National Cancer Program

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Report of the President's Cancer Panel

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NATIONAL CANCER PROGRAM

Report of the President's Cancer Panel
1975

Submitted to
The President of the United States
for transmittal to
The Congress of the United States

U. S. DEPARTMENT OF HEALTH,
EDUCATION, AND WELFARE
Public Health Service
National Institutes of Health
National Cancer Institute

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PRESIDENT'S CANCER PANEL

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The President
THE WHITE HOUSE
Washington, D. C.

August 12, 1975

Dear Mr. President:

As Chairman of the President's Cancer Panel I am pleased to set forth in this letter the Panel's annual evaluation of the efficacy of the National Cancer Program as required by Sec. 407(c)(4) of the National Cancer Act of 1971.

The Director of the National Cancer Institute and the National Cancer Advisory Board have already reported to you on the progress of the Program during the past year, and this letter will not undertake to duplicate the material contained in those reports. Instead, I will attempt to give you the Panel's evaluation of the Program and to deal briefly with some of the important issues which we feel should be brought to your attention.

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Overall Evaluation. The National Cancer Act of 1971 reflected a desire by the Congress and the Administration to give cancer research a higher priority. In the implementation of this policy, the funds which have been made available to the National Cancer Institute have been increased in successive steps from $180 million in 1970 to $699 million in 1975. These increases have permitted the Cancer Institute to support more and better cancer research than has ever heretofore been possible. Despite the rapid growth of the Program, a high order of excellence has been achieved in the work supported, and a good balance has been maintained between the various types of research involved and the varying research objectives.

The National Cancer Program is involved in four principal areas:

(1) *Fundamental Research.* Fundamental research in basic biomedical science is essential in order to provide the science base upon which to build improved technologies for prevention, diagnosis and treatment. Because of the vast areas of ignorance that still exist in our understanding of the cancer problem, research in basic cell biology, molecular biology, virology, immunology, enzymes, cell surface phenomena, cellular kinetics and other like areas of basic research are essential to the cancer research program today. This basic science must be supported at an adequate level if we are to have a continuing and increasing fundamental science base upon which to build in the area of cancer. Accordingly, over one-half of the resources of the National Cancer Institute go to fundamental research. It is often pointed out by critics of the Program that we do not have in cancer the fundamental science base that was present in both the Manhattan Project and the Space Program. This distinction is correct and is well recognized by those responsible for the Cancer Program. That is the reason that the largest area of expenditure in the Cancer Program is fundamental research designed to broaden our science base.

(2) *Applied Research.* In those areas where an adequate science base exists, it is appropriate to support applied research which is designed to produce improved technologies for prevention, diagnosis, or treatment. It should be emphasized that applied research cannot be fruitful unless an adequate fundamental science base exists, so the

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opportunities for highly productive applied research in cancer are limited today. Hence, the emphasis on basic biomedical research rather than upon applied research.

One of the worries about the Cancer Program has been that an effort would be made to do applied research without an adequate science base; that there would be an attempt to target research where targeting was not feasible and not likely to be productive. The Panel finds very little evidence in the Program itself for this concern. The Program has recognized that targeted or applied research is only appropriate and proper where an adequate science base exists, and that it is likely to be wasteful and unproductive if the science base does not exist. The National Cancer Institute administrators are well aware of this distinction.

A closely related but clearly distinguishable problem is the problem of centralized prescription for basic research. There is no question that there is a temptation on the part of administrators, particularly if those administrators are active intramural scientists or ex-scientists, to want to prescribe areas of fundamental research to be undertaken. However, experience has proved that fundamental basic research is likely to be most productive when it is conceived by the investigator. Therefore, the Panel and the Board have both encouraged a very high emphasis upon investigator-initiated, peer-reviewed, grant-supported basic research.

