MEETING THE CHALLENGE OF CANCER

A Supplement to

THE CHALLENGE OF CANCER
MEETING THE CHALLENGE OF CANCER

In 1950 the National Cancer Institute of the U. S. Public Health Service, and the National Cancer Institute of Canada sponsored publication of "The Challenge of Cancer" by Lester Grant, presenting in book form the story of cancer research based on a series of articles. This supplement, prepared by the Cancer Reports Section of the National Cancer Institute, presents some of the recent accomplishments in meeting the challenge of cancer.

U. S. Department of Health, Education, and Welfare
Public Health Service  National Cancer Institute
1955
PUBLIC HEALTH SERVICE PUBLICATION NO. 419

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer Research in the United States</td>
<td>1</td>
</tr>
<tr>
<td>Diagnosis of Cancer</td>
<td>5</td>
</tr>
<tr>
<td>Treatment of Cancer</td>
<td>9</td>
</tr>
<tr>
<td>Chemotherapy of Cancer</td>
<td>13</td>
</tr>
<tr>
<td>Epidemiology of Cancer</td>
<td>17</td>
</tr>
</tbody>
</table>
Cancer Research

in the United States

Cancer research in the United States has expanded rapidly since the close of World War II. As late as 1937, in this country, not more than half a dozen institutions were in existence for concentrated laboratory and clinical research on cancer. Today, support and coordination are being provided for a nationwide effort in cancer research.

Support for this concerted effort comes principally from four sources. They are: public contributions, private funds and foundations, the United States Government, and the funds of universities, hospitals, and other institutions conducting cancer research.

One of the leading sources of support is the American Cancer Society, largest of the voluntary agencies in the cancer field. The Society, founded in 1913, is a national organization, supported entirely by voluntary contributions. With headquarters in New York City, it has divisions in every State, the District of Columbia, and Alaska, and has affiliations with organizations in Puerto Rico, Hawaii, and the Canal Zone.

The activities of the American Cancer Society take in three broad areas: research, education, and the provision of facilities for diagnosing and treating cancer and of other services to cancer patients. The research program is carried out through grants-in-aid to individual research workers, grants to research institutions, and fellowships to train young scientists in cancer research. During the year ending August 31, 1953, the Society allotted $6,214,880 for the research program. Its campaign receipts for the same period amounted to about $19,800,000. In giving funds for the varied and widespread re-
search activities it supports, the Society is aided by a special advisory group known as the Committee on Growth. This committee functions as a unit of the National Research Council, Washington, D. C.

Another organization which solicits public contributions for work in this field is the Damon Runyon Memorial Fund for Cancer Research, founded in 1947. It makes grants to support individual research projects and to train scientists in cancer research. Between 1947 and mid-1954 the Runyon fund gave about $8,000,000 in grants for research and training.

There are many privately financed organizations interested in cancer research. Some function mainly to make grants for research in other institutions. Examples of these are the Donner Foundation, the Jane Coffin Childs Memorial Fund, the Elsa V. Pardee Foundation, and the Markle Foundation.

Other privately or locally financed organizations carry on research in their own laboratories. Among these are the Institute for Cancer Research in Philadelphia, the Roscoe B. Jackson Memorial Laboratory in Bar Harbor, Maine, the Rockefeller Institute for Medical Research in New York City, the Children's Medical Center in Boston, the Barnard Free Skin and Cancer Hospital in St. Louis, the Roswell Park Memorial Hospital in Buffalo, the M. D. Anderson Hospital for Cancer Research in Houston, the Goldblatt Memorial Hospital and the Ben May Laboratory for Cancer Research at the University of Chicago, and the Sloan-Kettering Institute of the giant Memorial Center for Cancer and Allied Diseases in New York City. At some of these research centers, tax funds and public contributions add to the support provided by private monies.

Federal support of research and related activities in the cancer field is given largely through the National Cancer Institute of the Public Health Service, U. S. Department of Health, Education, and Welfare. Other Federal agencies with interests in cancer studies include the Atomic Energy Commission and the Veterans' Administration, the latter of which carries on cancer research in some of its hospitals.

The National Cancer Institute, located at Bethesda, Md., was established by the U. S. Congress in 1937. Its program
divides into three main parts: research carried out directly by the Institute in its laboratory and clinical facilities at Bethesda; grants-in-aid to support research in hospitals, medical schools, and other non-Federal scientific institutions throughout the country; and efforts to improve methods for prevention, diagnosis, and treatment of cancer. For several years, the Institute also administered grants-in-aid for constructing and equipping clinical and laboratory facilities for cancer research at non-Federal institutions.

