About the Author

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The Health Care Cost Crisis and the Role of Prevention: New Approaches Utilizing the Transcendental Meditation Program

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Abstract

During the past two decades, the United States has become increasingly concerned with reducing medical care expenditures while continuing to improve the health of Americans. However, medical costs have continued to rise rapidly, despite efforts to contain them. Unlike the treatment-based strategies for health care that are currently in wide use, prevention-oriented approaches offer great unrealized potential to directly improve the health of U.S. citizens and thereby to reduce medical utilization and its attendant costs. At present, however, there is little research to validate the cost effectiveness of such prevention programs.

This paper reviews the cost effectiveness of the current U.S. health care system as compared with those of other nations, especially Canada, and examines the potential of effective prevention programs for alleviating the health care cost crisis. A strategy is suggested to lower medical care utilization and expenditures by directing effective health-promotion and disease-preventive interventions toward the highest-cost patients—that fraction of the population that consistently incurs the majority of all medical expenses. The scientifically validated Transcendental Meditation program is proposed as an effective preventive intervention to accomplish this strategy, and pertinent health-related research on the Transcendental Meditation program is reviewed. Future research possibilities are also suggested in order to enhance and expand national preventive care and thereby to further reduce high medical expenditures in the U.S.
Introduction

Despite numerous attempts by many governments to contain accelerating costs in the health care field during the past two decades, medical expenditures have continued to grow rapidly as a percentage of gross national product (GNP) throughout the world. This escalation diverts resources from other important national and international goals, such as job creation, housing, education, economic development, and the environment. In recent years, the medical expenditure crisis in the United States has created growing alarm about the efficiency and equity of the U.S. medical system. Jencks and Schieber (1991) summarize the problem:

Although U.S. health care costs have been in a proclaimed crisis for 10 to 20 years, we have made strikingly little progress in containing the growth of these costs. Neither the "regulatory" policies of the 1970s nor the "competitive" policies of the 1980s have slowed the growth of health care spending. (p.1)

Although medical expenses are higher in the U.S. than in any other country, the cost crisis is not limited to one nation; it is a worldwide problem. Moreover, the medical expenditure challenge is noncyclical; it continues to grow worse with time. Consequently, new and innovative interventions in the health care field will be required to slow this growth and, ultimately, to decrease medical spending.

Present cost-containment efforts focus mainly on attempting to improve the financing, delivery, and administration of the medical system. This type of improvement so far has had limited results (Jencks & Schieber, 1991). Medical spending is still escalating, yet many measures of health are not improving; indeed, some are declining. For example, the cancer rate is increasing in most developed nations in spite of significant funding for medical treatment and research. Such data suggest that current cost-containment strategies will inevitably fail in the long term if they do not address the underlying causes of the health care problem (Schwartz, 1987). Policy makers can no longer rely solely on administrative, financial, or treatment-oriented strategies to reduce medical expenses. New strategies are needed to prevent disease and enhance health, and thereby to reduce medical payments.

Most traditional preventive interventions, such as pure water and food, hygiene, and vaccination, have been fully exploited in the developed countries. Hence, further investment in these types of prevention is unlikely to yield significant improvements in national health and reductions in medical expenses. Other preventive approaches, however, offer great unrealized possibilities. These include lifestyle change, stress reduction, and environmental improvement. The U.S. Department of Health and Human Services (1990b) conducted an exhaustive analysis of the research on the benefits of prevention and concluded:

Recent evidence confirms that better control of fewer than 10 health risk factors—for example, poor diet, infrequent exercise, use of tobacco and drugs, and abuse of alcohol—could prevent between 40 and 70 percent of all premature deaths, a third of all cases of acute disability, and two-thirds of all cases of chronic disability (p. v).
These figures represent a large potential cost savings and a significant reduction of suffering. They suggest that the underlying cause of high medical utilization and hence expenditures is poor health. Yet research consistently shows that most disease is preventable through known methodologies (Friend, 1992; Breslow, 1990). If the implementation of such methodologies led to better public health, then medical financing, administration, technology, and delivery issues would become less important.

A renewed focus on prevention thus seems essential in order to alleviate both the health care cost crisis and unnecessary human suffering. However, many prevention interventions have been found to be expensive (Russell, 1986). Therefore, it is also essential to find cost-effective methods of health promotion and disease prevention.

The Transcendental Meditation Program: An Overview

Several lines of research indicate that one recently introduced method, the Transcendental Meditation (TM) program, can be particularly effective in reducing health care costs through effective disease prevention and health promotion. Moreover, existing data on this technique indicate that it is particularly effective in reducing health care costs among high health-care utilizers, the 10% of the population responsible for over 75% of national health care expenditures (Garfinkel et al., 1988).

The Transcendental Meditation technique is the primary intervention of a comprehensive system of health care known as Maharishi Ayur-Veda, which includes 20 distinct approaches to health promotion and disease prevention. This system is the authentic record of the ancient natural medical system of India. During the past decade, Maharishi Mahesh Yogi, founder of the Transcendental Meditation program, has initiated and collaborated on extensive research to bring to light the principles and practices of this ancient system of health.

Transcendental Meditation is a simple, effortless procedure, normally practiced for 15–20 minutes in the morning and evening sitting comfortably with eyes closed. The technique can be learned by anyone, independent of their educational, religious, or cultural background.

Twenty years of scientific research have shown that the Transcendental Meditation program is highly effective in alleviating many stress-related diseases and lowering the associated high rates of health care utilization and costs. These studies, several of which will be described below, have shown Transcendental Meditation to be a practical preventive program in a wide variety of populations, including inner-city African American and elderly groups.

Over 500 scientific research studies examining the effects of Transcendental Meditation on mental, physical, and social health have been conducted to date (see Orme-Johnson and Farrow, 1976; Chalmers et al., 1989; and Wallace et al., in press). Published meta-analyses—the most rigorously objective method of reviewing scientific literature—have found that the Transcendental Meditation technique produces:

1. a psychophysiological unique state of restful alertness that is different from simply resting with the eyes closed (Dillbeck and Orme-Johnson, 1987);

2. greater reductions in anxiety than other meditation, relaxation, and stress management techniques (Eppley et al., 1989);
3. greater improvements in positive mental health (self-actualization) compared to other techniques (Alexander et al., 1991).

The research further indicates that regular practice of this technique restores balance in the mind and body and provides the basis for accumulated health benefits.

Numerous published studies have documented that the Transcendental Meditation program prevents and reduces such major health problems as cardiovascular disease, substance abuse, mental disorders, and cancer. In addition, there is strong evidence for slowing or reversal of the aging process and enhancing human performance in many areas. These disease prevention and health promotion effects have resulted in 50% or greater reductions in health care utilization and health costs in several populations.