(3) *Application of the Results of Applied Research to Human Subjects ("Technology Transfer").* The next stage in the research process is the investigation of the efficacy of the results of the applied research on human subjects. After the science base has been developed and the applied research has been done so that a technology exists, it is necessary to determine whether the technology works. This determination is usually made first with respect to animal models and then with respect to humans. This latter phase of the research effort is being conducted in the Cancer Program by the Clinical Cooperative Groups, the various treatment programs, the Comprehensive and other treatment Centers, the Organ Site Task Forces and other researchers engaged in the initial application of new technology to the prevention, diagnosis or treatment of human cancer.

(4) *Widespread Dissemination of the Best Technologies.* Once the technology has been developed and has been found to represent an improved technology for the treatment of human subjects, it is desirable that as large a portion of the population as possible have the benefit of the new technology. This is not a research function *per se* and would normally be a part of the Health Care Delivery System and not a responsibility of an Institute whose mission is research. However, in the control provisions of the National Cancer Act, the Congress has made it the responsibility of the National Cancer Institute through education, communication, and in other ways, to obtain the widest possible application of the best technologies of cancer treatment. For example, once it was discovered that acute lymphocytic leukemia in children could be cured in a large percentage of cases provided the right treatment was applied, it was necessary to get this treatment to as high a percentage of infants with acute lymphocytic leukemia as possible. An

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extensive education program to this end was undertaken, with the result that now a much higher percentage of the infants with acute lymphocytic leukemia are being provided the best treatment that our present knowledge permits.

Obviously, the National Cancer Institute cannot begin to take on the cancer treatment responsibilities of the nation. However, it does undertake programs which are designed to attempt to see that the best treatment technologies are widely dispersed.

These four steps can be clearly envisaged if we look backward upon our progress in polio. Basic science over many years ultimately came up with the fundamental science base necessary to solve this problem. That science base consisted of the knowledge that three identifiable viruses and no others caused polio, and that these viruses could be grown in tissue culture. With this fundamental science base in hand, it was inevitable that the applied research accomplished so skillfully by Salk, Sabin, and others would produce technologies (in this case a vaccine) capable of preventing polio. Once the vaccine had been developed it was necessary to test it first on animal models and then on human models. When it had been determined beyond question that the vaccine worked, the three stages of the research were complete. The next step was general dissemination of the technology among the population. In the case of a relatively simple and inexpensive technology such as the polio vaccine, it was a comparatively simple task to gain widespread dissemination promptly and the job was done—or was it? Unfortunately not, for now we are beginning to be lax in our application of this technology and some polio is beginning needlessly to reappear because of our failure to utilize the great scientific knowledge which we have in hand. Unfortunately, in cancer the fundamental science base will in all probability never be quite so clear-cut and limited as it was in polio, but one by one scientific bases will be developed, will provide the impetus for the applied research, and in turn the technology which will permit us to deal more effectively and more satisfactorily with cancer.

The advances of the past few years in the fundamental science of cancer have added so much to the scientific base that there is little question that we have more to build on in the way of fundamental science than has ever before been the case. By the same token, there remains an almost limitless amount of basic science to be done. The fact is that we are at the stage in our fundamental science where discoveries very often present at least as many new questions as they answer. However, the continued building of this base is essential, not only for the understanding of cancer but also for the understandings which are necessary to deal adequately with many other diseases, such as multiple sclerosis, diabetes, arthritis and neurological diseases.

Recent research in the area of treatment has also been very productive. Important progress has been made in the past few years, not only in acute lymphocytic leukemia and other childhood tumors and Hodgkin's disease and other lymphomas, but also important progress has been made in

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connection with breast cancer, ovarian cancer, and lung cancer. Fortunately, it is possible to make progress in the treatment of certain specific cancers without having all of the fundamental knowledge that undoubtedly will be necessary before we can produce the ultimate answers.

