrial/ agricultural contaminants and toxic minerals like lead, mercury, cadmium, arsenic, nickel, and aluminum)

3. Chemicals in the home and workplace (formaldehyde, asbestos, solvents, volatile organic chemicals, industrial chemicals, radon)

4. Air pollution (electromagnetic smog, atmospheric particulate and oxidant pollutants)

5. Recreational drugs and stimulants (including excessive alcohol, caffeine, and tobacco)

6. Unnecessary medications

Such anti-nutrients are much more abundant today than at any time in recorded history. Far too many people are awash in toxins in excess of their bodies' ability to neutralize them. We are naturally endowed with robust detoxification systems. Too often they become cumulatively poisoned or are not given the needed nutrients to perform adequately.

By distress burden we mean the health-suppressing physical and emotional reaction that occurs when the stresses of life exceed our capacity to cope and adapt.¹² When stress exceeds individual resilience, distress impairs both mental and physical function through:

1. Biochemical responses (epinephrines [adrenalines] that raise blood pressure, suppress immune defense/repair function, induce fat, and push the body toward an acid-induced quick but unsustainable energy “rush”)

2. Hormones (cortisols that stabilize cells under attack at the price of reduced immune competence)

3. Visceral adrenaline reactions (the “flight or fight” response)

4. When repeated often in daily living, this leads to suppressed immune defense and repair function, high blood pressure and cardiovascular problems, and high risk of autoimmune disease.¹³

¹² For too long, American society has rewarded a frenetic, workaholic, sedentary lifestyle which overvalues work and undervalues quality of life (relaxation, exercise, family and social interaction, and contribution to a larger purpose). Behavioral competence and personal productivity will be enhanced, as a matter of fact, when America reprioritizes in favor of a healthful balance of work, rest, play, and meaningful pursuits. National, visible information and motivation campaigns can help restore Americans to healthier habits. Equal emphasis on teaching the importance of relaxation, enjoyment, and rest would yield great benefits. Schools can incorporate relaxation response training periods in the daily schedule and provide instruction in activities which encourage such lifelong habits. These might include music, dance, art, photography, crafts, nature walks, and reading for fun. Health education counseling and exercise programs should be made available in all places of employment. In both schools and corporations, time management skills can be taught as a way of helping people to achieve balance among work, play, and rest activities. A media campaign can highlight and promote the link between these behaviors and health.

¹³ Americans need incentives and positive role models to be brought home by media campaigns that appreciate the cause and effect link between activity patterns, consumption choices, mind, and health. In fundamental ways, self-image is a family matter so, first and foremost, assistance must be offered to families so that children can be raised with high self-esteem. Beginning in elementary school and continuing through graduate and medical studies, people can be taught the steps to self-esteem as well as how to enhance it in those around them. From parents and teachers, grandparents and surrogate parents alike, children need attentiveness, patience, positive reinforcement, gratitude,

5. Interpreting and applying the Health Equation

The more positive the sum of this equation for health (the higher the enhancement factors and the lower the risk factors), the more we are in the healthy zone and resistant to illness. On the other hand, when our sum falls into the negative zone we become more susceptible to ill health.

Too many Americans live in a state of vulnerability, surprised at how easily they fatigue, “catch anything that’s going around,” and/or have persistent symptoms of ill health that impair basic quality of life.

Our biological age can be substantially less or greater than our chronological age. Over 100 predictive or functional tests of specific organ or system health have been validated in large populations and can be used to develop a quantitative scale of health, including assessments of an individual’s biological or functional age.

Proper assessment of biological age allows for more accurate actuarial risk assessment. Such functional assessments enable earlier detection of health risk—even before disease manifests, at a point when corrective action requires less effort, risk, and expense.

Life decisions based on factors that maximize health and minimize risk become sensible and finely tuned to an individual’s unique profile. True health becomes achievable.¹⁴

inclusion, praise, and rewards for their efforts. School administrations should make these reinforcing behaviors a priority for teachers, administrators, and support personnel. Corporations can create climates supportive of self-esteem, including appropriate administrative styles. Significant learning and work productivity increases will result. Businesses can institute ergonomically healthy work sites (designed to minimize noise, crowding, poor lighting, insufficient ventilation, and exposure to toxins), as well as flex-time, telecommuting, and other approaches to improving the quality of life. Both public and private sector employers should bring vacation allowances up to world standards. The usual two to four weeks, depending on length of employment, now offered in America is vastly less than that given in all other industrialized countries.

Skills for handling stress and negative emotions can be taught, beginning in elementary schools and continuing through life. This includes an appropriate mix of physical and mental exercises. Health counselors in schools and corporations can provide additional support via individual or group therapy. Both in schools and corporations, resources for stress reduction should be provided, ranging from work breaks to recesses to discussion and support groups. In addition, skills to minimize exposure to undue stress can be learned. From home to schools to workplaces, leadership can be exerted to promote healthy choices in regard to workload, pace, and attitude. Education should also teach those in both the public and private sectors that “more [intensity] is not always better.” Quality of work should replace quantity of hours spent as the basis for reward.

Medical care facilities, both public and private, can be environments which reduce stress for those in need of healing—rather than increasing it, as is typically the case today. Senior citizen centers and nursing homes can expand elder care programs like foster grandparents, arts and pet therapy programs, and senior volunteers to provide loving, caring interaction with the elderly and the young—who are so often emotionally abandoned and, quite literally, untouched.