In this paper, we present an analysis showing how a relatively small investment to train high-cost health care patients in the Transcendental Meditation technique would result in a surprisingly large reduction in national health care expenditures. We first review the escalation of medical expenditures in the U.S. and compare the U.S. medical system with those of other countries, notably Canada. Then we discuss the high-cost case phenomenon and the potential application of the Transcendental Meditation program as an effective intervention for this segment of the population. We also summarize the pertinent research studies concerning the impact of the Transcendental Meditation program on health. Next we present a cost-benefit analysis of potential health care savings through the Transcendental Meditation program, using the Washington, D.C. Medicaid program as an example. We conclude with suggestions for future research aimed at improving the health care cost crisis in the U.S.

The International Health Care Cost Crisis

Medical Expenditure Escalation in the U.S.

The U.S. has the highest absolute medical expenditures and highest per capita medical expenditures of any nation. The U.S. also has the fastest growing percentage of GNP devoted to the health sector (Schieber, Poullier, & Greenwald, 1992). The rate of medical expenditure growth has accelerated in the last two decades. Jencks and Schieber (1991) elaborate: “Since 1970, U.S. health care expenditures have grown at an annual rate of 11.6 percent, 2.9 percentage points faster than our gross national product (GNP)” (p.1). According to the Health Care Financing Administration, the U.S. spent approximately 13% of its GNP on medical care in 1991 and 13.5% in 1992. These expenditures could rise to 18%-20% of GNP by the year 2000. Figure 1 shows the extraordinary growth of American medical expenditures from 1929 to the present. Reinhardt (1990) predicted that if the health sector’s share of GNP continued increasing at the present rate, in 82 years medical expenses would consume the entire GNP. Although such a prediction could never come true, the current trend indicates the urgency of the high medical expenditure situation in the United States.

This problem increased in severity during the early 1980s, when medical expenditures began growing approximately twice as fast as the Consumer Price Index (CPI). Numerous reasons exist for the faster growth of prices for medical services. Jencks and Schieber (1991) identify some of these as follows:
1. insurance coverage and premium subsidies (third-party payment);
2. lack of price competition among providers;
3. open-ended payment systems (fee-for-service);
4. developments in technology;
5. malpractice litigation;
6. self-referral (many physicians own diagnostic equipment and labs to which they refer their patients to enhance income);
7. expenses related to containment policies (cost-containment systems increase both payer and provider overhead); and
8. increasing physician supply.

Price increases, however, are only part of the problem. Medical expenditure growth has two components: rising prices and increased utilization. Both are extremely difficult to control. Equation (1) illustrates the fundamental relationship that must be considered in all cost containment planning:

\[
\text{Medical Expenditures} = \text{Price of Medical Services} \times \text{Utilization of Medical Services}
\]

Jencks and Schieber (1991) and Fuchs (1990) indicate that both medical prices and medical utilization have been growing faster than the corresponding prices and utilization of goods and services in other areas of the U.S. economy. Consequently, controlling medical expenditures is analogous to pushing on a balloon; if we squeeze in one place, it bulges in another. For example, if a government attempts to control medical
prices by fiat, then the medical industry can, within certain limits, maintain target revenues and incomes through supply-induced demand—that is, suppliers of medical goods and services can increase the utilization of these goods and services through various means (Payer, 1992; Inlander, Levin, & Weiner, 1988; Wohl, 1984). Hence, trying to control medical prices while expanding health insurance coverage, as is currently being attempted by the U.S. government, may increase access to care, but total direct expenditures are still likely to rise dramatically.

Direct payments for medical care are only part of the problem. The indirect costs of ill-health constitute an additional large drain on the nation's economic and human resources. The indirect losses due to illness include lower productivity, increased absenteeism, and higher retraining costs. The total economic impact of an inadequate health care system greatly exceeds the direct payments of medical care. According to the U.S. Department of Health and Human Services (1990a):

Lost productivity due to disease and early death compounds the impact of this problem. In 1980 the total cost of illness equalled nearly 18% of GNP. Injury alone now costs the nation well over $100 billion annually, cancer over $70 billion, cardiovascular disease $135 billion. (p. 5)

If the total economic impact of poor health was 18% of GNP in 1980, it might be as high as 25% of GNP in 1992. Thus, total medical (indirect and direct) expenditure growth is a major problem for all of society.

The disproportionate allocation of resources to the health sector hurts national economies in the long term. Health and Human Services Secretary Dr. Louis W. Sullivan (1989) explains, "Employers are finding that health care costs consume a large proportion of their gross income—more than 10 percent of gross income for some companies" (p. 127). It is true that the short-term channeling of funds to the medical sector has created millions of jobs (Hiles, 1992), which in turn give the appearance of economic growth because national output of services has increased. More than eight million people today are employed in the medical services industry, and three million of those jobs were created in the last decade. However, economists concur that the net effect of this redistribution of resources weakens long-term growth and productivity. Robert Marks explained, "Unchecked health-care spending consumes resources that could be utilized more productively elsewhere and imposes considerable costs on the economy and the American people" (Koretz, 1992, p. 24). Employers ultimately pass on the effects of higher medical expenses to workers in the form of lower wages; instead of increasing employees' salaries, employers have had to contribute more and more each year to corporate health benefits packages. This is a major reason why real salaries and wages over the last 20 years have barely increased. Yet, as medical payments increase, actual health status stays the same or, in some areas, declines. Unchecked medical outlays divert funds away from the creation of new businesses and productive jobs, which might explain much of the current shortage of business investment and venture capital. In short, medicine is a nonproductive industry.

Soaring Medicare and Medicaid expenses are also undermining attempts to reduce the federal deficit. A recent Congressional Budget Office report warned that escalating medical spending "will reduce investment and substantially cut future incomes—by
almost 2.5% in 2002 and even more thereafter” (Koretz, 1992, p. 24). Furthermore, a Government Accounting Office report states that the unduly complex and fragmented health insurance system in the U.S. enables unscrupulous medical providers to defraud insurers and the government of approximately $70-$80 billion a year—almost 10% of all health sector expenditures in 1992. Consequently, finding effective and affordable means of providing health care is a national priority.

**U.S. Medical System Compared with Other Developed Nations**

When compared with other developed countries, the expense and performance inadequacies of the American medical system become more evident. As mentioned above, the U.S. has the highest annual per capita expenditure for medical care in the world. Yet life expectancy is lower, infant and adult mortality rates are higher, and other general measures of medical performance are worse than those in many other developed nations (Schieber et al., 1992). Table 1 compares the expenditures and outcomes of selected developed nations.