Mechanisms of Support. During fiscal 1975 the National Cancer Institute spent a total of $699 million. Of this amount, $540 million was spent directly on research. Of this $540 million, $50 million was spent on the exceptionally excellent intramural program of the N.C.I., and $490 million was spent in the extramural support of research in our best institutions throughout the country. An additional $34 million went to centers' support, $28 million to manpower support, and $46 million was spent on construction, all of which are in support of the extramural programs. The balance of $51 million was spent on cancer control. If we break the $699 million total down another way, we find that $331 million was spent on investigator-initiated, peer-reviewed, extramural grants, $108 million on extramural research contracts, $137 million on support, construction, and cancer control contracts, $15 million on inter-agency agreements, $50 million on in-house research, and $58 million on administration.

Grants vs. Contracts. In many quarters it is thought that the Cancer Institute spends too much on contracts and too little on grants. The fact is that grant support has increased far more rapidly with the increased funding than contract support. We were able to fund in 1975 over fifty percent of the approved applications for investigator-initiated, peer-reviewed, grant-supported basic research. Only $108 million in research was supported by contract. The Panel and the Board are far more interested in the quality of the research and the excellence of the researchers than in the mechanism of support. Moreover, a number of those supported by contract, including some of the outstanding scientists in the country such as Drs. Sol Spiegelman, Frank Dixon and Howard Skipper, have advised me that they find no disadvantages by way of unwarranted direction or interference in their contract-supported research. However, in the scientific community generally, contract-supported research tends to be associated with targeting and direction.

Therefore, the Board, the Panel, and the Director have moved consistently in the direction of grant-supported research and away from contract-supported research. We have just introduced a new mechanism of support (Cancer Research Emphasis Grants) which will permit the seeking of investigator-initiated research in broad areas which it is necessary or desirable to emphasize. This new mechanism will permit a further movement away from contract-supported research in the direction of grant-supported research.

Centers' Grants. Another worry that we often hear expressed is to the effect that the research supported by centers' grants is not of the same high quality as that supported by traditional research grants. We find absolutely no evidence to support this assertion. Some of the finest institutions in the country are supported by centers' grants. These include not only the Comprehensive

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Cancer Centers such as Memorial Sloan-Kettering, Johns Hopkins, Mayo Clinic, Duke, Wisconsin, M. D. Anderson and others, where some of the best cancer research in the world is being conducted, but centers' grants also go to many institutions such as Harvard, M.I.T., Yale (before it was a Comprehensive Cancer Center), Stanford, and others who were supported by centers' grants in order to encourage them to do cancer research at a time when such research was not as popular as it is today. Ironically, this criticism of centers' grants has been most loudly voiced by Nobel Laureate, Dr. James Watson, whose Cold Spring Harbor Laboratories are themselves supported under the centers' program. The support of Cold Spring Harbor Laboratories has increased from $436,000 in 1970 to $1,795,000 in 1975. It is a mark of the fairness and objectivity with which the Cancer Program is conducted that neither criticism nor soft-soap affects favorably or adversely the support which is received. The decisions are made strictly on the merits, largely on the basis of the best peer advice available.

There is a legitimate worry about the Comprehensive Cancer Centers which relates to future funding in the event of the recognition of too many such centers. This has been a concern of the Office of Management and Budget, many members of the scientific community, and is very much on the minds of the Board, the Panel, and the Director. Comprehensive Cancer Centers must compete on the merits with all other institutions for the cancer research dollar. Therefore, if too many centers are recognized and we have centers which cannot compete on the merits, we will then be in a position of having centers which we are unable to support. The fear is that, under those circumstances, political pressures would be brought to bear which would force the support of the Comprehensive Centers at the expense of other institutions capable of better cancer research. The answer to this perceived future problem is strictly to limit the recognition of Comprehensive Centers and to recognize them only at institutions that are established academic and scientific leaders clearly capable of competing on the merits.