¹⁴ Americans should be taught the negative influence of accumulated body toxins and the sources of those toxins. Farmers, food processors, and the agribusiness industry can play important roles in reducing the average person’s exposure to toxins by reducing the unnecessary use of pesticides, additives, preservatives, growth enhancers, and other artificial agents. Strong but sensible measures are needed to motivate such reductions, including incentives to develop and apply environmentally safe industrial technologies and reduce toxic waste.

Environmental education in schools, from the elementary level through graduate studies, and ongoing consumer education can raise public awareness of toxins’ effects on long-term health and enlist a public-private partnership to

To clarify and concretize this message, let's compare today's disease-reactive approach to a health-based approach for a hypothetical person.

Bill C. complains to his doctor of frequent fatigue and constant sinus problems, with resulting coughing and hoarseness, and dry, itchy skin. He suffers from frequent colds and seems to catch any flu that goes around.

The conventional-approach physician runs standard blood tests and checks for major diseases. Finding nothing diagnosable, his doctor then prescribes antihistamines for the allergy problems and cortisone creams for the dry, itchy skin, and recommends over-the-counter cold remedies as needed.

The health-focused physician questions the patient in depth about his diet, exercise habits, work habits, stress level, and both his and his family's long-term health histories. Appropriate allergy and immunology tests are requested. Based on the findings, the physician recommends:

1. A whole foods diet; supplementation to counter observed nutrient deficits based on the symptoms described.
2. Functional laboratory tests; elimination of any items found to be allergenic.
3. Distress reduction techniques including tools for better adaptation to daily stress and a regular exercise program that integrates smoothly into the patient's lifestyle. The physician also discusses the need for restorative sleep and regular time off each day for relaxation, laughter, joy, and sharing with significant others.

The likely result of the first, disease-reactive approach is that the patient will experience some relief from the sinus problems via the antihistamines, some temporary resolution of the dry, itchy skin via the cortisone creams, and some relief from cold effects via the over-the-counter medications. However, he will continue to suffer recurrent bouts of all of these problems and will need the symptom-suppressing medications on a regular basis. His energy will remain low and the risk of chronic, autoimmune illness will remain high.

The likely result of the second, health-enhancement approach is that the patient will experience true resolution of these problems with no future need of symptomatic suppression. Essential fatty acids along with zinc and its cofactors, combined with improved diet, will likely eliminate the dry, itchy skin.

The sinus problems will likely be resolved when the essential factor deficits that inhibit the tissue healing response (rather than the inappropriate response which leads to allergic reactions and sinus tissue swelling) are eliminated. Allergens present in food or the environment will be eliminated too, to the extent possible, while individual resistance will be enhanced.

evolve healthy, sustainable environments. Finally, education on the negative consequences of personal choices to smoke, indulge in recreational drugs, or drink to excess should be emphasized—including taxes to shift the health cost of these habits to those who choose them. Media participation can be critical to such efforts.

Fatigue is likely to recede when levels of B12 and other nutrients essential to sustained energy levels are restored, and the “fatigue tax” imposed by allergic reactions and toxins is eliminated. The constant susceptibility of the patient to colds and ‘flus’ will most likely be eliminated as the nutrients required for optimal function of the immune defense and repair system are replaced.

Overall, the patient will feel much better, with more energy for daily living and far fewer episodes of illness. His body will be far less susceptible to chronic disease. Finally, his need for healthcare and his contribution to healthcare costs will greatly diminish as his health improves.

In Table 2 below includes comparisons of biological and conventional therapies for nine additional health categories.

Table 2: Comparison of Biological and Current Therapies for Nine Health Categories

Condition	Biological Therapy	Conventional Therapy
1. Prenatal care — Neural tube birth defects	Intensive correction of nutrient deficits such as folate, B12, magnesium, and zinc as early as possible; active counseling.	Prenatal care usually begins after 8-10 weeks’ gestation, with inadequate nutritional and attitudinal counseling.
2. Childhood health ➤ Otitis media ➤ HeadStart	Identify/avoid immunotoxins and teach substitution or avoidance; correct nutritional deficits. Teach self-esteem a la “Mr. Rogers’ Neighborhood” and Waldorf School models; involve volunteer foster grandparents.	Treat infections with antibiotics and implant middle-ear tubes when this fails. Concentrates on academic preparation.
3. Adolescent health	Active health-habits counseling in school and via health professional contacts; reduce trauma and suicide risk.	Annual physical examinations with blood pressure and cholesterol checks are the usual current routine.
4. Nutritional enhancement in hospital patients with Long ALOS not included elsewhere in this table	Screen all patients for malnutrition and intensively correct deficits through specialized nutrition teams; avoid catabolic illness, particularly in elderly and surgical patients; train social workers to look for behavioral problems and refer to intensivists as needed.	Emphasis on symptom suppression or surgical intervention; most nutritional, social, and behavioral deficits overlooked.
5. Heart disease: — Hypertension — Coronary artery disease	Both: Correct metabolic acidosis with alkaline diet; correct EFA, EAA, magnesium, and zinc or other identified deficits; identify and avoid immunotoxins and environmental toxins. Most hypertension, coronary artery/ cardiovascular disease is reversible.	Both: Primary therapy symptom suppression and surgical intervention when this fails.
6. Cancer	Enhance individual immune defenses and natural	Chemotherapy, radiation, and surgery

