ANNUAL REPORT: NATIONAL CANCER PROGRAM. 1982 DIRECTOR'S REPORT AND ANNUAL PLAN FY 1984-1988

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FOREWORD

In accordance with Section 404(a)(9) of the National Cancer Act (as amended in 1978), the Director, National Cancer Institute (NCI), must prepare, annually, a report summarizing activities, progress, and accomplishments for the preceding year of operations and a plan, including budget projections, for the ensuing 5-year period.

The program activities, accomplishments, and plans (including budget projections) contained in the 1982 Director's Report and Annual Plan have been reviewed in detail by the National Cancer Advisory Board and its Subcommittee on Planning and Budget.

Based on these reviews, the National Cancer Advisory Board endorses the 1982 Director's Report and Annual Plan and recommends that the Director, NCI, submit the Plan to the Secretary, HHS, for simultaneous transmittal to the President and the Congress.

Tim Lee Carter, M.D.
Chairman
National Cancer Advisory Board

PREFACE

A NEW LOOK AT CANCER CONTROL

Cancer control has taken on a new look. It is now becoming the scientifically based effector arm of the National Cancer Program. It is the means by which our basic laboratory and clinical research advances may be utilized through an orderly sequence of applied research for the ultimate reduction of cancer incidence, morbidity, and mortality in the United States. Several parts of this new cancer control direction are already visible; others will unfold with the advice and the perspective of our advisory councils and as new staff are integrated.

Cancer control research, simply stated, is applied research. It tests specific actions or interventions aimed at having a measurable effect in reducing important cancer problems in people. It tests actions or interventions that could reduce cancer incidence, morbidity, and/or mortality rates in specific groups. It is research aimed at developing methods, plans, or policies to benefit people across the spectrum from prevention through treatment and continuing care.

In order to help follow progress made against cancer, an ordered sequence of research steps called "cancer control phases" has been developed, building on the logic of phased steps in clinical cancer research. The phases will help to assure that community programs derive from carefully conducted population-based research. New Cancer Control Research Units (CCRUs) for defined population studies and a new Cancer Control Science Program are encouraging many excellent scientists in cancer centers and universities throughout the country to take part in this process. CCRUs shall determine how, whether, and to what extent, actions proposed for a particular cancer are effective for defined populations; the populations shall be defined in such a way as to allow generalization to large segments of the population. Cancer control studies shall provide the data from which to set realistic national goals in cancer prevention and management. Through this new systematic approach, we now have (1) the seeds of a participatory method of setting national goals with the oversight of both the Board of Scientific Counselors of our Division of Resources, Centers, and Community Activities and the National Cancer Advisory Board, and (2) the opportunity to set into motion cancer control activities whose actions are measurable.

Prevention programs focus on the three major exposures known to be associated with cancer risk--smoking, nutrition, and occupation. While these are major program thrusts, chemoprevention deserves special comment. Our new chemoprevention effort holds promise for reducing cancer incidence. The growing convergence of laboratory and epidemiological evidence on the inhibition of cancer suggests that chemoprevention merits an aggressive research effort. Human intervention trials are under way to determine whether naturally occurring micronutrients such as beta-carotene, vitamins A, C, and

E; and selenium may have an impact on cancer risk. Our laboratories are testing other promising natural and synthetic chemicals of potential benefit in reducing cancer risk. The National Cancer Institute has developed a cohesive plan for a chemoprevention program which includes all aspects from the development of synthetic compounds through the conduct of human trials. This will help physicians and scientists in this field to efficiently work together for the earliest possible public benefit from the chemoprevention program.

NCI's Surveillance, Epidemiology, and End Results (SEER) cancer registries provide us with a method of monitoring results. For the first time in this past year, the results can be assessed annually. In 1983, throughout the United States, there will be about 840,000 new cases of cancer and about 435,000 cancer deaths. Cancers of the lung, colon, rectum, breast, and pancreas account for half of all cancer deaths. Smoking-related cancers have increased markedly in the past decade and now account for at least 129,000 cancer deaths per year. Mortality rates for most of the other major sites have been either level or declining. Advances in therapy have led to improved survival, and as sufficient time passes after diagnosis for accurate measurement, results of more recent therapeutic advances are expected to become even more apparent. It will be the responsibility of our cancer control program to assure that these have nationwide impact.

Diffusion of clinical research advances for wide public benefit will be stimulated by our new Community Clinical Oncology Program (CCOP). Community oncologists are working together with cancer centers and clinical cooperative groups in this new dynamic program. Patients throughout the country shall have the opportunity to enter into clinical studies in their own communities. Protocol studies promote uniform conduct of clinical trials. They will be an important educational device for participating physicians and assure up-to-date patient management. This cooperative venture among the National Cancer Institute, community oncologists, and research centers will provide new insights into patterns of patient care and technology diffusion and will be a key ingredient in our national effort to reduce cancer morbidity and mortality.