Cancer Control. One of the most difficult mandates in the National Cancer Act is that relating to cancer control. Obviously the National Cancer Institute cannot and should not take responsibility for the care of the nation's cancer patients. That is part of the General Health Care Delivery System and should so remain. However, the Control Program is designed to extend the efforts of the National Cancer Institute to identify, field test, evaluate, demonstrate and promote the best techniques emerging from research trials in order to extend the use of such techniques by the health professions so that the public may benefit from the best technology available. The Control Program has demonstration projects in the fields of breast cancer, cervical cancer, lung cancer, certain high risk groups such as asbestos and other industrial workers and persons exposed prenatally to stilbestrol, and is engaged in extensive programs of professional and lay education. The Control Division also has a program in rehabilitation and a number of programs designed to bring about the widest possible use of the best technologies of treatment. The activities of the Control Division in this

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area get very close to health care delivery, so that their activities must be watched very closely in order to be sure that the objectives sought are reasonably attainable and that the programs do not cross the line into outright health care delivery.

Training. In my letter to the President of May 24, 1973, as well as my letters of January 25, 1973, and June 12, 1974, I have set forth in some detail my views with respect to training. I will not repeat those arguments in this letter. However, I do wish to state once again that, so long as we are going to support programs in biomedical research, we must, in my opinion, also support strong programs in training. This is the way the work gets done. Fellows and trainees are indispensable to the current research programs and they provide far more in current value to those programs than they cost or can be provided for the same dollars by any alternative device. The O.M.B. must get rid of the notion that these programs are government handouts designed to provide education to already educated and potentially high income groups. These trainees and fellows are a part of the operating personnel at the institutions to whom the research grants are being made, and their presence is fundamental to the receipt of maximum results from the research grants. It is true, as O.M.B. and others have argued, that we run the risk of training more people than can ultimately be used directly in these professions. But in any human endeavor, it is necessary for more people to enter the pipeline than the ultimate number of excellent performers required. No one has yet developed a system which enables us to pick our Nobel Laureates at the predoctoral or postdoctoral level. But those receiving training and fellowship grants are working on the current problems and are contributing far greater current value than their current costs. The ones who do not make it in the ultimate competition will move on into other areas which are of value to themselves and to society.

It is also argued that, since we have approved unfunded grants, we clearly have enough scientists and therefore we should not be training more. But we must not forego our best young minds because we have older scientists whose grants are being funded. The best young minds must be brought into the process not only for the future but for our current success.

This whole training matter has been so confused in recent years that it is deserving of a Presidential directive. The needed directive is quite simple: to the extent that we provide Federal support for biomedical research, we should support related training and fellowship grants at an appropriate level.

International Aspects of the Program. Our international programs are proceeding satisfactorily. We have close cooperation with almost all of the Western European countries, and very close cooperation with those Western European countries which are leaders in cancer research. Our cooperation with the Soviet Union has been enormously expanded during the past three years and these interchanges are also proceeding very satisfactorily. We have good relationships with Japan, and several other Asian Countries, and we have some limited programs with some of the Iron Curtain countries. It is our policy to make our knowledge known to the greatest possible extent to

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all parts of the world and to cooperate and work jointly with other nations wherever such cooperation can benefit the total cause.

Organization. The National Cancer Institute has done an exceptional job in the administration of this rapidly expanding program. I have dealt with a great many government agencies, and I have never seen any government agency that works with such industry, dedication, and commitment as the Director of the National Cancer Institute and the members of his staff. However, we have suffered badly from inadequate allocations of personnel in this expanding program. This was the subject of my letter to you of April 25, 1975, and we are grateful for the relief which we received as a result of that letter. However, we still need some reasonable increases in personnel in order properly to administer this vast program.

