THE SCHOOL OF MEDICINE

OF

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL


# THE MERRIMON LECTURE

*by*

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# INTERNATIONAL EMINENCE THROUGH LOCAL RELEVANCE: A CHALLENGE NEGLECTED BY ACADEMIC MEDICINE

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The School of Medicine

The University of North Carolina at Chapel Hill

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## THE MERRIMON LECTURESHIP IN MEDICINE

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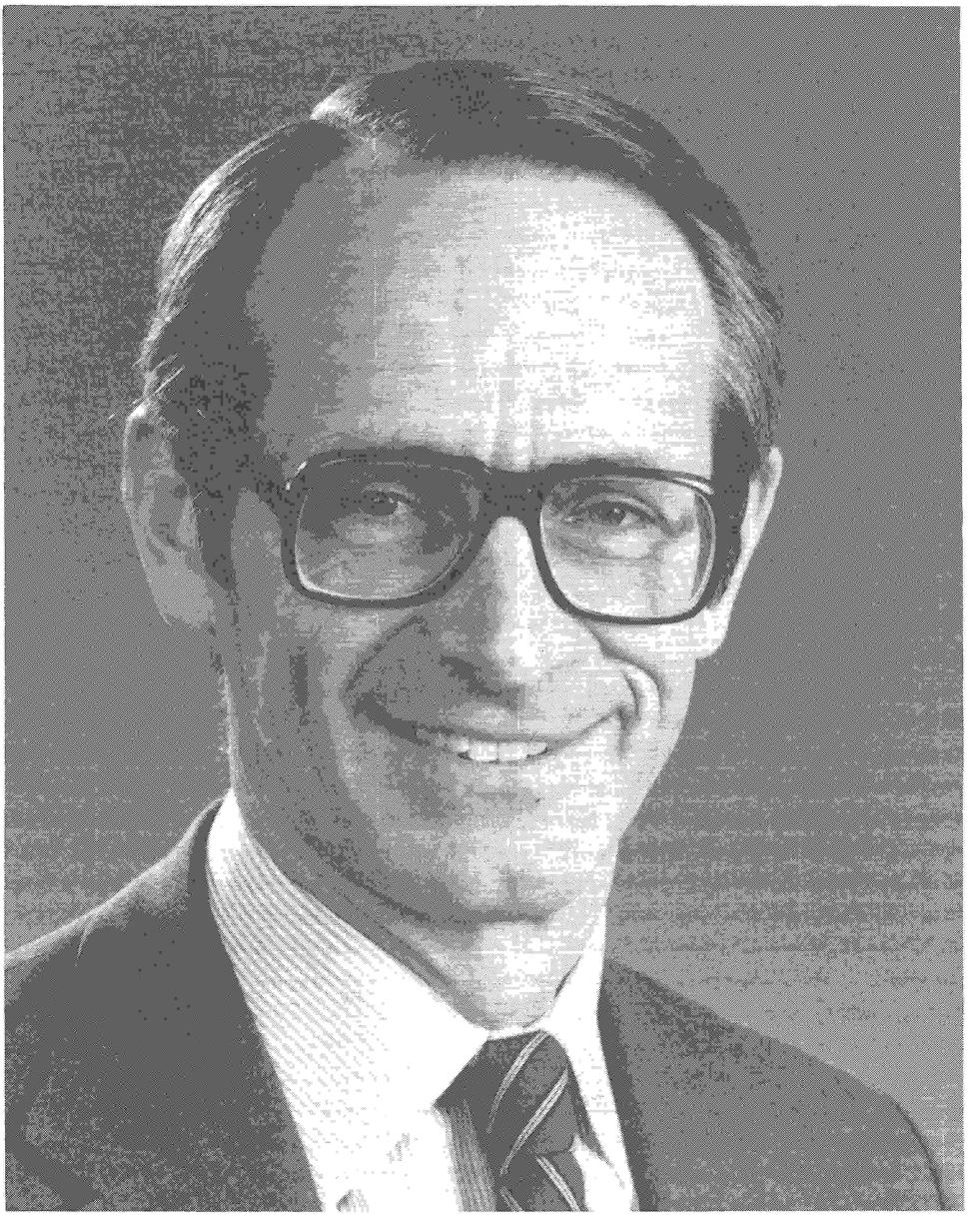

