

## 6. HEALTH SCIENCE'S CONTRIBUTION TO HEALTH CARE

Science has obviously played a major role in expanding and improving health care delivery. Common sense and the general improvement in the human condition (some of which is related to science) have also played major roles. We have not, however, had a reasoned or well organized approach to the broad range of sciences impacting on health. Since World War II, the United States has placed its major emphasis on the basic biological sciences, while the clinical sciences and public health sciences have lagged behind. Although most people believe that a major investment needs to be made in our most basic research, it is also clear that the applied sciences of clinical medicine and public health are essential to the continued improvement in health.

The thesis of this paper is that the United States must continue to support basic biological research but at the same time show increased support for clinical research and public health (or population based) research. We must also bridge the gap between clinical medicine's emphasis on the care of the individual and public health's emphasis on the care of populations. The appropriate combination of the two will more rapidly improve the health of the nation.

### **Improving Health: Measuring Effects of Medical Care**

In a recent publication, Bunker, Frazier and Mosteller (1994)<sup>1</sup> have reviewed this topic. They point out that, within this century, average life expectancy has increased from approximately 45 to 75 years. Many people attribute this remarkable improvement to advances in the content and distribution of medical care.

Their very reasonable analysis shows that medical care can account for an estimated current gain in life expectancy of about five years and a potential for adding one and a half to two more years. Interestingly, curative medical services appears to be contributing twice as many years gained as clinical preventive services. Even more interesting, however, is the fact that these analyses only explain 5 of the 30 years of life expectancy prolongation.

An explanation for the remaining 25-year gain in life expectancy this century is not analyzed in the paper by Bunker, et al. Other authors (Carlson 1975<sup>2</sup>; Illich 1976<sup>3</sup>; McKinlay and McKinlay 1977<sup>4</sup>; McKeown 1979<sup>5</sup>), however, have argued persuasively that improvements in public health and socioeconomic conditions explain the largest gains in life expectancy in the U.S. and other developed countries.

Recent history has shown dramatic improvements in the survival of patients suffering from heart disease. Goldman and Cook (1984)<sup>6</sup> have estimated that 40% of the reported decline in death rates between 1968 and 1976 could be attributed to medical care, chiefly coronary care units, treatment of hypertension, and medical treatment of ischemic heart disease. These interventions contributed especially to a decline in case-fatality rates for coronary disease. The incidence of the disease has also decreased, however. These declines can be attributed to risk factor reduction and improvements in lifestyle.

Curative medicine and the health care sciences have had their principal impact on improving health status and well-being or quality of life. The relief of pain and suffering and of physical, social, and mental dysfunction are the primary ways in which medical care can improve quality of life. Bunker<sup>1</sup>, et al. have documented the millions of people who have experienced relief of pain and improvement of function from the use of therapeutic drugs, surgery, medical management, and medical devices. These cures and ameliorations represent much of what we buy with our medical budget.

In conclusion, the health care sciences have contributed significantly to the extension of life, but most dramatically to the improvement of health status and quality of life. Although further improvements can be expected, this report highlights the potential for public health improvements as well as improvements expected from raising socioeconomic status.

S. Edwards Dismuke, M.D., M.S.P.H.  
Professor and Chair  
[Department of Preventive Medicine](#)  
[University of Kansas School of Medicine](#)

## References

- <sup>1</sup> Bunker JP, Frazier HS, Mosteller F. Improving Health: Measuring Effects of Medical Care. *The Milbank Quarterly* 1994. 72:225-258.
- <sup>2</sup> Carlson RJ. 1975. *The End of Medicine*. New York: Wiley.
- <sup>3</sup> Illich I. 1976. *Medical Nemesis: The Expropriation of Health*. New York: Random House.
- <sup>4</sup> McKinlay JB and McKinlay SM. 1977. The Questionable Effect of Medical Measures on the Decline of Mortality in the United States in the Twentieth Century. *Milbank Memorial Fund Quarterly Health and Society*. 55-405-28.
- <sup>5</sup> McKeown T. 1979. *The Role of Medicine: Dream, Mirage, or Nemesis?* Princeton: Princeton University Press.
- <sup>6</sup> Goldman L and Cook EF. The Decline in Ischemic Heart Disease Mortality Rates: An Analysis of the Comparative Effects of Medical Interventions and Changes in Lifestyle. *Annals of Internal Medicine* 1984. 101:825-36.