In 1987, among the 24 member nations of the Organization for Economic Cooperation and Development (OECD), the U.S. ranked 21st in infant mortality, 16th in male life expectancy at birth, and 13th in female life expectancy. These poor health outcomes should be contrasted with their price. Schieber noted that “the United States spends almost twice as much per person and devotes 50 percent more of its gross domestic product (GDP) than the other major industrialized countries” (1990, p. 159). The data in Table 1 demonstrate the lack of any significant relationship between medical expenditures and health outcomes. Thus, one must infer that the United States

<table>
<thead>
<tr>
<th>Country</th>
<th>Male Life Expectancy at Birth</th>
<th>Infant Mortality Per 1000 Births</th>
<th>Mortality Rate</th>
<th>Health Expenditure Per Capita as %</th>
<th>GDP Health Spending</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>73.0</td>
<td>8.7</td>
<td>7.2</td>
<td>7.1</td>
<td>$939</td>
</tr>
<tr>
<td>Canada</td>
<td>71.8</td>
<td>7.8</td>
<td>7.2</td>
<td>8.6</td>
<td>$1,483</td>
</tr>
<tr>
<td>Denmark</td>
<td>71.8</td>
<td>8.3</td>
<td>11.3</td>
<td>6.0</td>
<td>$792</td>
</tr>
<tr>
<td>France</td>
<td>72.0</td>
<td>7.6</td>
<td>9.5</td>
<td>8.6</td>
<td>$1,105</td>
</tr>
<tr>
<td>Iceland</td>
<td>75.1</td>
<td>7.2</td>
<td>7.0</td>
<td>7.8</td>
<td>$1,241</td>
</tr>
<tr>
<td>Japan</td>
<td>75.6</td>
<td>5.0</td>
<td>6.2</td>
<td>6.8</td>
<td>$915</td>
</tr>
<tr>
<td>Netherlands</td>
<td>73.5</td>
<td>6.4</td>
<td>8.3</td>
<td>8.5</td>
<td>$1,041</td>
</tr>
<tr>
<td>Norway</td>
<td>72.8</td>
<td>8.4</td>
<td>10.0</td>
<td>7.5</td>
<td>$1,149</td>
</tr>
<tr>
<td>Sweden</td>
<td>74.2</td>
<td>6.1</td>
<td>11.1</td>
<td>9.0</td>
<td>$1,233</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>71.9</td>
<td>9.1</td>
<td>11.3</td>
<td>6.1</td>
<td>$758</td>
</tr>
<tr>
<td>United States</td>
<td>71.5</td>
<td>10.0</td>
<td>8.7</td>
<td>11.2</td>
<td>$2,051</td>
</tr>
</tbody>
</table>

Source: OECD Health Data Bank (Schieber and Poullier, 1989b).
MODERN SCIENCE AND VEDIC SCIENCE

needs to increase the effectiveness and efficiency of its medical system.

Part of the problem appears to be negative growth in medical productivity in the U.S. medical sector, despite tremendous growth in technology (Jencks & Schieber, 1991). Productivity can be evaluated in many ways. If we compare American total outputs with the total expenses incurred to produce those outputs, the U.S. medical system appears to be extremely unproductive, especially in relation to other industrial nations. In an international comparison of medical systems, Schieber and Poullier (1989a) summarize the productivity of the U.S. medical system:

Several relevant facts are clear. First, the United States spends far more in absolute dollar terms and relative to GDP than any other country in the world. Second, this gap appears to have grown in recent years. Third, the higher GDP of the United States can explain only a small part of these disparities. The United States tends to have about the same physician-population ratio as the average for the OECD countries and fewer inpatient medical care beds. U.S. use rates in terms of physician visits, hospital days, and average length of stay are among the lowest in the OECD. Yet, the costs for medical procedures and the costs per hospital bed, day, and stay are the highest in the world by far. Americans appear to practice a much more intensive style of medicine. Nevertheless, on the basis of crude outcome measures such as infant mortality and life expectancy as well as access-to-care criteria, the achievements fall short of those in many other OECD countries. (p. 7)

Among the industrial nations, the United States is also weak in primary care. Primary care is the first level of treatment after a disease or injury has occurred, and should prevent minor medical events from becoming serious and expensive problems. An inadequate primary care system may thwart attempts to improve health and contain expenditures. The inadequacy of the U.S. primary care system may be due, in part, to misplaced incentives. Most nations give greater prestige, awards, and larger income to specialists instead of primary care physicians. The disparity, however, appears to be more extreme in the U.S. Terris (1990) reports:

In Canada, 50 percent of all physicians are general practitioners, versus 10 percent in the United States. Although the ratio of physicians to population is about the same in both countries, the United States has 33 percent more surgeons per capita. It is hardly surprising therefore, that Americans undergo 40 percent more operations per capita than Canadians. Nor is it surprising that the costs of care are higher in the United States. First, specialists in both countries charge considerably more than general practitioners; U.S. specialists often pull in $130,000 to a quarter of a million a year, GPs only earn about $80,000. Second, specialists are trained to use expensive high-tech diagnostic and therapeutic procedures, whether or not these make a significant difference in the patient’s health. (pp. 30-31)

The inadequacy of the U.S. primary care system is likely to persist for some time. Whitcomb and Desgroisseilliers (1992) explained:

Between 1986 and 1991, the number of graduates matched to residencies (internal medicine, pediatrics, and family medicine) that might lead to careers in primary care medicine decreased by 19 percent. If the current trend persists, the percentage of U.S. physicians who are primary care practitioners can be expected to decrease from the present one-third to approximately one fourth by the turn of the century. (p.1469)

Inadequate primary care leads to needless human suffering and contributes to esca-
lating expenditures by allowing minor medical problems to degrade into serious and expensive tertiary care crises.

These high medical expenditures are an especially great burden for U.S. businesses, which pay a large and growing portion of the national health care bill each year. Businesses in the United States frequently feel unfairly burdened because they are competing in a global marketplace where their foreign competitors do not pay their employees' medical insurance. In 1965 business paid 17% of the cost of national health services and supplies, but in 1985 they paid 30% (Levit & Cowan, 1990). Firms often have paid 20%–30% increases in annual health insurance premiums in recent years. Eastaugh (1991) states, "For the past six years corporate health care spending in America has exceeded after tax profits and should surpass $175 billion in 1991" (p. 25). Group plans buy approximately 85%–90% of all health insurance. These plans are usually funded by employers, according to Standard & Poor's Industry Surveys (1990). A survey conducted by A. Foster Higgins in 1990 found that American firms paid approximately $3200 in average annual total health plan expenditures per employee. These expenditures are obviously beginning to have a tremendous impact on companies' profits and competitiveness, and many corporations are having difficulty caring for their employees and meeting their profit objectives.

However, in other countries where the government pays for most or all medical care, private business still pays indirectly for the medical system through higher taxes. The Canadian medical system, which is fully funded by the government, is an example.