JOHN R. EVANS

JOHN ROBERT EVANS was born in Toronto, Canada in 1929. He was educated from earliest grades through medical school in various units of the University of Toronto, receiving the M.D. in 1952. He departed immediately for Oxford as a Rhodes Scholar and obtained there a wife (1954) and the D.Phil (1955), working with the hematologist, L.J. Witts. Together with Witts, he published 10 papers on various types of anemia. His next five years (1955–61) were spent qualifying as an academic cardiologist in London, Boston, and Toronto, a period documented by two dozen publications in clinical and experimental cardiology.

Dr. Evans became a Markle Scholar and a faculty member of the University of Toronto in 1960–61. Five years later he moved nearby as Dean to establish the new medical school of McMaster University in Hamilton. After seven years as Dean, he returned to Toronto in 1972 as President of the University and a Professor of Medicine. He left the presidency of the University in 1978 to run for Parliament in a bye-election which he lost. After losing, he "was rescued from unemployment by the Rockefeller Foundation" which commissioned him to assess the health of Schools of Public Health at home and abroad. In 1979 he joined the World Bank in Washington to establish lending in health, population and nutrition in developing countries. Dr. Evan's extensive ideas on academic matters, particularly medical, were published in a succession of 45 papers between 1965–81. Since going to the World Bank, he has eschewed revealing his thoughts in the ordinary literature.

At the World Bank, Dr. Evans was director of the department of Population, Health and Nutrition for four years, and since 1983 has been Chairman of the Board and the CEO of Allelix, a biotechnology company in Canada which specializes in agricultural applications.

While performing in this dizzying succession of important high level positions, he has sired six children, received 13 honorary degrees from the best North American institutions, is a director of eight business corporations, and is currently Chairman of the Board of Trustees the Rockefeller Foundation.

The Merrimon Lecture Committee proudly presents Dr. Evans as a 20th Century "Renaissance Man", one of only two physicians we have encountered who so qualify. This leads us to posit Budd Schulberg's famous question, "What makes Sammy run?". Perhaps Dr. Evans will take the occasion of his visit to answer this question about himself for us. It would be fascinating.

# INTERNATIONAL EMINENCE THROUGH LOCAL RELEVANCE: A CHALLENGE NEGLECTED BY ACADEMIC MEDICINE

The American public, and to an increasing degree the public throughout the world, have been led to expect that any disease can be conquered given an adequate investment in biomedical research and technologically sophisticated medical care. During the past three decades, the United States has emerged as the undisputed world leader in biomedical science and in the development of sophisticated technology for medical care. Academic medicine in the United States now represents a mammoth investment of more than five billion dollars per year in the education of a profession to serve these functions. But in spite of the miracles of being a world leader in both advances in medical technology and in expenditures on health services, the health status of American citizens rank significantly behind that of more than a dozen industrialized countries which spend much less on health care. And some regions of the United States, including the nation's capital, are only marginally above the health standards of developing countries.

How is it possible that a country with such intellectual resources in medicine and such massive health expenditures can turn in such a mediocre report card? The pursuit of excellence in medical care led by the academic medical centers has not been matched by the pursuit of equity. Indeed, the costly sophistication of medical care may, inadvertently, have reduced accessibility particularly for those Americans without health insurance. This group is now estimated to number between 30 and 40 million people of whom 1/3 are children. In 1977, John Knowles, then President of the Rockefeller Foundation, captured the essence of the American medical dilemma in the title of a high level symposium, "Doing Better and Feeling Worse".