	killer-cell activity with biological response modifiers; reduce environmental toxins/ immunotoxins; recognize that some tumor overgrowth is metabolically triggered and reversible.	to kill or remove the tumor with minimum damage to patient.
7. Autoimmune diseases: — Arthritis — Adult diabetes	Both: Reset immune defense and repair competence by correcting nutritional, behavioral, and outlook dysfunctions; evoke the human healing response by training and reinforcing healthier habits; emphasize activity/ rest alternation.	Both: Anti-inflammatory medications, steroids, and immunosuppressive drugs; minimal lifestyle and outlook intervention.
8. Gingival/ dental health	Identify causes of inflammation: antioxidant deficits; EFA/ EAA needs; stimulate repair & regrowth of tissue (gingiva, cartilage, bone); active hygienist program to teach brushing & flossing.	Annual examinations and cleaning; recommendation to brush & floss; surgery and restorative crown and bridge work as needed.
9. Mental health	Examine biological, nutritional, & behavioral needs first; psychotropics & psychotherapy 2°.	Psychotropic medication and psychotherapy first and only.

EFA = Essential fatty acids; EAA = Essential and conditionally essential aminoacids

One of the conclusions of this report is that the fatal flaw in our current disease-treatment system lies not in its wrapping, not in the mechanisms of its administration, politics, procedures, and finance, but rather in the very philosophical underpinnings that narrow it’s perspective. Our healthcare incentives, strategies, research, clinical practice, evaluation mechanisms, and technology priorities are too mechanistic to the exclusion of the subtle, experiential, and contextual. It is not that “the emperor has no clothes” but rather that “the clothes [of disease-treatment operation, management, and finance] have no emperor [an archetype of high-level health].” Health, fundamentally, is not a national priority.

6. How true healthcare can halve costs while improving outcomes

Choosing health means:

“ . . . viewing a person and his/her wellness from every possible perspective, taking into account every available concept and skill for the person’s growth toward harmony and balance. It means treating the person, not the disease. It means using mild, natural methods whenever possible. For the person, it means engaging in a healthier lifestyle to enjoy a higher level of wellness. The holistic approach promotes the interrelationship and unity of body, mind, and spirit. It encourages healthy, enjoyable activity on all these levels of existence. A holistic approach differs from simply following an “alternative” therapy. It is not an alternative to conventional medical practice. Rather, it includes judicious use of the best of modern Western medicine combined with the best health practices from East and West, old and new.” Halbert L. Dunn, *High Level Wellness*, 1961

Not giving health an adequate chance means:

“ . . . seeing America, with all its great strength and beauty and freedom. . . gradually subside into decay through default and be defeated, not by the Communist movement,

demonstrably a bankrupt system, but from within by weariness, boredom, cynicism, greed and, in the end, helplessness before its great problems.” Walter Percy, *The Wall Street Journal*, 3/15/93, p. A12

How do we blend and apply our dramatic advances and exploding knowledge in acute and symptom-driven care with the applicable classic wisdom and new integral therapies, in the areas of chronic illness, disease avoidance, and health promotion?

Essentially, we recommend applying E.O. Wilson’s concept of consilience—the appropriate, synergistic blending of multiple approaches, creating outcomes that could not have been achieved by any of them individually—to health and medical care. As we move from our disease-reactive to a health-proactive stance, we can incentivize scientists, medical experts, health practitioners, patients, and organizations to be inclusive and to share their results, together building a comprehensive body of best practices. Shoulder-to-shoulder, we will establish the organizational and knowledge foundation needed to move forward. We will refine the definitions of “health” and “healthcare” as we learn to consistently apply and universally promote the message of sustainable, attainable health.

As our model shows, costs will drop and outcomes will improve. The disease-treatment system is measured primarily by demand and consumption. As Edmund D. Kelly, group president of Aetna Insurance, has said, “The problem with our medical financing system is that most doctors get paid for doing things to people, not for keeping them healthy.” The healthcare system will be measured by risk and reward; efficiency and quality; consilience and evidence-based results.

If the entire health approach recommended here were implemented this year, the savings would exceed \$575 billion out of our \$1,600 billion year 2000 expected expenditure. Thus, development of the new system can be funded 100% from unincurred disease-treatment costs.

Let’s look at just three hypothetical examples of these savings. Our \$158 billion budget for Medicare/Medicaid is an example of money largely not well spent. The system is based on triage. This means putting bandage after bandage on recurring signs, symptoms, and sufferings rather than addressing underlying causes. A health-based system would redirect funds and strategies toward preventing and reversing the underlying causes of costly chronic and recurrent illness. For example, we now provide constant funding for emergency room or hospital visits for a child or elder who has no primary physician. Building a relationship with a primary care resource—a physician, nurse practitioner, or physician’s assistant—could lead to identifying and treating overlooked, reversible risk factors such as malnutrition, stressful family encounters, and environmental toxins.

Medicare beneficiaries devoted a much greater portion of their resources to disease-treatment in 1991 than in 1961, before Medicare began. Using 1991 dollars for comparison, Families USA reports that in 1961 10.6% of an elder’s out-of-pocket expenditures were devoted to medical care, while in 1991 17.8% was so devoted. Average personal expenditures for disease-treatment increased from \$1,589 in 1961 to \$3,305 in 1991, again using constant dollars for comparison.