The Canadian Health Care System

Policy leaders in the U.S. are studying various aspects of the Canadian health care system to find new strategies for lowering expenditures and expanding access to services. Some U.S. officials speak as if adopting the Canadian system would automatically solve all health sector problems. In fact, although the Canadian system has many commendable features, growth in medical expenditures is a source of economic distress in Canada as well. Rapid increases in medical outlays are impeding the federal and provincial governments' attempts to meet their fiscal responsibilities. Francis (1990) describes the growth in Canadian medical expenditures:

The latest figures show that, between 1975 and 1987, total Canadian health-care costs jumped fourfold to $47.9 billion from $12.2 billion. This represents 8.71 per cent of the nation's gross domestic product... compared with 7.15 per cent in 1975. (p. 19)

Thus the Canadian system appears to have an expenditure escalation problem similar to that in the United States. Although Canada's current percentage of GNP spent on medicine is smaller, it is also growing, if somewhat more slowly than in the U.S. These differences in growth rates may be the result of differences between the two medical systems. The Canadian government (as in most developed countries) controls the price of medical services; this helps to slow expenditure increases. The U.S. prices and utilization are controlled by neither the government nor market dynamics. Hence, Americans have the faster medical expenditure growth rate (Schieber et al., 1992).

Although the Canadian system is less costly, they are rapidly approaching a financial
crisis. Since the Canadian national debt, per capita, is the largest in the world, the government has attempted to diminish budget deficits through several means, including reducing the federal government's contributions to the provincial medical care systems, in order to restore economic strength. At one time, Ottawa paid 48% of the nation's annual medical expenditures; now, the federal contribution is only 38%. Even more drastic cuts are intended by the mid-1990s. According to the 1993 President of the Canadian Medical Association, "The provinces are trapped between the public's unlimited expectations of a 'free' system—expectations which are fueled by politicians—and a federal government intent on reducing the debt" (Brown, 1989, p. 29). In response to the reduced federal contribution, the provinces have had to either increase taxes or ration medical expenditures more severely or both. These options are difficult and unpopular.

Overall, Canada has been more successful than the United States in slowing the rate of medical expense growth, especially with reference to the physicians' price component of health expenditures (Fuchs & Hahn, 1990; Hughes, 1991). Québec, in particular, surpassed all other provinces in Canada in containing the price of physician and other medical services. Indeed, most of the total difference between the relatively high U.S. and low Canadian medical expenditures is caused by the extraordinary success of cost containment programs in Québec. Yet the quality of care does not seem to have suffered: for example, Québec has the lowest infant mortality rate of any province in the world.

Recently, however, increases in utilization have led to dramatic increases in medical expenditures even in Québec. The Québec Minister of Health and Social Services said the province will have a shortfall of at least $2 billion in the health care budget over the next five years if current trends persist. Medical care presently consumes $12.8 billion annually, or one third of the province's total budget. Consequently, a massive restructuring of Québec's entire health and social services system is under way in order to lower expenditures and improve efficiency. Proposed changes may include deviating from the guidelines of the Canada Health Act by charging fees for some medical services to reduce capricious utilization.

Hughes (1991) found that increases in the supply of physicians have been a major contributor to increases in utilization. Barer et al. (1988) and Hughes (1991) provide cogent evidence for physician-induced demand phenomena in Québec. Their analysis shows that new physicians generate utilization for their services in order to attain target incomes. Furthermore, established doctors respond to government fee-reduction schemes by increasing demand for their services. Once under a doctor's care, a patient sometimes become the victim of unnecessary treatment administered by the physician to maintain his or her target income. This unnecessary treatment generates high expenditures for the provinces.

One can see from Figure 2 that medical expenditures of other countries are simply a few years behind the United States. Thus, the health care cost escalation problem is not only an American or Canadian problem, but an urgent concern for policy makers worldwide.
The Need For Prevention: Identifying New, Cost-Effective Strategies

During recent years, there has been a growing recognition throughout the world that more and better prevention is needed to reduce human suffering, enhance the quality of life, and contain medical expenditures (Fries et al., 1993). There are two major reasons for this conclusion: the inadequacy of treatment-oriented strategies and the potential benefits of prevention.

The Inadequacy of Treatment-Oriented Strategies

A therapeutic-oriented medical system devotes most of its funds towards curing diseases after they occur. Medical resources are therefore focused on diagnosing disease and eliminating it through pharmacology, surgery, radiation, or related technologies, which are relatively expensive. The prevailing medical doctrine is that better diagnosis and therapeutics will yield better health.

Therapeutics is the dominant strategy for health care partly because when many groups are competing for relatively scarce financial resources, generally the most dire needs are met first. People dying of heart disease or cancer today are a higher priority than groups who might get the disease 20 years in the future. Consequently, the majority of nations currently direct most of their medical resources towards implementing a therapeutic or curative strategy.

However, in recent years some medical researchers have questioned the effectiveness
of relying almost entirely on the therapeutic strategy for maintaining health. For example, Thomas McKeown (1978) explained:

Modern medicine is not nearly as effective as most people believe. It has not been effective because medical science and service are misdirected and society's investment is misused. At the base of this misdirection is a false assumption about human health. Physicians, biochemists, and the general public assume that the body is a machine that can be protected from disease primarily by physical and chemical intervention. This approach, rooted in 17th century science, has led to widespread indifference to the influence of the primary determinants of human health—environment and personal behavior—and emphasizes the role of medical treatment, which is actually less important than either of the others. It has also resulted in the neglect of sick people whose ailments are not within the scope of the sort of therapy that interests the medical professions. (p. 60)

Robert J. Haggerty (1990) stated:

There is not much evidence that illness care (which is what most medical care consists of) reduces mortality or morbidity very much. When well organized, it can reduce utilization of expensive facilities such as hospitals and emergency rooms and can reduce other costs such as laboratory and pharmacy without any measurable difference in health status. In other words, the effect of illness care after a point produces only marginal gains in health. (p. 113)

Some research supports this viewpoint. Fuchs (1972, 1974, 1979) and Newhouse, Phelps, and Schwartz (1974) concur that therapeutic care appears to be only a minor factor in producing national health. Multiple regression studies on general health inputs and outcomes further support this conclusion. These studies include those by Letourmy (1975). Fuchs (1979) summarizes the results of these studies: "The basic finding is: when the state of medical science and other health-determining variables are held constant, the marginal contribution of medical care to health is very small in modern nations" (p. 155).

Evidence for the ineffectiveness of almost total reliance on therapeutic medicine (at present, 98%–99% of health sector spending has been devoted to treatment and 1%–2% for prevention) in producing health is the virtual leveling off of the adult mortality rate in the U.S. from 1955 to the present. Since the end of World War II, the GNP devoted to medical spending has grown from less than 5% to an estimated 14% of GNP in 1993. Yet there have been no corresponding improvements in mortality and other health measures.