The use of medical technology in health care has been intensified as a function of professional demand, patient expectation and fear of litigation. There have been enormous benefits from the advances in technology, but the trend has had two adverse consequences: first, the cost of care of an episode of illness has escalated rapidly; and secondly, the technological imperative in diagnosis and treatment has so overshadowed everything else in patient management that many doctors have lost sight of those other factors which make the difference between disease and illness.

First, on the matter of escalation of cost of care, the National Leadership Commission on Health Care, a panel of private citizens and health professionals seriously questioned in their recent report the quality of care which patients receive. They noted that approaches to therapy vary widely from hospital to hospital within the same city; that new procedures are introduced into practice before there is evidence of their effectiveness; and that the sky-rocketing bill for sophisticated technological medical care is already a critical public and private policy issue. As Roger Dyson, economist to the Great Britain national health service, points out, advances in medical

science create the opportunity to increase health care costs three times as fast as the increase in gross national product. Some years ago, Professor Colin Dollery suggested in his Rock Carling lecture that only about five percent of therapeutic interventions in common use have been proven to be effective. This does not mean that 95 percent are ineffective, but rather that the vast majority have been accepted without evaluation of their effectiveness.

It is easy to ridicule blood letting and leeches which were the mainstays of medical practice a few centuries ago. In the modern era of rational therapeutics, however, it is still not difficult to identify widely used remedies such as coumarin anticoagulants for myocardial infarction, gastric freezing for peptic ulcer, and agents to lower blood cholesterol which have joined the therapeutic discard list after years of enthusiastic use. In other cases, we have failed to define the precise subgroup of patients most likely to benefit from treatment to ensure that it is only used for them, e.g., the use of coronary care units after myocardial infarction and carotid bypass for cerebral ischemia. The type of evaluative research required has not enjoyed high status in academic medicine in the United States and, as Arnold Relman, editor of the New England Journal of Medicine, points out, "We could probably dispense with. . . Maybe even 30% of procedures now in use without any loss of effectiveness". An investment of $500 million, one tenth of one percent of U.S. health expenditures, devoted to studies of efficacy and effectiveness could provide substantial savings in health care costs and at the same time improve the quality of services rendered *if* the results were adopted by doctors and reflected in the payments system.

What kind of an example do we set in the teaching hospitals of an academic medical center? We justify higher than average investigative cost of a patient on academic grounds, but do we provide students with an appreciation of the cost and effectiveness of the techniques of diagnosis and treatment in patient management and the relative value of possible options? In the investigation of headache, for example, large clinical studies have demonstrated first, the extraordinary rarity of brain tumour presenting as headache without neurological signs and secondly, the frequency with which clinical findings from history and physical examination establish the extracranial origins of headache. Nevertheless, many patients with headache as the sole presenting symptom are subjected to expensive investigations including brain scans to "rule out" a brain tumour. This is not only unnecessary for the patient but uses scarce resources which could help others. We need to maintain a perspective of the needs of the total population served as a context for making decisions on individual patients. Without this perspective we will lack the critical judgement on what is needed, what benefits might be expected, and what is the opportunity cost. In no case is this more apparent than in the management of the terminally ill when vast resources are aggressively applied to add days of life in hospital when a less intrusive approach might add life to days at home.

Physicians have a profound steering effect on the use of health resources. Do our educational programs prepare them to exercise that steering effect wisely? Academic

medicine in the United States enjoys immense prestige for its achievement in medical science. The scientific rigor which created the new diagnostic and therapeutic interventions has not, however, been matched by scientific rigor in the evaluation of their use.

