ANSWERS TO A CONGRESSMAN'S QUESTIONS

AN EDITORIAL

1. Why am I, as a medical scientist, distressed over a small 5 to 10% cut in our budget for research?

   For several reasons:
   
   a) The funds allocated for extramural research and training to the National Heart Institute (as an example) were less for the year ending June 30, 1969 ($125.4 million) than they were for the year ending June 30, 1963 ($127.4 million), yet during that 6-year period the costs of research increased to an unprecedented degree. It would require at least $1,500,000 in 1969 to buy research that cost $1,000,000 in 1963. Therefore, the "plateau" or "hold-the-line" policy on funding has, in effect, already decreased heart research and training in 1969 to two-thirds of that in 1963. Inflation has changed $125.4 million to $83.6 million. If there was any "give" in the budget ("fat" in Congress' language), it is long gone.

   b) Failure to increase the budget in the fiscal year 1970 (to restore the "one-time" cut in 1969 and to pay for increased cost of research in the last 2 years) will now result in disruption of medical research teams and financial difficulties for many of our medical schools.

   c) The constant threat that another branch of the Government (the Bureau of the Budget) can, with little or no notice, reduce research budgets appropriated by you leads to further instability of our research programs and apprehension in our medical schools, where most of the medical research is done.

2. Why does a reduction in N.I.H. funds for medical research trouble the Schools of Medicine? Aren't research funds used only for research and education funds only for education?

   If all our research were done by scientists working in a research institute in the country and all of our teaching by professors in a medical school in the city, closing the research institutes would not jeopardize the financial stability of the medical schools. But this geographic and functional separation does not exist. Every professor in a medical school teaches and does research. And, in many cases, part of his salary (related to the time he spends in research) comes from an N.I.H. research or training grant; 48% of the faculty receive some salary from such grants (11% receive at least half and 16% receive all).

3. Can't we fire the 16% who receive ALL their salary from research grants without influencing the teaching function of the medical school?

   Twenty years ago, maybe. Not today. Science is the base for medicine. A good physician must learn to think scientifically—how to use special apparatus, how to collect quantitative information, how to evaluate it and how to draw conclusions from it. He uses this training every time he has a patient who presents a difficult problem in diagnosis and treatment. Further, a physician-in-training must learn to be critical of what he reads and hears, because he must continue his education on his own for 40 years after he leaves his medical school and university hospital. He often receives his most effective education in scientific medicine from full-time or part-time researchers by working as part of their research team during the summer months. For example, in one medical school the staff of a research institute (who you might expect would do no teaching) accept 30 medical students for 3 months every summer for this special and personal type of scientific training.

   Further, you say we need many more physicians in this country and to get them we must train many more faculty members for new or existing medical schools. Just as a good surgeon needs years of special surgical training, so a good faculty member needs 2 to 3 years of special research training. This training is provided in the research laboratories of our biomedical scientists. For example, over the last 10 years one research institute in one school of medicine has provided 1 to 3 years of such special training to 140 American physicians. Not all are now full-time faculty members but most are: 6 are now professors, 31 associate professors, 61 assistant professors and...
In summary, research and teaching in a medical school interact continuously. Cripple one function, and you cripple the other.

4. You ask, in 1969, isn't it more important to deliver health care than to support research?

I agree on the urgency of providing health care to everyone. It is the right of every American to have a good doctor when he needs one. But it is not an either-or matter. We need both—both care and research. You can search scientific laboratories and you will not find remarkable new discoveries hidden in dusty corners—discoveries that should be "delivered" to the sick. If, by some magic, there were at this moment enough physicians immediately available to care at once for every sick person in this country, they would not have enough specific care to deliver. Fifty years ago physicians had little to deliver except their presence, charm and personality. Today, they can deliver the cure for many diseases and the prevention of others—because of the discoveries of medical science. But they can't deliver a cure for coronary artery disease or for emphysema or for hundreds of other disorders because as yet not enough is known about these.

Let's not put delivery of care and research to improve care in competition with each other. A country that can afford to send men to the moon can afford both adequate delivery of what is now known and the scientific work to uncover what is not yet known. Separate the budgets for the two; provide enough for delivery of health care in one budget and enough for medical research in the other.