C.T. Stewart, Jr. (1971), empirically evaluated the contributions of treatment, prevention, information, and research in improving health as measured by life expectancy for all the nations in the Western Hemisphere. With regard to the comparison between treatment and prevention, Stewart (1971) concluded:

Readily available empirical data suggest that until recent decades in the United States, and even today in nearly all underdeveloped nations, health improvement as measured by increased life expectancy has been almost entirely the result of improvements in prevention. (p. 111)

The therapeutic strategy has apparently reached the point of diminishing marginal
utility in most nations, including the United States. This suggests that our continued massive investment in this expensive approach is unwarranted. Further spending might help a relatively small number of people in the short term, but the general population does not appear to benefit significantly in terms of increased life expectancy or reduced morbidity in the long term.

The therapeutic strategy is exhibiting the symptoms of an obsolete technology, namely, level to decreasing marginal returns. It may now be time to consider alternative strategies.

**The Possible Benefits of Expanded Prevention**

The prevention-oriented strategy is based on the realization that “an ounce of prevention is worth a pound of cure.” In implementing this strategy, a public health organization attempts to identify and promote the determinants of good health and to eliminate factors that threaten health. Usually public health officials prevent disease through community interventions that improve water purity, hygiene, vaccination, sanitation, nutrition, and air quality and other environmental factors. They also attempt to foster healthier lifestyles through programs that aim to improve dietary habits, lower cholesterol, reduce drug abuse, decrease smoking, encourage regular exercise, decrease alcohol consumption, increase prenatal care, introduce stress management, and otherwise enhance health in the individual and society. Unlike clinical medicine, public health attempts to avert medical problems before they arise.

In 1979, the United States government called for more prevention in *Healthy People: The Surgeon General's Report on Health Promotion and Disease Prevention*. Later, in *Healthy People 2000: National Health Promotion and Disease Prevention Objectives* (1990a), the Department of Health and Human Services (DHHS) identified specific prevention-oriented goals and delineated plans for attaining those goals. Both these documents operationalized prevention in terms of eliminating behaviors that increase disease risk. Secretary of Health and Human Services Louis W. Sullivan (Health and Human Services, 1990a) explains the U.S. government’s perspective:

> First, personal responsibility, which is to say responsible and enlightened behavior by each and every individual, truly is the key to good health. Evidence of this still-evolving perspective abounds in our concern about the dangers of smoking and the abuse of alcohol and drugs; in the emphasis that we are placing on physical and emotional fitness; in our growing interest in nutritional practices; and in our growing concern about the quality of our environment. . . . We would be terribly remiss if we did not seize the opportunity presented by health promotion and disease prevention to dramatically cut health-care costs, to prevent the premature onset of disease and disability, and to help all Americans achieve healthier, more productive lives. (p. v & vi)

In spite of extensive recognition of the need for more prevention, governmental funding has not increased significantly in this area. Historically the United States has spent 1%-2% of its health sector expenditures on prevention. It is possible that more funding for health promotion and disease prevention research and interventions in the United States would yield significant improvements in health and well-being that would
simultaneously reduce national medical expenditures. This funding, however, must be well directed; not all prevention and promotion programs are effective (Russell, 1986).

Government and private organizations attempt to promote health and prevent disease mainly by disseminating information on lifestyle improvement. Prominent individuals help this endeavor by expounding the virtues of healthy behaviors; for example, on Feb. 5, 1992 (Des Moines Register, 1992), President Bush urged citizens, "Let’s change the behavior that costs society tens of billions.” Such exhortation strategies appear to have had only limited impact: they have yielded minimal results as measured by morbidity and mortality rates. Most people find it difficult to change their behavior. For example, there have been numerous smoking cessation campaigns in the U.S., and consequently, almost all adult smokers in the country know that their habit increases the likelihood of their dying prematurely from lung cancer, coronary heart disease, or other diseases. Ninety percent of those who smoke would like to stop, but only 15% will attempt to quit each year. Of those who try to end their habit, only 10% will succeed. John G. Bruhn (1988) explains why behaviors are difficult to change:

Compliance is difficult to achieve when health produces little or no rewarding physical feedback, e.g., reduction of pain, and typically elicits only minimal or short-term acknowledgment and support by family, friends and employer. . . . People are reluctant to alter patterns that represent powerful, predictable, and immediate sources of gratification which are deeply ingrained in social and cultural contexts. One possible impediment may be the lack of a comprehensive national health policy and the mixed messages the public receives about the health risks of certain substances. These inconsistencies may reinforce the ambivalence and resistance to change among many people. Furthermore, there is an apparent lack of real commitment to the concept of healthier living. The government continues tobacco subsidies, while the Surgeon General takes a strong stand on the health risks of smoking. Similarly, certain foods and alcohol are promoted by the mass media, while the health sector warns about their abuse. Perhaps one of the greatest barriers to change may be the “live for today and don’t worry about tomorrow” attitude prevalent in our country, coupled with the high expectations that the sophisticated technology of medicine can mend any health malady that might occur. There is little incentive for individuals to assume responsibility for their health or adopt a Spartan pattern of living (Milio, 1981). (p. 79)

In 1974 Marc Lalonde, Canadian Minister of National Health and Welfare, issued a working paper called A New Perspective on the Health of Canadians, which challenged many of the current assumptions in the health care field, such as “more medical therapeutics means better health.” Lalonde stated that the Canadian government would give the same priority to environment and lifestyle that it gives to medical care organizations. Only a small fraction of Minister Lalonde’s recommendations for prevention were implemented, however. Sixteen years later, Milton Terris (1990) again urged Canadians to adopt more healthy behaviors:

Perhaps the biggest failing of the Canadian program is a defect it shares with most of the world’s developed nations: its enormous expenditures for medical care have left very little money for preventing disease and injury. Illness and death from lung cancer continue to rise in Canada—at an alarming pace in women, for whom the death rate doubled from 1970 to 1979. Chronic obstructive lung disease, another major killer caused mainly by cigarette smoking, is also on the rise in Canadian women. Cirrhosis of the liver, primarily from heavy drinking, increased by 31
percent in men and 21 percent in women during the 1970s. . . . All these problems are preventable, but even now, 15 years after the Lalonde Report, decisive action has yet to be taken. (p. 32)

A possible deterrent to funding research on innovative prevention strategies is a perceived doubt that health promotion and disease prevention are cost effective. Pelletier (1991) points out that research assessing the cost effectiveness of health promotion interventions is urgently needed:

Unequivocally, the question most frequently asked by decision makers prior to implementing comprehensive health promotion and disease prevention programs is "What is the data regarding the health and/or cost benefits?" Failure to provide compelling evidence documenting these benefits is the most pervasive deterrent to the implementation of programs. (p. 311)

According to two reports by the Office of Technology Assessment (1989, 1990), Medicare does not pay for most preventive interventions in the elderly because there is no evidence to justify these programs as being effective and affordable. These reports add that the failure to produce strong evidence is usually related to research design problems that foil the accurate measurement of potential expenditure savings. The problem is not necessarily a lack of potential results, but the lack of well-designed and properly implemented research. Unfortunately, in America prevention research has been a low priority; it has been overridden by more popular projects such as AIDS and genetic research.