The pre-occupation of academic medicine with new technologies for specific diseases has allowed the changing health needs of the population to go largely unnoticed by the mainstream of medical education. With the changing demographic composition and profile of illness, the preponderance of health problems are associated with chronic disability, yet teaching programs are still geared primarily to acute episodes of illness. In modern economic jargon we have become dominantly "supply-side" in our orientation to medical care looking for patients to fit our specialized technologies and gaining satisfaction and renumeration from technological interventions. A "demand" approach which begins with an evaluation of the health needs of a population would identify many gaps, particularly those relating to reduction of the incidence of low birth-weight babies, attention to problems of adolescent health, management of mental illness and the maintenance of health and delay of disability in the elderly and in patients with chronic diseases. Without an information system on the health status of the population it will be difficult to target programs of health promotion, disease prevention and early intervention.

The great bulk of the population's health problems originate outside the hospital, removed from view of the clinical leaders in academic medical centers. Their incomplete perspectives lead to serious distortions in policies on training health manpower, organization of health services, and priorities in resource allocation. Making their perspective whole is critically important because their advice is so influential, particularly in less developed countries. Their purview must be the community population — not just the hospital population — and their analytic approach epidemiological, in order to bring quantitative skills to the critical evaluation of health needs, effectiveness and efficiency of interventions and resource allocation in relation to the health status of the population.

Furthermore, health is much more than the absence of specific diseases. The major differences in how disease is expressed in different individuals and in different economic and cultural groups and the variability in effectiveness of treatment may be strongly influenced by host factors in patients, by the caring process itself, and by the strength of coping mechanisms. The nature of social relationships and the quality of human interactions may have an important influence on tolerance of disease and sense of well-being as Syme, House and others have pointed out. The physician's ability to deal with illness as distinct from disease involves an understanding of the individual, the family and the community context. The frequency of readmission to hospital of elderly diabetics living alone can be dramatically reduced by regular home visits by a health worker. The morbidity of children of single parent households is significantly higher than that of dual parent households of similar economic level. The incidence of malnutrition in children in the urban slums of

Bangladesh is three times greater in families where the breadwinner has been sick during the preceding month. And the health and socioeconomic consequences of blindness from Onchocerciasis in West Africa are much less in Mali, where the individuals are members of an extended family community, than in Guinea where nuclear families are the norm. Understanding of these important factors that determine the degree of illness and disability of a patient is critical to good patient management. In addition, it provides the basis for policy advocacy to deal not only with the factors which contribute to the illness, but with what can be done to eliminate them. This is especially important with the elderly and patients with chronic disease where reduction of morbidity and maintenance of independent living are more realistic objectives than cure. Health expectancy may be a more important objective than life expectancy. The importance of policy advocacy by physicians has been demonstrated in the case of smoking. There are other challenges, for example, alcohol, drug abuse, family violence, and environmental hazards, where public education and public policy changes could substantially reduce major causes of morbidity and mortality. Does the physician's responsibility extend beyond the individual patient to becoming an advocate for changes to eliminate the causes of diseases? Or is this someone else's responsibility?

Technologies can be ordered and executed by others. To understand the factors which influence illness and to gain the maximum impact of the curing process itself require physicians to listen to their patients patiently and to take time to communicate advice in a manner that can be understood. Most physicians score poorly on both counts. Pressure on time forces short cuts, and these elements are the first to be dropped. But as Feinstein has pointed out, the physician's concern and communication skills are quantitatively important elements in the clinical results of treatment. The placebo effect varies greatly among countries, institutions and, presumably, physicians.

Most educational programs give lip service to communication with patients in the undergraduate curriculum and entirely neglect the skills at the graduate level when reinforcement is needed most to establish the pattern for future practice. In our evaluation of clinical skills we rarely assess the effectiveness of a student or resident in communicating with the patient although this is a critical factor in patient compliance with medical instructions. Until these skills are a pass-fail element in the evaluation of clinical performance, it is unlikely that communication will be moved from window dressing to the central position it deserves in clinical training. Nor will patients gain the maximum benefit from interaction with their physicians.