Table 3 (below) provides the details of escalating health expenditures for Medicare recipient beneficiaries.

Table 3: Expenditures, 1961-1991, for Medicare Beneficiaries (constant 1991 dollars)

	1961	1972	1991	% change 1961-1991
Total \$1991 in constant dollars	\$1,589	\$1,854	\$3,305	108%
Direct	\$1,285	\$1,331	\$2,332	81%
Hospital	228	171	90	
Physician	316	184	408	
Nursing Home	287	582	1,194	
Other	454	390	640	
Insurance Premiums	304	523	973	200%
Private Insurance	304	309	653	
Medicare Premiums	0	214	320	

Source: A. Foster Higgins

Demonstration projects showcasing foster grandparent, elder co-care, recreational therapy, and life quality initiatives, staged by Morton Leeds at HUD in the 1970s, showed that each dollar spent returned \$2-10 in reduced disease-treatment expenditures over the next two years. It is time to return these programs to center stage in the 21st century.

Hospital costs are a second opportunity overlooked. Too many of our resources are devoted to too few patients with treatable but usually ignored nutritional and/or outlook problems. The most basic measure of nutritional competence is protein-energy malnutrition (PEM). While 25-55% of all hospitalized patients show clear evidence of PEM, only about 1 in 10 of these patients are properly diagnosed and treated for their underlying disorder. Similar prevalence and lack of treatment have been reported for hopeless and helpless feelings among patients. This unfortunate situation derives from the medical community's woeful lack of training in nutrition, individual metabolic needs, and attitudinal states. The average length of stay (ALOS) for patients with PEM is twice as long as for nutritionally competent patients. By conservative calculations, these oversights add 40% to the hospital costs of such patients. (Berg RL, Cassells JS. The Second 50 years, Promoting health and preventing disability, IOM/NAS, Washington, 1992; Sullivan S, Lewin ME. The Economics and ethics of long-term care and disability. Lanham, MD: University Press of America, 1988.)

If we assume benefits for only the one third (33%) of hospital patients who incur more than 50% of all expenses, based on our \$309 billion hospital bill for 1992, we could save \$41.2 billion annually just by providing minimal nutritional and attitudinal care for these neediest patients. ("Superior nutritional care cuts hospital costs," NCMI, 1988.)

A final significant source of savings: taxes on health-reducing behavior. Economic incentives can be created to encourage universal access to healthy choices. Heavy industrial fines and corporate/ personal sin taxes can be made an immediate consequence of negative

health choices, while tax credits and insurance premium reductions can be the reward for positive health choices. Thus, while we encourage community rating to reduce health insurance cost disparities, we similarly recommend taxation to recoup the disease-treatment costs of lifestyle choices by those who smoke, drink, or engage in other health-threatening behaviors.

To summarize, the major opportunity for cost reductions derives from providing comprehensive, quality healthcare that draws from the spectrum of modalities—physiology and pathology, biology and pharmacology, psychology and sociology, and health enhancement and disease-care triage. In Table 4 (below) we provide specific examples of cost-saving opportunities for nine health categories. As this table makes clear, the cost savings of expanding from disease-care to healthcare are so great that this incentive alone should be enough to inspire and sustain the effort.

Further savings derive from both costs reduced and costs not incurred, based on treating the causes rather than the consequences of ill health. These savings we estimate at over \$200 billion in 1992 (again, see Table 4). Additional savings can come from reducing the adverse effects of medication, procedures, institutions, and technologies. Indeed, medical technology, personnel, procedures, and products have become an increasingly egregious source of disease and disability. This is due both to inherent dangers in the advanced diagnostic and therapeutic tools and to their misuse and misapplication by disease-care professionals, workers, and institutions. Estimates of iatrogenic (doctor-caused) disease range from 15-32% of all disease-treatment dollar expenditures (\$1,228.5 billion in 1999) based on studies by Rand Corporation, Allstate Insurance, CBO, and the AMA.

Savings are not the most important reason for expanding from disease-treatment to integral healthcare, of course: health is. Significant outcomes from applying the health-based approach have already been achieved and reported in the medical literature. The evidence is sufficiently powerful to warrant careful review and implementation of innovative and outcome-effective approaches in many aspects of medicine. In our view and that of many others, it is a national tragedy that we have not tested and implemented more widely the principles central to this health approach, the most basic of which are “an ounce of prevention is worth a pound of cure” and “first of all, do no harm.” A health-based system, preventing disease and applying early, low-risk interventions, will be less dependent on high-tech, high-risk interventions and therapies and, as a consequence, less susceptible to iatrogenic costs and suffering. High-technology therapies will be reserved for the situations where they produce the best outcomes.