Finally, interventions must also succeed in changing the potential patient's perception of his or her own health status, in addition to improving physical health. The reason for this is that health improvement alone is unlikely to reduce utilization. A study by Buczko (1986) indicates that the key determinant of physician utilization for the general population is perceived health status. Buczko (1986) explained the results of his regression analysis on various possible predictors of physician utilization:

As in prior studies, health status variables were the strongest predictors of both physician visit utilization and expenditures. Perceived health status was the best predictor of number of physician visits and physician visit expenditures, and it was also a significant predictor of the probability of a physician visit. (p. 25)

Thus to decrease medical utilization and expenditures, a health-promotion intervention must improve both physical health and psychological status, because both of these factors affect medical care expenses.

The High-Cost Case Phenomenon: A Way to Leverage Medical Expenditure Savings through Prevention

The term high-cost cases is applied to that fraction of a population that consistently incurs high medical expenses over a long time period (Alexandre, 1988). Numerous researchers have found that high-cost cases, who compose only a small percentage of the population of a nation, incur the majority of its medical expenditures. For example,
in the United States, Garfinkel, Riley and Iannacchione (1988) reported, "Based on data from the National Medical Care Utilization and Expenditure Survey, the 10 percent of the non-institutionalized U.S. population that incurred the highest medical care charges was responsible for 75 percent of all incurred charges" (p. 41). The consistency of the high-cost case phenomenon has been documented in several studies by Schroeder, Showstack, and Roberts (1979) and by Anderson and Knickman (1984). In their analysis of 204,917 randomly selected subjects, Anderson and Knickman (1984) reported:

Individuals hospitalized in 1974 were found to have twice the rate of hospitalization in 1975, 1976, or 1977 compared with individuals who were not hospitalized in 1974. The increased rate of hospitalization remained constant throughout the 3 years. Individuals with large medical expenditures in 1974 were 20 times more likely to have large medical expenditures the following year, and this rate declined slowly in the following 2 years. (p. 143)

High-cost people are generally not hypochondriacs. Typically, these people suffer from chronic health problems. Schroeder et al. (1979) found that 47% of adult high-cost patients had chronic medical problems, whereas only 17% had an acute medical problem. In another study, which analyzed the hospital utilization of 2238 patients whose medical records were randomly selected, Zook and Moore (1980) found, "On average, the high-cost 13 percent of patients consumed as many resources as the low-cost 87 percent" (p. 996). The persistent poor health of the high-cost individual is a potential target for health promotion interventions.

Unlike the general population's chief determinant of health care utilization, which is perceived health status (Buczko, 1986), actual health status is the chief determinant of medical utilization for high-cost people. Garfinkel et al. (1988, p. 41) reported, "Health status was the strongest predictor of high-cost medical utilization, followed by economic factors." Several researchers have found that high-cost patients frequently have lifestyles that put them at greater disease risk. For example, Zook and Moore (1980, p. 996) found that "Potentially harmful personal habits (e.g., drinking and smoking) were indicated in the records of high-cost patients substantially more often than in those of low-cost patients." In an article illustrating a new method for analyzing high-cost cases, Lynch, Teitelbaum, and Main (1992) stated, "The relative risk of high cost from smoking remained consistent across all age groups" (p. 213). If the level of medical utilization of these high-cost patients could be reduced, the financial impact on the entire nation would be significant.

Research has shown that certain types of preventive interventions can significantly reduce the medical utilization and expenses of high-cost people. For example, in a study in Québec, Herron (1993) found that a stress-reduction program utilizing the Transcendental Meditation program decreased the medical payments of high-cost cases an average of 18% per year over three years (cumulative: 54%). The mechanism explaining this effect has only recently been understood. During the last ten years, a substantial body of research has found that stress has a powerful negative effect on health (Chrousos & Gold, 1992). Prolonged mental or physical stress weakens the immune system and thereby increases disease susceptibility. Almost everyone is exposed to undue stress, and hence the potential benefits of stress reduction are widespread.
Certain types of stress reduction appear to be more effective in reducing medical utilization and expenses than other preventive interventions; the outcomes of prevention programs can vary widely. For example, lifestyle interventions are probably the most widely used methods of health promotion and disease prevention. Lifestyle changes, however, can take many years to affect health status and expenses. Bly, Jones, and Richardson (1986) reported on Johnson and Johnson’s Live for Life Program, which is a comprehensive attempt to develop and maintain healthier lifestyles in the corporate setting. Over a five-year period, the Live for Life group showed a slower rate of increase in medical expenses than control groups. Note that this program, which utilized several lifestyle interventions, including smoking cessation, weight control, nutrition education, and fitness and blood pressure programs, failed to reduce medical expenses (Bly et al., 1986). When lifestyle interventions are compared with certain types of stress reduction for their effectiveness in reducing medical expenditures, stress reduction produces larger expense decreases. Consequently, the most powerful stress-reduction interventions are recommended to reduce health care expenditures in high-cost groups that incur the majority of expenses in most populations.

The Proposed Strategy

Our proposed strategy is to offer innovative health-promotion and disease-prevention interventions to high-cost cases and thereby reduce medical expenditures. This strategy is a refinement of previous public health approaches that were directed to the entire population, which often wasted much time, energy, and funds urging people who were already relatively healthy to change their behavior. This new strategy would focus resources on the least healthy people, who are incurring the majority of our nation’s medical expenses. We propose that a small amount of resources could be directed to a narrow segment of society and possibly leverage a large reduction in expenditures.

Since this plan demands that such prevention strategies first be rigorously tested before implementation, we recommend the implementation of the Transcendental Meditation program, which has already been scientifically verified by over 500 published research studies for its effectiveness in promoting good health. Such an intervention would demonstrate the benefits and cost savings resulting from the use of one prevention program that has been ascertained to meet the necessary criteria of scientifically validated effectiveness.