Another very disturbing organizational problem is the salary ceiling. Most of our exceptional people are people who have been with the Institute for a number of years and who continue to serve out of loyalty and commitment in spite of offers of higher salary levels in other places. However, the long-term freeze on salaries that has been in existence for five years now has caused us to lose a number of our top people and, with the salary ceiling of $36,000, it is almost impossible to obtain from the outside replacements of equal calibre. The $36,000 salary ceiling also works a serious hardship on the Director and his senior deputies. There are over one hundred people in the N.C.I. who now make the same salary as the Director.

It seems ridiculous for the government to economize by having a $700 million program administered by a $36,000 administrator. Fortunately, we have not yet suffered at the Director level, because it would be hard to find a better man than Dr. Rauscher at any salary. However, we have been able to keep him only by appealing to his loyalty and patriotism and he has stayed on at enormous personal sacrifice. I do not know how much longer we can expect this sacrifice and there would be no hope of bringing in anyone of comparable ability from the outside at the $36,000 salary. Government has never been competitive with private industry and it probably should not be. However, it is no longer even close to competitive with academic and philanthropic institutions and this eliminates what has been the principal source of talent for scientific organizations such as the N.C.I.

The long-range health of these programs clearly requires higher salary ceilings and flexibility to grant salary increases. In a time of unparalleled inflation, most of the senior staff at N.C.I. have had no increase in salary for the past five years.

We have people of outstanding ability on the National Cancer Advisory Board, and without exception, they expend enormous time and effort on this program. We also make tremendous use of a great number of the ablest members of the scientific community. Without this help, which costs us only a small fraction of its value, we could not get the job done. I continue to be amazed by the extent of the willingness of members of the scientific and medical community to give freely and generously enormous amounts of their time to this cause.

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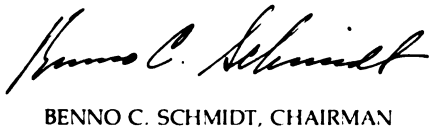
Conclusion. While it is not possible to prepare meaningful cost benefit analyses for basic biomedical research in the sense in which we prepare profit or cash flow projections in business, I have no hesitancy in urging as a sound proposition for the American people the continued support of cancer research at levels necessary to maintain the momentum of this Program as a priority program. In a free enterprise system, basic biomedical research of this type cannot be carried forward on the scale that is required without Federal support. Profit incentives are not there to support adequate basic research in this area, and philanthropic institutions, while providing the bulk of the facilities and personnel needed for this enterprise, must have government help in order to stimulate their activities and to sustain them at the level which the public interest requires. It is this mix of public support and private sector initiative that has made our biomedical research establishment the envy of the world. Not only cancer research but other biomedical research supported by the other Institutes of the N.I.H. should continue to receive strong Federal encouragement. These are among the best of the Federal programs.

If any well-run business were spending $100 billion per year on medical care, it would be spending at least 5% of that amount on research to reduce those costs. While I do not advocate that level under today's circumstances, I do believe that sound business judgment requires that we not cut back on the present effort. Biomedical research is now at a point where our research dollars will be very rewarding, and the Federal expenditures in this field are leveraged dollars which mobilize an effort much larger than the Federal dollars themselves support. The continuance of our biomedical research effort is essential to our well-being as a Nation.

We must continue to regard the Cancer Program as a long-term commitment by the Administration, the Congress, and the American people. We will make progress as we go and there is no doubt that the benefits of this program will be increasingly available to the American people as time goes by. However, neither the Congress nor the public must expect too much too fast. These are profoundly intricate scientific problems and they will take years of basic and applied research before we reap the harvests which are our ultimate goal. However, this research must be done and we must not forsake this task because of its difficulty. We are making extremely important progress and our effort must be sustained.

Mr. President, I would like to express the sincere appreciation of the Panel, the Board, the staff of the Institute and, I am sure, the American people for your strong support of the Cancer Program. Much of your support is a matter of public record, but much of it has taken place unseen in the councils of O.M.B. and the White House. For all of your help, we are most grateful.

Respectfully yours,



BENNO C. SCHMIDT, CHAIRMAN
President's Cancer Panel

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