Table 4: Cost-saving Estimates for Nine Health Categories

Condition/ Category	Integral Therapy (IT)	Common Therapy (CT)	People in millions (annual)	IT, total cost	CT, total cost	Possible savings
1. Postnatal care for gestational complications: neural tube birth defects, NICU	\$750	\$90,000	0.6	\$0.5	\$51 Bn	\$50 Bn
2. Childhood health:						
— Otitis media	\$340	\$1,100	1.2	\$ 0.4 Bn	\$1.3 Bn	\$ 0.9 Bn
— HeadStart ^a	\$75	\$300	17	\$1.3 Bn	\$5.2 Bn	\$ 3.9 Bn
3. Nutritional enhancement in hospital patients with long ALOS not elsewhere in this table	\$9,000	\$32,000	1	\$9 Bn	\$32 Bn	\$23 Bn
4. Heart disease:			[50% treated]			
— Hypertension	\$450	\$900	30	\$13.5 Bn	\$27 Bn	\$13.5 Bn
— Coronary artery disease	\$2,250	\$29,000	0.2	\$4.5 Bn	\$ 58 Bn	\$53.5 Bn
5. Autoimmune diseases:						
— Arthritis	\$750	\$3,000	2	\$1.5 Bn	\$6 Bn	\$ 4.5 Bn
— Adult diabetes	\$1,000	\$7,750	4	\$4.1 Bn	\$32 Bn	\$28 Bn
6. Gingival/ dental health	\$450	\$4,800	9	\$3.9 Bn	\$44 Bn	\$40 Bn
7. Mental health	10-50% lower	Various	10	TBD	TBD	TBD
8. Adolescent health	10-40% lower	Various	30	TBD	TBD	TBD
9. Cancer	15-40% lower	Various	10	TBD	TBD	TBD
Annual Total			\$115 Bn	\$39.2 Bn	\$256 Bn	>\$217 Bn
Decade of healthcare average savings			\$125 Bn (average)	\$450 Bn	>\$3,000 Bn	>\$2,500 Bn¹⁵

^a (2) Each dollar spent on HeadStart reduced disease-treatment costs by \$2.50-6 over the next 3 years

Sources:

(1,8) Committee for Economic Development; Manpower Demonstration Research Corp.; HCFA; Foresight

(2,6,7,9) Beasley JD and Swift JJ, *The Kellogg Report: The impact of nutrition, environment, and lifestyle in the health of Americans* (Institute of Health Policy and Practice, Bard College Center, 1989).

(2,4,7,9) *The Surgeon General's Report on Nutrition and Health* (DHHS: Pub. No. 88-50210, 1988).

(3) Smith, A and Smith, P, *Superior nutritional care cuts hospital costs*, (NCMI: Chicago, 1988); Weir EC, *Human nutrition benefits from nutrition research*, (USDA: Washington DC, 1971); Holbrook TL, Barrett-Connor E, Wingard DL. Dietary calcium and risk of hip fracture: 14 year retrospective study, *Lancet* 2:1046-1049 (1988).

(4) Enstrom JE, Kanim LE, Klein MA. Vitamin C intake and mortality among a sample of the US population, *Epidemiology* 3:194-202 (1992).

¹⁵ Exclusive of the cost of money which, over a decade, would typically add an additional 50%.

Part three. Attaining consilience

Part three addresses the sixth topic for this report: the opportunity and choices for consilient, integral health and better healthcare value

7. Where the people lead, the leaders will likely follow

Expanding from disease-treatment to healthcare calls for a public-private partnership to realign policies, practices, and incentives with healthy choices. Furthermore, our public health policies, health professional curricula, and practices need to live and breathe this new lifestyle.

Citizens appear to be far ahead of most practitioners and policymakers in seeking innovative, health-promoting care. Dr. David Eisenberg has reported that in 1990 over half of all Americans sought care from non-physician sources. (NEJM 328:246-252, 1993.) The numbers for alternative therapy use in 1997 show the trend is still growing: the percentage of the U.S. population who use alternative care increased from 33.8% (60 million people) to 42.1% (83 million people). The probability that a loyal user of alternative care would see an alternative practitioner increased from 36.3% (22 million people) to 46.3% (39 million people). The increase in annual visits to alternative practitioners grew from 427 million to 629 million—nearly double the number of visits to all primary care physicians (386 million in 1997). (Eisenberg DM, Davis RB, Ettner SL, Appel S, Wilkey S, Rompay MV, Kessler RC. Trends in alternative medicine use in the United States, 1990-1997. JAMA 1998; 280: 1569-1575.)

Thus, a consumer-driven healthcare model is emerging in fits and starts, pushed by a population that intuitively feels its literally vital need for preventive care. But many Americans remain confused, caught between the conflicting messages put forth by conventional practitioners and their own experiences. According to multiple national opinion surveys over the last two decades, health consumers are increasingly distrustful of their doctors.

To paraphrase Gandhi: Where the people lead, the leaders must follow. Disease-treatment professionals (physicians, nurses, physician assistants, dietitians, nutritionists, psychologists, social workers, physical therapists), educators (from preschool to graduate and medical school), government regulators and administrators, public servants, insurance and business leaders, farmers, journalists, and advertising and media leaders must be educated and motivated to join their constituents. Once they do, their training and expertise will position them to lead the transition to a healthy America.

A policy for national health should cover five critical areas taught as early as possible and reinforced through a lifetime:

- 1. nutrition,**
- 2. living skills,**
- 3. outlook,**
- 4. enhanced competence to handle the toxic burden, and,**
- 5. reduced distress (adaptive skills to deal with distress).**

To implement this health-focused approach requires constructing a medical system which lives, breathes, and inspires health promotion and disease avoidance. It will require making healthy choices a national priority. This means giving priority to:

Proactive, prevention-oriented medicine

Healthcare professionals and consumers educated in the art and science of health promotion and healthful living

Research and clinical practices that identify and eliminate the susceptibilities to disease

Early application of therapies that pose minimal risk at low cost

Treatment and payment based on carefully designed outcome studies; this should include fully informed consent by patients regarding all relevant opportunities and risks

Transformed practices in the conduct of American agriculture, business, industry, advertising, and education which lead to production and consumption of healthy products from farm to table

8. Conclusion: If not now, when?

We are living in a time of extraordinary complexity. The consilience of formerly separate disciplines has created an explosion of new knowledge, broadening and deepening every medical and biological field far beyond its traditional mandate. All of our basic assumptions about science, health, and medicine are being thrown open to question. So far, we have lacked any common vision to replace them.