National concerns about medical education have an important international dimension. The model of American medical education has shaped medical schools throughout the world and has strongly influenced their approach to medical services. There is reasonable doubt that we have the ideal model for a country with the vast resources of the United States. There can be no doubt that the model is inappropriate for countries of the third world with an annual health care budget of $10 to $20 per

person. In 1988, the World Conference on Medical Education in Edinburgh described with concern the growing dichotomy worldwide between medical education and the general health needs of society. It identified a series of priority actions to broaden the horizon of medical education from high technology curative and palliative procedures in teaching hospitals to a wider vision which "truly meets the defined needs of the society in which (the medical school) is situated". It was an unmistakable plea for medical schools to balance their obsession with international standards of technical eminence with attention to the health needs of greatest local relevance. The executive director of UNICEF, James Grant, posed the question "Is the medical community wise enough to make the hard choices now which would ensure its continuing leadership role in society's health in the 21st century—or will inertia compel an underserved society to take health into its own hands?".

Some have argued that medical schools should concern themselves only with the diseases of individual patients and that the health needs of populations, the determinants of health, health promotion and disease prevention are the responsibility of others. A concern that medical schools were not addressing the root causes of morbidity and mortality led the Rockefeller Foundation to launch schools of public health worldwide starting with Johns Hopkins in 1916. But 60 years later the Foundation's officers were uncertain that the schools were strong enough to cope with the broader health challenges of the 1980's symbolized so well by that phrase "Doing Better and Feeling Worse".

With support from the Rockefeller Foundation, I undertook a study in 1979 of the role of schools of medicine and public health in addressing the broader issues of health in countries at different stages of development. Two consistent themes emerged. The first was that available resources were not being used effectively to achieve the maximum impact on health. For example, money was being invested in tertiary care services in some developing countries where more than half the population did not yet have access to the most basic health care. Trained largely in industrialized countries their medical leaders were putting into practice our models of medical care, pursuing international standards without relevance to local needs or available resources. The second was that, although the techniques to manage health resources more effectively were available, the three groups of professionals who might have been expected to put the techniques into practice had failed to do so. Public health officers seemed unable to influence the health service system, much of which lay outside their authority; hospital and health administrators seemed more concerned with administration than health; and practicing physicians were so focused on individual patients that they rarely used their substantial leadership ability to influence the broader health agenda. There were few people in leadership positions with breadth of perspective, knowledge of the health system, and the analytic skills necessary for rational decisions on policy and management. What was needed was not just more epidemiologists but more epidemiological thinking by those responsible for assesing health needs, allocating resources, and planning and managing health programs. This call for critical analytic skills and a population perspective was not new. For

more than a century leaders in clinical medicine had searched beyond their individual patients for the root causes of the public's health problems. They had been advocates and engineers of immunization, environmental controls, social programs, preventive services and other measures to protect the public's health. The importance of epidemiological thinking for medical care systems was eloquently articulated in the late 1960's at the University of North Carolina by people such as Kerr White, Frank Williams, Bob Huntley and Dan Martin and in the United Kingdom by Dr. Archie Cochrane. During this period programs to prepare clinical scholars in health policy and in clinical epidemiology, funded respectively by the Robert Wood Johnson Foundation and by the Milbank Memorial Fund, helped to prepare individual physicians to address the broader health issues in U.S. medical centers.

In spite of articulate advocacy and the training of outstanding young faculty members, however, there was little evidence of institutional change to strengthen the population perspective in the teaching and research programs of academic medicine. Several efforts to build institutional commitment warrant mention. First, with Dr. Kerr White's leadership, the Rockefeller Foundation began a longterm program of support to establish clinical epidemiology units in medicals schools as a means for training physicians in the quantitative analytic techniques required to evaluate health needs and the effectiveness of their clinical interventions. From ten years of investment has now emerged the International Clinical Epidemiology Network (INCLEN) comprising 27 medical schools in Asia, Africa and Latin America and five Clinical Epidemiology Research and Training Centers in industrialized countries. One of the five Training Centers is at the University of North Carolina. The clinical epidemiology units have now become a significant force in population-based thinking and in critical review of clinical interventions in the developing countries in which they are located.