Maharishi’s Transcendental Meditation Program as a Proven Technology for Disease Prevention and Health Promotion

The previous sections of this paper have established that the implementation of an effective prevention strategy is central to addressing the current crisis in health care costs. The key to the success of an effective prevention initiative will be cost-effective measures that work. Those measures currently in wide use have been shown to be of limited benefit and to be inadequate to reduce national health care expenditures. In contrast, Maharishi’s Transcendental Meditation program has been shown through exten-
ive scientific research to be particularly effective in the reduction of health care costs through effective disease prevention and health promotion. Moreover, application of this program to high health care utilizers—the 10% of the population responsible for over 75% of national health care expenditures—has demonstrated its consistent effectiveness both in improving the quality of life of these patients and in lowering medical expenditures.

Below we summarize the most pertinent areas of research on the Transcendental Meditation program concerning the alleviation of health problems that contribute most to rising national health care expenditures.

**Studies on Health Care Utilization and Costs**

Several studies have shown that Transcendental Meditation substantially reduces rates of health care utilization and costs. Orme-Johnson (1987, 1988) conducted two field studies using Blue Cross/Blue Shield data to compare the health care utilization rates of Transcendental Meditation practitioners with matched control groups. In the first study, over 2000 subjects were followed over a five-year period. The Transcendental Meditation subjects had a 50% reduction in both inpatient and outpatient medical utilization when compared with controls matched for age, gender, occupation, and health insurance coverage. As Figure 3 shows, for people practicing Transcendental Meditation, utilization was strikingly reduced in every major category of health care examined, including heart disease, cancer, and mental health.

In the second study, the medical insurance utilization of 400 individuals who practiced Transcendental Meditation and other prevention programs of Maharishi Ayur-Veda in the midwestern United States was 83% lower than the national norm. The greatest utilization decrease was in the older subjects.

In a longitudinal study, Herron (1993) expanded upon Orme-Johnson's research by evaluating the impact of Transcendental Meditation practice on the medical care costs of 600 French Canadians. This carefully controlled study used the Québec govern-

![Figure 3. Effect of the Transcendental Meditation program on health care utilization.](image-url)
ment's health care system's own data. Health care utilization was compared for the three years preceding and the three years following instruction in the Transcendental Meditation technique. The Transcendental Meditation participants' expenses declined approximately 36% over three years. Older participants showed even greater reductions in their expenses—a 57% decline over three years.

**Transcendental Meditation in the Treatment of Hypertension**

Hypertension is a major health problem throughout the United States, and is an even greater problem among African Americans. Approximately 40% of African American adults are afflicted with hypertension. This rate averages about 33% higher than for Caucasians. Furthermore, the rates of hypertension-related diseases, such as stroke, heart attack, and kidney disease, are significantly higher in African Americans compared to whites (for example, death from stroke is 60% greater) (Schneider et al., 1992).

One of the major reasons for the disproportionately high levels of blood pressure in African Americans is excessive stress from disadvantaged social and environmental conditions. For this reason, Schneider et al. (1992) conducted a well-controlled field trial of the effects of stress management for treating hypertension in older African Americans. The study was funded by a national research foundation and conducted at an inner-city community health center in Oakland, California. After three months, the results showed that the Transcendental Meditation group had reduced their systolic blood pressure by 11 points (mm Hg) and their diastolic blood pressure by 6 points (mm Hg). A "relaxation" control group showed about half these reductions, and the usual care group did not change at all.

These results are highly significant because the magnitude of reductions in blood pressure with Transcendental Meditation were the same as the reductions normally produced by drug treatment. Over a few years these reductions in blood pressure would prevent an average of 40% of strokes and 20% of heart attacks that normally occur without adequate blood pressure treatment.

A second major advantage of treatment with Transcendental Meditation was the lack of adverse side effects that are commonly experienced with conventional drug therapy. Instead of negative side effects, the Transcendental Meditation group reported several improvements in subjective health and quality of life measures.

A third advantage is compliance with the program. Normally, less than 50% of patients with hypertension take their medication regularly as prescribed. However, in this inner-city project, approximately 90% of the Transcendental Meditation group followed their prescribed program regularly throughout the study. In addition, the Transcendental Meditation group rated their stress management program as "excellent" on the average, and all participants reported that they planned to continue the program and would feel comfortable recommending it to their friends.

In a study directed towards nonminority elderly, Alexander et al. (1989) examined the effects of the Transcendental Meditation program and other relaxation and self-development techniques on mental and physical health. After three months of follow-up, the Transcendental Meditation group showed a 12-point reduction in blood pressure, similar to the African American study above, as well as improvements in mental agility.
and health. Also, a higher proportion of the Transcendental Meditation group regularly practiced their technique (80%) as compared to the other programs. Most important, after three years, the survival rate for the Transcendental Meditation group was 100%, as compared to an average survival rate of 76.6% for the control groups.

**Transcendental Meditation and Prevention of Cardiovascular Disease**

The two other major risk factors for heart disease, namely, cholesterol and smoking, have been significantly reduced in Transcendental Meditation practitioners. Thus, it is not surprising that Orme-Johnson (1987) found an 87% lower rate of hospitalization for heart disease in Transcendental Meditation meditators compared to matched non-meditators.

**Alcohol, Substance Abuse, and Mental Health**

In an area overlapping the consideration of stress, it is estimated that 80% of the health problems seen by general practitioners are related to alcohol, drug abuse, and mental health. Substance abuse and mental health problems are a major source of excessive health care utilization and costs. Research shows that Transcendental Meditation is effective in alleviating these problems.

Twenty-four studies on alcohol and drug abuse found significant effects of Transcendental Meditation on reduction of substance misuse for all classes of illegal drugs, as well as for alcohol, cigarettes, and prescribed drugs (Shafii et al., 1974 and Gelderloos et al., 1991). These studies include large surveys of students in addition to well-controlled studies of drug rehabilitation patients.

For example, in a very carefully designed study of 120 skid-row chronic alcoholics in Washington, D.C., 65% of Transcendental Meditation subjects were found to be completely abstinent 18 months after completion of training, compared to 25% of the patients receiving standard treatment (Gelderloos et al., 1991). The Transcendental Meditation technique was also consistently more effective in enhancing mood and reducing negative emotions.

In addition to increasing the risk of heart disease, cigarette smoking is probably the single most important risk factor for lung cancer. With most smoking cessation programs, the quit rate gradually decreases over time (to about 10%), while with the Transcendental Meditation program the quit rate actually increases gradually over time to over 90% after 60 months (Gelderloos et al., 1991).

The National Institute of Health of Japan has also conducted a study on more than 800 Transcendental Meditation practitioners and found significant decreases in physical complaints, anxiety, depression, smoking, insomnia, digestive problems, neurotic tendencies, and psychosomatic problems (Haratani and Itsumi, 1990a and Haratani and Itsumi, 1990b).