Vincent T. DeVita, Jr.
Director
National Cancer Institute
National Cancer Program

EXECUTIVE SUMMARY

The Report of the Director on the National Cancer Program covering Fiscal Year 1982 and the Annual Plan for the Program for Fiscal Years 1984-1988 was prepared in accordance with the requirements of Section 404 (a)(9), Part A, Title IV, Public Health Service Act, as amended. The Director's Report portion of the document summarizes the accomplishments in cancer research made during the fiscal year, while the Annual Plan portion describes current program activities and future plans, including 5-year budget projections. This information is organized by the Program's major thrusts: cancer biology; cause and prevention; detection and diagnosis; and treatment, rehabilitation and continuing care.

Highlighted in this year's report is the changing emphasis of the cancer control program to place more emphasis on research projects rather than demonstration programs. A major new cancer control program will enlist community physicians, who treat the majority of cancer patients, in the conduct of clinical cancer research. The ultimate goal of this program is to reduce national mortality by speeding the application of effective new cancer treatments in every community. Several factors made the new initiative possible. One was the dramatic increase in practicing physicians specializing in cancer treatment in communities across the country. The other was the success of a small pilot program conducted by the NCI-supported Eastern Cooperative Oncology Group (ECOG). The pilot effort gave proof that community hospitals could meet the same standards of care in clinical research as the major treatment centers.

PDQ--a computerized cancer information system--is also providing physicians in communities throughout the United States with up-to-date information about NCI-supported clinical trials and treatments available in cancer centers. The first phase of this system--PDQ 1--went on line in 1982 and is available at 1,800 hospitals, cancer centers, and medical libraries that have access to the National Library of Medicine's MEDLARS data base. Individuals can obtain a general description of approximately 700 cancer therapy research protocols, including the objective of the clinical study, who is conducting it, and the criteria patients must meet to be eligible to enter the study. In the future, PDQ-2 will be expanded to provide access to state-of-the-art cancer treatment information tailored to fit a patient's particular type of cancer. It will allow physicians to direct their patients to board-certified specialists in their geographic region.

A major advance in the basic biology of the cancer cell is the isolation of cancer genes from cultured cells originally derived from human tumors. These are called cancer genes because they can transform cultures of mouse cells from normal to malignant. However, very similar genes occur in normal cells, where they may have a role in normal growth and development, although this is not yet established. This year several groups of scientists deciphered the genetic code of the cancer gene found in human bladder cancer cells and found that it differs only slightly--but crucially--from that of the gene

in normal cells. Scientists also discovered that the human cancer genes are related to the cancer genes (called oncogenes) associated with certain animal RNA tumor viruses. The human bladder cancer gene differed only slightly from an oncogene originally derived from a rat virus, and the difference was at the same crucial site as the difference between the human bladder cancer gene and the gene in normal cells.

An NCI scientist isolated the first virus associated with a human cancer. Called the human T cell leukemia virus, or HTLV, this RNA tumor virus has now been isolated from the cells of more than 13 cancer patients around the world, including the United States. Although other viruses--such as hepatitis B and Epstein-Barr--are thought to be associated with human cancers, in no case other than HTLV have virus particles actually been isolated from human cancer cells. Scientists have cloned the viral genes, a step that will facilitate more definitive studies. This year scientists were able to transmit the virus in laboratory cultures to normal human cells. And these cells were transformed. It is not yet clear how the virus is transmitted in nature, but there is some new evidence that HTLV may be associated with human tumors other than the rare T cell leukemia.

Studies are under way to find the cause of the recent outbreak of Kaposi's sarcoma and associated opportunistic infectious diseases, called acquired immunodeficiency syndrome (AIDS), primarily among young homosexual males in the United States. The fact that this cancer is associated with a defect in the immune system is of great interest, for it may provide important information pertinent to other cancers. Consequently, the Institute is intensifying its research efforts in this area and has committed research funds to studies of the epidemiology and treatment of AIDS. NCI is coordinating its efforts with other institutes within NIH and the Centers for Disease Control that also are committed to the study of acquired immunodeficiency syndrome.

New 5-year survival data collected nationwide from the Institute's SEER (Surveillance, Epidemiology and End Results) network of 10 population-based cancer registries showed that the overall relative survival rate increased to 45 percent for all patients diagnosed with cancer from 1973 to 1979. About 86 percent of patients who survive their cancer 5 years can expect to live 20 years past treatment and are potentially cured. An earlier study, conducted by the NCI before SEER was established, showed that patients diagnosed between 1967 and 1973 had a relative 5-year survival rate of 40 percent. Although these rates cannot be compared directly because they are based on different populations, the trend does reflect advances in patient treatment.

The SEER registries also collected data on cancer incidence that allowed statisticians to compare, for the first time, cancer rates among various U.S. ethnic groups (American Indians, Hispanics, Hawaiians, Filipinos, Chinese, and Japanese). Knowledge of patterns of cancer incidence is important for identifying new problems and changing risks of cancer that suggest environmental hazards. The data reported this year indicate that the average American's cumulative risk[1] of having cancer through age 74 is 26.5 percent or about one in four.

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1. Cumulative risk is the risk an individual would have of developing cancer through age 74 if no other causes of death were in operation.