The second example of efforts to create institutional commitment to the population perspective was initiated by Rebecca Rimel of the Pew Charitable Trusts and is being implemented by Dr. Steven Schroeder as Project Leader. The "Health of the Public" program launched by the Pew Trusts and the Rockefeller Foundation was designed to sensitize academic medical centers in the United States to the rapidly changing health needs in this country and to mobilize schools of medicine and public health and other relevant university disciplines to establish innovative responses in their educational and research programs. Rockefeller Foundation support for this program was strongly motivated by the need to have in some American medical centers a more appropriate environment for training third world health personnel. From a two stage national competition involving proposals from 89 academic health centers, six were selected for program support. The University of North Carolina was one of the successful competitors. The stated goal of the University of North Carolina proposal is to promote population-based health concepts among senior faculty in Medicine, Public Health, Nursing, Dentistry and Pharmacy and through their leadership to introduce the concepts into the teaching, research and patient-care programs of the schools.

The third initiative was launched by Dr. Joseph Cook, of the Edna McConnell Clark Foundation, at about the same time as the "Health of the Public" program was started. He convened a group to review how the health research needs of developing countries might be more effectively met. From these discussions emerged the Commission on Health Research for Development, an independent international group sponsored by foundations and development agencies in Europe, North America and Asia. The Commission has found that the world's health research agenda is dominated by the interests of the most affluent countries, in particular, the United States. Only 5% of the global health research expenditures are directed to the specific health problems of developing countries which represent 3/4 of the world's population. Futhermore, the neglected problems are not just tropical diseases such as malaria, schistosomiasis and leprosy. They include such diseases as tuberculosis, which has ceased to be a focus of research interest in industrialized countries but which remains the commonest preventible cause of death in adults aged 15–59 in the developing world. Since the research resources of most developing countries are very limited there is a compelling case to adopt a population-based perspective in global terms and to mobilize the world's scientific capability to address the principal causes of disability and premature death in these countries. Biomedical research is rarely location-specific and, therefore, the results can be shared among laboratories in industrialized and developing countries with the objective of finding answers to critical problems more rapidly.

But, in the opinion of the Commission, the overriding research priority for every developing country is the type of research which measures the burden of illness in the population and the effectiveness of health programs. It is this type of study which informs those making judgments on health policies and management decisions, how to organize and finance health care and how to make the best use of the technologies currently available in the specific circumstances which prevail in that country. The Commission has labelled this type of reserch, "Essential National Health Research": "Essential" because without it the limited resources for health will not be used wisely; and "National" because the results are strongly influenced by local conditions and therefore may not be applicable in or transferable from another country. There is an urgent need to build institutional capacity to carry out Essential National Health Research in nearly every developing country. Regrettably this type of research has been a low priority with medical schools and research granting agencies in developing countries. Their academic leaders and medical scientists have, until recently, been more interested in international recognition for biomedical research than in local impact from health systems research. In this regard, they have followed the example of leading North American medical schools. Fortunately, however, some of the best groups in developing countries are recognizing that international eminence may result from research of local relevance. This theme is being reinforced by the International Clinical Epidemiology Network and by an international network designated as the "Community Oriented Educational Institutions for Health Sciences". Their aim is to bridge the gulf between the interests of medical schools and the health needs of the population, the problem cited by the World Conference on Medical Education in Edinburgh.