5. Will it hurt medical research to decrease its budgets for 1, 2, 5 or 10 years?

It takes years to construct a building that can be knocked down by a wrecker's ball in a few days. It takes years to recruit and train top-notch research teams. They too, can be knocked apart in a few days, but it will take years to reassemble them. Be sure that they are not essential before knocking these teams apart.

6. Wouldn't the country be better off if half of our medical researchers went into the practice of medicine and delivered health care?

Many research workers have the Ph.D. (not the M.D.) degree and of course are not permitted to practice medicine. Many of those with a medical degree have had no clinical training beyond their medical school years, and these were many years ago. I finished my internship 33 years ago and have not had full responsibility for the care of patients since then; I doubt that an informed patient would select me as his physician. Further, I suspect that changing innovative, creative scientists into practicing physicians would be somewhat like drafting the expert designers of our supersonic transport to meet a shortage of pilots for commercial jet planes.

7. Won't we get the answers we need more quickly by supporting applied research and development than by supporting basic research?

Again, it's not an either-or proposition. We need both. Two years ago, the whole world was excited by the first transplantation of a human heart; surely this was a triumph of applied research! Today, we know that such transplants fail because of lack of enough basic immunological knowledge of the rejection mechanism. This lack will not be filled by someone using a scalpel and sutures but by a basic scientist. An "Operations Hindsight" in biology and medicine will show that almost every major advance in health depended on a prior basic scientific discovery. Cardiac pacemakers depended on knowledge of the conducting system of the heart; electrical stimulation of the carotid sinus as a treatment for angina depended on basic knowledge of baroreceptors; artificial valves required prior knowledge of blood clotting on a variety of materials and surfaces; antihypertensive drugs required basic knowledge of neurohumoral transmission in the sympathetic nervous system; correction of...
renal hypertension first required basic work on renal ischemia and the renin-angiotensin system; our most effective diuretics required prior basic work on renal physiology and biochemistry. The intensive coronary care unit would be impossible without the basic work that developed rapid or continuous methods for studying the heart and circulation and measuring blood oxygen and carbon dioxide. Modern diagnosis of pulmonary disease had its beginnings in basic physiological studies of intrapulmonary distribution of air and blood, diffusion of gases across membranes, and the work of breathing.

Basic and applied research are both necessary. Each is apt to be more productive when there is frequent interaction. Perhaps encouragement of interaction, rather than an either-or attitude, would be helpful.

8. Have Federal funds for biomedical research produced the expected “pay-off”?
Congress must appreciate that scientific knowledge can’t be produced on a predetermined schedule and that scientific breakthroughs can’t be expected on a monthly basis. Scientists in medical schools give more time and effort per dollar than any other group I know. Many work 80 hours a week (and are paid for 40 hours’ work) 52 weeks a year; they receive no overtime pay; their schools make no profit.

9. Scientists seem to be insatiable in their requirements for Federal dollars. How much is really needed?
A comprehensive study should be undertaken to determine the dollars needed for:
   a) the medical education of students who intend to practice medicine;
   b) the special education of research staff and medical faculties;
   c) biomedical research;
   d) delivery of health care.
The necessary competence for such a study does not now exist in Congress or in the President’s Office or in the Bureau of the Budget. The study will require a high-level, nonpolitical commission that reports to Congress. It must study carefully the consequences to all four (medical education, faculty training, research, care) of an increase or decrease (or change in pattern) of funding of each.

In the meantime, the N.I.H. should be kept in a healthy state. Throughout the world it represents the model of governmental support of biomedical research and training, and many of the countries of the free world depend on U. S. research laboratories, supported by N.I.H. funds, for the training of their medical school professors.

1969 seems to me to be a time for statesmanship on the part of both Congress and medical scientists—a time to build an overall national policy for medical science, medical education and health care directed toward both immediate and long-term gains for the health of all of us.

What are our national goals?
In space, we’ve landed men on the moon—the national goal is now Mars.
In the air, we have passenger planes that fly 600 mph—the national goal is now SST at 1800 mph.
In weapons, we have a variety of nuclear warheads—the national goal is now antiballistic missiles.

WHAT ARE OUR NATIONAL GOALS IN MEDICINE?
We’ve learned how to prevent or cure most infectious diseases—is it the national goal to forget about the cure of cancer?
We’ve learned how to prevent poliomyelitis—is it the national goal to shelve the prevention of coronary artery disease?
We’ve learned how to control population—is it the national goal to delay better control of mental disorders?

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