Our thesis in this paper is that the vision of integral or consilient healthcare is the best one to lead America to a sustainable health and medical system. Further, the Health Equation introduced herein provides clear guideposts toward this vision.

Sooner or later, the expansion from disease-treatment to healthcare must occur if America is to remain strong and competitive. A model of integral healthcare is already struggling to take root—one that its users and practitioners have found to provide more effective, actionable insights and treatments and better outcomes than conventional medicine is capable of. Now it is incumbent upon our health policymakers and practitioners to consciously choose the healthcare model and start working cooperatively towards its arrival.

This proposal is a modest introduction to the transformed processes and practices that can turn the tide toward a sustainable American healthcare system. Remember that if we begin today, over just the next three decades a health approach could reduce the proportion of GDP devoted to disease-treatment to a fraction of its current level. In numerical terms, the 13.9% of GDP spent on disease-treatment in 1999 could be reduced to a sustainable 9.5% by 2028.

As our model makes clear, the fundamental change to a true health-based system is achievable, and will make healthcare effective, accessible, and affordable.

Bibliography and Appendices

Appendix 1. Background Sources and Documentation

- 1. Dubos R. Mirage of Health, NY: Harper and Brothers, 1959.**
- 2. Williams R. Your beautiful world within, Wichita, KS: Biocommunications Press, 1960, (reprinted) 1986.**
- 3. Dunn H. High Level Wellness, Washington, DC: R W Beatty, 1961.**
- 4. Mason JO. Healthy people 2000. National health promotion and disease prevention objectives. Washington, DC: DHHS PHS, GPO Publication No. 017-001-00474-0, 1990.**
- 5. Richmond JB. Healthy people. The Surgeon General's report on health promotion and disease prevention, Washington, DC: USDHHS/PHS, GPO, 1979.**
- 6. McGinnis M. Promoting health, Preventing disease: Objectives for the nation. Washington, DC: DHHS, GPO, 1980.**
- 7. Beasley JD, Swift JJ. The Kellogg report: The impact of nutrition, environment & life-style in the health of Americans. Annandale-on-Hudson, NY: IHPP/Bard College Center, 1989.**
- 8. Sullivan S, Lewin ME. The Economics and ethics of long-term care and disability. Lanham, MD: University Press of America, 1988.**
- 9. Caplan AL, Engelhardt TH, McCartney JJ. Concepts of health and disease: Interdisciplinary perspectives. Reading, MA: Addison-Wesley, 1981.**
- 10. Kass L. Toward a more natural kind of science. NY: MacMillan, 1985.**
- 11. Berg RL, Cassells JS. The Second 50 years, Promoting health and preventing disability, IOM/NAS, Washington, 1992**
- 12. Chen J, Campbell TC, Li J, Peto, R. Diet, Life-style and mortality in China NY: Cornell Univ Press, 1990.**
- 13. The Surgeon General's report on nutrition and health, Washington, DC: DHHS GPO publication No. 8850210, 1988.**
- 14. Chapman-Walsh D, Egdahl R. Payer, provider, consumer: Industry confronts healthcare costs. Boston, MA: Springer-Verlag, 1984.**
- 15. Starr, P. The social transformation of American medicine. Chicago: Basic books, 1982.**
- 16. Starr P. The logic of healthcare reform. Knoxville, TN: Grand Rounds Press, 1992.**

17. Aaron, H. **Serious and unstable condition: Financing America's healthcare.** Brookings Institution, Washington DC, 1991.
18. Fein R. **Medical care, medical costs: The search for a health insurance policy.** Harvard Univ Press, Cambridge, MA, 1986.
19. Holahan J, Moon M, Welch WP, Zuckerman S. **System reform.** Urban Institute Press, Washington, DC, 1991.
20. Menzel P. **Medical costs, Moral Choices.** New Haven, CT: Yale University Press, 1983.
21. Jaco E (Ed). **Patients, Physicians and Illness.** NY: Free Press, 1958.
22. Payor L. **Medicine and culture.** NY: Henry Holt, 1988.
23. Selye H. **Stress without distress,** NY: Harper and Row, 1974.
24. Hamburg DA, Elliott GR, Parron DL (Eds). **Health and Behavior.** Washington, DC: National Academy Press, 1982.
25. Rees A (Ed.) **Measurement and interpretation of productivity,** Washington, DC: National Research Council, 1979.
26. Miller S, Remen N, Barbour A (et al.) **Dimensions of humanistic medicine,** San Francisco, CA: Institute for the study of humanistic medicine, 1975.
27. Hilfiker, D. **Healing the wounds.** NY: Pantheon Books, 1985.
28. Lynch JJ. **The broken heart. The medical consequences of loneliness,** Chicago: Basic books, 1977.
29. Mumford E. **Interns from students to physicians,** Cambridge, MA: Harvard University Press, 1970.
30. Freese AS. **Managing your doctor.** NY: Stein and Day, 1975.
31. Guinther J. **The malpractitioners.** NY: Doubleday, 1978.
32. Scott CD, Hawk J. (eds.) **Heal thyself: The health of health-care professionals.** NY: Brunner-Mazel, 1986.
33. Lander L. **Defective medicine.** NY: Farrar, Straus, Giroux, 1978.
34. Illich I. **Medical nemesis.** NY: Pantheon, 1976.
35. Mendelsohn RS. **Confessions of a medical heretic.** Chicago: Basic Books, 1979.
36. Carver C. **Patient beware.** Scarborough, Ontario: Prentice-Hall Canada, Inc. 1984.