Flexner brought to medical education professionalism rooted in the scientific method and laboratory diagnosis. This has flourished in the biomedical sciences and has contributed immeasurably to the understanding of disease and to the discovery of powerful new technologies for diagnosis and treatment. But the care of patients and effective management of health resources requires additional knowledge and skills. In most academic medical centers, the sciences underlying the social, economic and behavioral determinants of health and the evaluation of effectiveness of interventions have remained underdeveloped and separated from clinical medicine. Few clinical role models exist and the curriculum experience is inadequate to assure this critical aspect of the formation of a physician. The setting for clinical experience is not only the ICU or hospital ward, but also the population of the community. The research depends heavily on epidemiology, biostatistics, and the social and behavioral sciences. Diagnosis, treatment and prevention address not only the individual patient but also the community where the determinants of health, risk factors for disease and factors influencing the disability from illness can be measured and modified. It is this challenge which has been neglected by academic medicine. The attention now being given to this challenge by foundations, international agencies, and by some leading centers such as the University of North Carolina, raises hope that academic medicine will find a new path to international eminence through local relevance, linking once again the mission of the physician and the health needs of the community.

I conclude with a quotation from Dr. Kerr White's forthcoming book *"Healing the Schism: Epidemiology, Medicine and the Public's Health"*: "I once asked the leading professor of medicine in a developing country what advantages his country had derived from the Rockefeller Foundation's benefactions. He thought for some time and replied: 'They brought us (meaning the medical school faculty) up to international standards, but they took us away from the people'. Do we really want our faculties of medicine to be remote from the populations they serve? No matter how many other health professions are involved, do we really want commitment to bettering the public's health to be something apart from the mainstream of the medical enterprise?"

The health system in America is a patchwork quilt with some of the squares missing. Medicine has no monopoly on finding answers to critical problems but the medical profession needs to learn how to be a more effective partner with other professions in solving problems of a magnitude which requires all our resources. The rate of increase in cost of medical care and the inequity of access to care for financial reasons are issues which the academic medical center must address. We are part of the problem. We must become part of the solution. It is also critical for us to re-examine the objectives of medical care: Is it to add days to life or life to days and is the target increased life expectancy or increased health expectancy? The achievements in biomedical science and medical technology will surely be regarded as one of the most important contributions of the 20th century, but to realize the full potential of these advances we need to apply the same scientific rigor in evaluating their effectiveness and to match the supply of technology with the health needs of the population in resource-allocation decisions. We need to recognize the difference between disease

and illness. We need to give much more attention, both in our teaching and in our research, to the host and environmental factors and the coping mechanisms which influence the degree of disability a patient suffers from a specific disease. In the same way we must recognize the nonspecific impact of the concern, caring and communication by physicians on the patient's perception and the actual outcome of treatment. Finally, at least a small part of each physician's responsibility should extend beyond care for the individual patient to advocacy for changes in the policies and practices which influence determinants of health and causes of disease. Population based information on disease trends and professional advocacy may help communities and political jurisdictions to deal with the root causes of ill health.

There is a long and strong tradition at the University of North Carolina of support for the broader health objectives. The culture has nourished cooperation among the health professional schools and interdisciplinary linkages with the university in a way that sets this center apart from most others in North America. The tradition has been reinforced by the vision and leadership of some remarkable people who have been risk-takers for the objectives they cherished. Cecil Sheps, John Cassel, Bernie Greenberg, Chris Fordham, Floyd Denny, James Bryan, Suzanne and Robert Fletcher are some that I have been fortunate to know. I know there are many others. Their broad vision is reflected in important programs: the Tricounty Community Health Center, the AHEC Program, the Arthritis Center and the Hemophilia Center which extend from basic research to state wide outreach, the New Health Promotion and Disease Prevention Center, the Clinical Scholars Program, the INCLEN Fellows, the Health of the Public initiative and the efforts to establish a population perspective in family medicine and general medicine. The most important resource for the future is the outstanding group of students in the undergraduate medical program, some of whom I have been privileged to meet.

From this substantial base is there now the confidence to move from responding to specific funding opportunities to a more proactive role which would bring these broader health objectives into the mainstream of undergraduate and graduate medical education and the defined mission of the academic health center? Such leadership would not only benefit North Carolina but inspire, by example, other academic health centers in the United States and abroad to achieve international eminence by addressing critical issues of local relevance.