Several studies have also shown that Transcendental Meditation is effective in reducing anger, hostility, anxiety, and depression. For example, a nationwide epidemiological study by the Swedish government's National Health Board found that psychiatric hospital admissions were 150–200 times less common among the 35,000 Transcendental
The following analyses provide an example of the large savings that would accrue if the Transcendental Meditation program were implemented in the treatment of hypertensive patients and high-cost health care utilizers. Using the Medicaid program of the District of Columbia as an example, these analyses show that the Transcendental Meditation program would greatly reduce the burden on the health care system.

**Analysis 1: Reduction of Hypertension and Prevention of Heart Disease and Stroke**

According to population-based estimates, approximately 26,000 Medicaid recipients in Washington, D.C., are diagnosed hypertensives. We estimate that average medical expenses for these individuals are about $1000 per year for medicines, doctor visits, and hospital costs. Thus, Medicaid in Washington, D.C., pays $26 million per year for the care of hypertension alone. Since the majority of people with hypertension have mild hypertension (80%-90%), and since research has shown that Transcendental Meditation by itself is capable of correcting mild hypertension, the Transcendental Meditation program could potentially lower the blood pressure to normal levels in at least 80% of the hypertensive patients. Therefore, the Washington, D.C. Medicaid system could save at least $21 million per year if these hypertensive patients were to begin the Transcendental Meditation technique. If only 50% of these patients began Transcendental Meditation, then the savings would be $10.5 million.

Furthermore, over a four- to five-year period, since the Transcendental Meditation program reduces blood pressure without side effects, we would expect substantial reductions in the incidence of heart attacks and strokes, which could save the District additional millions of dollars in acute medical care costs. We would also expect that the prevention of such disabling diseases would result in significant savings in productivity and human quality of life costs.

**Analysis 2: Reduction of Health Care Utilization**

Approximately 100,000 people are currently enrolled in the District's Medicaid system, and last year's Medicaid budget was $206 million. As mentioned above, 75% of all health care dollars are consumed by 10% of the population—the high utilizers of health care. For the District's Medicaid program, this means that 10,000 of the 100,000 participants use approximately $154.5 million of the total Medicaid budget. The upper line in Figure 4 projects the current $154.5 million of Medicaid expenditures attributable to high utilizers through the next five years, assuming a yearly increase of 11.6%, which is the published national norm for health care inflation (Jencks & Schieber, 1991).

Herron (1993) has demonstrated that, on average, the health care costs of high utiliz-
ers decrease at least 19% per year for five years following instruction in the Transcendental Meditation technique. The lower line in Figure 4 projects Medicaid expenses over five years if all high utilizers were to begin the Transcendental Meditation program. The savings in the first year would be $29.4 million. The savings for five years would be $667.9 million. If only 50% of the high health care utilizers in Medicaid were to learn Transcendental Meditation, the savings would be $14.7 million in the first year and $334 million for five years. It is clear that this program would result in huge savings to Medicaid: approximately $30 would be saved for every dollar invested in Transcendental Meditation instruction, at an average cost of instruction of $1000 per subject in this income group.

The above analysis indicates that implementation of the Transcendental Meditation program for even a modest proportion of the members of the hypertension and high utilization groups of Medicaid participants would reduce the District’s Medicaid costs substantially. This cost-benefit analysis provides an example of the enormous cost savings that can be realized by adopting this effective prevention strategy. Extending this analysis to the national level indicates that proportional savings would accrue to the national health care budget if this program were implemented on a national scale.
Conclusions and Future Research Directions

On the basis of the scientific research already conducted on the Transcendental Meditation program, as well as the cost-benefit analyses provided above, we suggest that national health initiatives should make provision to reimburse training in proven prevention-oriented programs such as the Transcendental Meditation program. Intermediate options might also be considered, e.g., targeting hypertensives and high health-care Medicaid participants, as in the example cost-benefit analyses above. The available research suggests that, ultimately, the most effective long-term approach would be to make the Transcendental Meditation program an integral part of health education programs in the nation's schools.

In addition to the Transcendental Meditation technique, Maharishi Ayur-Veda encompasses several other proven, cost-effective prevention methods that could also be included as part of a comprehensive health education program. Innovative health education programs, such as the Transcendental Meditation interventions described above for minority and elderly populations, could empower individuals to take fuller responsibility for their own health, rather than giving the physician that responsibility, as is currently the case in society. Future research should therefore include the development of innovative health education programs that will enable citizens to make use of health information in a more practical and useful way.

An effective national health care policy must address both price containment (through managed competition, price control, and other methods) and reduced utilization of medical services. Breslow (1990) and numerous other public health experts estimate that the majority (80%) of diseases and accidents are preventable through known methodologies; yet at present there is an imbalance in the funding of medical research, with only 1%–2% going to prevention and 98%–99% spent on curative approaches. One rationale for neglecting prevention is the lack of evidence to support its cost effectiveness. Therefore, a first step in overcoming this lack of documentation would be to redirect more resources toward prevention research. To achieve this end, specific grants should be made available to conduct rigorous, well-controlled studies to evaluate the possible health and financial benefits of prevention. It would be especially valuable to conduct intensive research that would evaluate the impact of effective health promotion and disease prevention on high-cost individuals, because as mentioned above, this small fraction of our population incurs the majority of medical expenses in our nation. Research directions should include studies on the effectiveness of various approaches that enhance health and prevent disease and that might also be cost effective.

Since a substantial body of research indicates that most disease can be prevented by living healthier lifestyles, future research to identify and develop effective methodologies to change unhealthy behaviors should be given top priority. For example, cigarette smoking accounted for nearly 434,000 deaths in 1992 and cost over $100 billion in medical treatment expenses for those who died. Effective smoking-prevention programs for the young as well as smoking-cessation interventions for adults could thus save many more lives than are lost through genetic disorders, for example, although those diseases are allocated significantly more funding for research. For example, several
research studies examining the effects of the Transcendental Meditation program on cigarette and alcohol consumption have validated the effectiveness of this intervention in reducing and even eliminating these behaviors.

Finally, on a collective level, over 40 scientific research studies have indicated that group practice of the Transcendental Meditation and Transcendental Meditation-Sidhi program by a relatively small proportion of a population reduces societal stress, leading to significant reductions in violent crime, drug abuse, and other antisocial behavior (see, for example, Dillbeck et al., 1987; Orme-Johnson et al., 1988a; and Orme-Johnson et al., 1988b). Funding to allow the formation of such groups would therefore not only improve collective health, but would also improve the overall quality of life for all Americans.

Through the implementation of prevention-oriented interventions such as those described in this paper, the health status of the United States should no longer remain among the worst of the developed nations. The goal of improving the health of U.S. citizens while reducing medical expenditures is feasible today through intelligently applied programs of expanded and effective preventive care.

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MODERN SCIENCE AND VEDIC SCIENCE