37. Rabinowitz PM. Talking medicine. NY: New American Library, 1983.
38. Sidel VW, Sidel R. (eds) Reforming medicine. NY: Pantheon, 1984.
39. Robertson WO, Medical malpractice: A preventive approach. Seattle: Univ of Wash Press, 1985.
40. Kramer C. The negligent doctor. NY: Crown, 1968.
41. Schneider RG. When to say no to surgery. Englewood Cliffs, NJ: Prentice-Hall, 1982.
42. Weitz M. Health Shock, Englewood Cliffs, NJ: Prentice-Hall, 1982.
43. Bennett JV, Brachman PS. Hospital infections. Boston: Little, Brown and Co., 1979.
44. Gross SJ. Of foxes and hen houses. Westport, CT: Quorum Books, 1984.
45. Bok S. Lying: moral choice in public and private life. NY: Pantheon, 1978.
46. Mullan F. Vital signs. NY: Farrar, Straus & Giroux, 1983.
47. Inlander CB, Levin LS, Weiner E. Medicine on trial. NY: Pantheon, 1988.
48. Tate DA. Health, hope and healing. NY: M. Evans, 1989.
49. Califano JA, Jr. America's healthcare revolution. Simon and Schuster, 1986.
50. Schwartz WB, Aaron H. The painful prescription. Brookings Institution, 1984.
51. Maxwell R. Health and wealth. Lexington Books, 1984.
52. White K. The task of medicine. Henry J. Kaiser Family Foundation, 1988.
53. Payer L. Medicine and Culture. Henry Holt and Company, 1988.
54. Somers AR, Kleinman L, Clark WD. Preventive health services for the elderly: The Rutgers Medical School project. inquiry, 1982; 19: 190-198.
55. Fries JF, Green LW, Levine S. health promotion and the compression of morbidity. Lancet: 1989; 1 (8636): 481-483.
56. Hogress JR (Ed). Healthcare for an aging society. NY: Churchill Livingstone, 1989.
57. Schauss A. Eating for A's. Biosocial Press, 1991.
58. Anderson WT. Reality isn't what it used to be, 1988.
59. Rawls J. A theory of justice. Oxford, England: Oxford Univ Press, 1989.

60. Daniels N. *Just healthcare*. Cambridge, England: Cambridge Univ Press, 1985.
61. Price W, Pottinger F. *Nutrition and physical degeneration*. LaHabre, CA. Price-Pottinger Foundation, 1939.
62. Callahan D. *Setting limits*. NY: Simon & Shuster, 1987.
63. Fuchs V. Learning to say “no.” *N Engl J Med* 1984; 311: 1569-1573.
64. Blank RH. *Rationing medicine*. NY: Columbia Univ Press, 1988.
65. Pauker SG, Kassirer JP. Decision analysis. *N Engl J Med* 1987; 316:250-258.
66. Mosteller F. Implications of measures of quality of life for policy development. *J Chronic Dis*. 1987; 40:645-650.
67. Torrance GW, Thomas WH, Sackett DL. A utility maximization model for evaluation of healthcare programs. *Health Serv Rev* 1972; 7:118-133.
68. Hadron DC. The Oregon priority-setting exercise: quality of life and public policy. *Hasting Cent Rep*. 1991; 266: 2439-2445.
69. Kaplan RM, Bush JW, Berry CC. The reliability, stability, and generalizability of a health status index. In: American Statistical Association. *Proceedings of the Social Status Section*, 1978. Alexandria, VA: American Statistical Association, 1978: 704-709.
70. Rokeach M. *The nature of human values*. NY: The free press, 1973.
71. Merrilees MA, Scott PJ, Norris RR. Prognosis after myocardial infarction: results of 15 year follow-up. *BMJ*. 1984; 288: 356-359.
72. Wasson JH, Sox HC, Neff RK, Goldman L. Clinical prediction rules: applications and methodological standards. *N Engl J Med*. 1985; 313: 793-799.
73. Hadron DC. Discrimination in healthcare priority setting, *J Am Med Assn*. 1992; 268:1454-1459.
74. Thomas L. *Medusa and the snail*, NY: WW Norton, 1979.
75. Gould SJ. *Hens’ teeth and horses’ toes. Further reflections in natural history*, NY: WW Norton, 1984.
76. Shorter E. *Bedside manners. The troubled history of doctors and patients*, NY: Simon and Schuster, 1985.
77. Pellegrino E. *Humanism and the physician*. Knoxville, TN: Univ Tenn Press, 1981.
78. Weil A. *Health and healing*, Boston, MA: Houghton Mifflin, 1983.

79. Breslow L. How to get the best healthcare for your money. The family guide to new choices in healthcare, Emmaus, PA: Rodale Press, 1979.

80. Lederberg J, Shope RE, Oaks SC. Emerging infections. Microbial threats to the health in the United States. Washington, DC: Natl Acad Press, 1992.

81. Drake D, Uhlman M. Making medicine, making money. Kansas City, Mo. Andrews & McNeel. 1993.

Appendix 2. Health Facts

- 1. Health is the most important asset of an individual, community, or society.**
- 2. There is more to health than the absence of disease.**
- 3. Health evokes human qualities such as compassion, empathy, and tolerance.**
- 4. Health grows from nutritional and behavioral competence when distress, toxins, and immunotoxins are minimized.**
- 5. Health can never be long falsified.**
- 6. Risk reduction is more humane and clinically effective, and less expensive, than fighting the signs and symptoms of ill health.**
- 7. Rejoice in each others' health.**
- 8. Treat other people's health as you would have them treat your health.**
- 9. Health is a basic human need.**
- 10. Health is living in harmony with our nature and life purpose.**

Therefore, Let us now, this day, choose health.

Appendix 3. Ten Ways to Promote Your Health and Prolong Your Life

1 Breath deeply of smoke-free air.

Babies and healthy, long-lived people breathe deeply, each breath filling from deep in their diaphragm to the tops of their lungs. Lungs are hard to replace. Actively avoid poisons and particles from smoke and other air pollutants. Most of us breathe too little and too often. Yet we can relearn healthier breathing patterns with only a few minutes' practice each day.

2 Eat whole, uncontaminated foods in moderate amounts.

We are largely what we eat. Whole, fully nutrient, uncontaminated food, direct from the sea or the garden to your table is the healthiest. Nutrient dense foods, from deep sea fish to biodynamic cereals; from seeds to sprouts; from vegetable juices to fruit-nut shakes; from spices to fermented foods help rebuild and repair us daily so that we can remain vigorously healthy through a century or more or restore health from most chronic ills.

3 Know yourself and live harmoniously with yourself.

We each have a nature—laid back, activist, or methodical, for example. We should reflect on ourselves until we know ourselves well, then focus on living well a life that conforms to our nature. Are we morning birds or night owls? Perky or droll? Vigorous or contemplative?

4 Exercise regularly and moderately.

Our bodies are made to move. In addition to stretching and limbering, movement causes life-sustaining electricity to flow. Remarkably, when we press or stretch our body, the connective tissue structure discharges electricity. Acupuncture may work through these pathways. We need to exercise for at least 30 minutes each day. People often that report vigorous exercise improves their concentration and problem solving ability and elevates their mood. Try rhythmic exercise like Acupressure, Hatha yoga, Tai Chi, Aikido or breath-coordinated walking.

5 Take antioxidants.

We breathe contaminated air and our water and food often lacks sufficient essential factors to help us keep up with life's demands. Intelligent supplementation with balanced, pure supplements (like vitamins A, B, C, D3, E, selenium, carotenes, flavonoids, and coenzyme Q10) that act like concentrated foods is the least expensive health insurance we can buy to overcome the "pollution tax" of modern society.

6 Laugh heartily each day.

"Laugh and the world laughs with you; weep and you weep alone" is all too true for most of us. And when we remember to not sweat the small stuff—that it's all small stuff and that we can't do much about the big stuff anyway—it is easier to laugh heartily, easily, and often.

7 Practice relaxation and active meditation.

The learned arts of relaxation and mental focusing are essential to a well focused and composed life.

As a 105-year-old, vigorously healthy friend of ours said, “The first 35 years of my life, I practiced the abuse of life; since then, I have been learning the practical use of life. Which do you practice?”

8 Appreciate your and others’ successes; Forgive your and others’ failures...you deserve both.

Most of us do the best we can under the circumstances until we know better. Today’s problem or danger can be tomorrow’s opportunity when we have the hopefulness, resilience, and endurance to take advantage of our challenges.

9 Stay cool...in body and mind.

Lower room temperatures are more healthful and reduce volatile organic chemicals/particulates in the air you breathe and in contact with your skin (60-65°F is best, in general). Practicing a cool, aware presence is equally helpful for the mind.

10 Be a little more well each day...step by step, the path to health is our rightful choice.

© HSC, 1993

Appendix 4. Ten ways to enhance your quality of life

- 1. Love what you do. When possible, do what you love. Otherwise, love what you do.**
- 2. Give and receive three heartfelt, spontaneous hugs a day.**
- 3. Watch a child, an animal, a plant, or an insect for at least a few minutes each day while breathing deeply and quietly.**
- 4. Know that this, too, shall pass.**
- 5. Be for yourself and for others.**
- 6. Now is the time. What is the best use of this “now”?**
- 7. Alternate periods of rest and activity.**
- 8. Adapt to the challenges, distresses, and toxins of our world with distress and toxin “tax relief.” Have an active reverence and supplementation anti-toxin program for which you make time daily.**
- 9. Consume, assimilate, and eliminate in harmony with your nature.**
- 10. Step out of routine and into sacred time on a regular basis.**

While we immerse ourselves in the material world, our life exists in the web of enfolded time. Like much that is subtle and fundamental, we can miss this life enrichment and life renewal if the pace and cadence of the way we live keeps us anchored in trivia and distractions. This is about being rather than doing; about essence rather than substance.