Funds to carry on the program of the National Cancer Institute are appropriated annually by the Congress. To meet the growing challenge of the cancer problem in the United States, Congress over the years has increased the Institute's appropriation from $400,000 for 1938 to $21,737,000 for the fiscal year 1955. Each year about 45 percent of the Institute's funds are allocated in grants-in-aid to support research projects in non-Federal institutions and for fellowships to train young scientists in cancer research. Grants-in-aid are made also to State health departments, hospitals, universities, and other scientific institutions and professional groups for development of better methods for preventing, treating, and diagnosing cancer. Into grants of this type go about 25 percent of the Institute's funds.

The United States Atomic Energy Commission is supporting studies of two broad aspects of the cancer problem: radioactive materials as causative agents and the application of new sources of radioactivity to the treatment of cancer. In addition, since 1946 the Atomic Energy Commission has made a tremendous contribution to medical research in general and cancer investigations in particular by supplying radioactive isotopes for thousands of studies. Important assistance to cancer research also comes from industrial and pharmaceutical laboratories and from professional organizations such as the American Medical Association, the American Association for Cancer Research, and the American College of Surgeons.

With the postwar expansion of financial support and physical facilities have come significant changes in the scientific approach to the challenge of cancer. Interest in clinical investigations has increased so that today emphasis in cancer research
is divided almost equally among three major facets of study: clinical research, carcinogenesis (production of cancer), and tumor development.

Clinical research includes studies relating to epidemiology (occurrence of diseases in the population), diagnosis, and therapy; that is, the phases of the cancer problem which are of direct interest to the clinician. The majority of the studies designated as clinical are closely related to or directly concerned with the treatment of cancer patients. A few years back, there was virtually no clinical investigation in this field, for investigators had not gained enough basic knowledge to deal directly with the problems of cancer in the human being.

The rise of interest in clinical research does not mean that fundamental studies of cancer have been relaxed. Two of the three major facets of cancer research—carcinogenesis and tumor development—represent fundamental studies. Actually, then, the majority of current research projects in this field are concerned with basic problems such as the way cancer evolves as the result of causal factor, the essential nature of the cancer cell, the metabolic requirements of the cancer process, and the various effects of cancer on the host which bears it.
Diagnosis of Cancer

Studies in the diagnosis of cancer make up an important part of present-day cancer research. These studies have two broad objectives: (1) The improvement of existing methods of finding cancer; and (2) the development of tests that can be applied more widely to screen large groups of apparently well people for signs of cancer. An ideal solution to the cancer-finding problem would be a blood test as useful as the Wassermann test for syphilis—a test which can be applied on a mass basis and which is accurate enough to identify a high percentage of cancer cases at an early stage.

An intensive search for a general test for cancer is going on. Many proposed chemical diagnostic tests have been evaluated and a variety of new tests have been devised. So far none has been found to be accurate enough for mass use. The fact that several of the tests work to some extent is an encouraging indication that something occurs in the body chemistry of cancer patients which may be measured in a diagnostic test. For instance, in some patients with cancer of the prostate gland the acid phosphatase level is increased. Measurement of the acid phosphatase level has been developed to the point where several laboratories are evaluating it as a means of diagnosing prostatic cancer. Other promising procedures being investigated include a serum flocculation reaction, the use of radioactive tracers, means of detecting abnormal steroid in the blood or urine, and the liver catalase reduction in cancer.

A useful specific test which is being applied to the problem of early cancer detection is the cytologic test. Some types of cancer begin at an early stage to exfoliate cells with the structural characteristics of cancer. In many cases these abnormal cells are shed before a detectable cancer lesion appears. The technique of recovering, staining, and examining such cells
is known as the cytologic test for cancer. Although the cytologic test is theoretically applicable to any of the body excretions, it is being used mostly as an aid to the diagnosis of cancers of the uterine cervix, the stomach, and the lungs. The test's greatest life-saving potential seems to be as an indicator of early uterine cancer. Many medical experts believe that the combination of the cytologic test with other diagnostic procedures and with adequate treatment may result eventually in the control of uterine cancer.

Advances have been made in the field of X-ray which may aid in mass screening programs to find internal cancers. A machine called the electronic fluoroscope has been developed and tried extensively in the screening of persons for signs of gastrointestinal cancer. The electronic fluoroscope gives brighter images with much less radiation than conventional fluoroscopes do, allowing X-ray examinations of longer duration. Another new device being studied combines X-ray and television equipment to give sharp, clear pictures of the human body. Research is underway to determine if multimillion volt X-ray is feasible for detecting lung cancer and other chest diseases. Also being evaluated as a technique for detecting early lung cancer is the mass application of the small X-ray films now used in screening the population for tuberculosis.

Atomic energy research has provided still another approach to cancer diagnosis: the use of radioactive isotopes as tracers to locate cancerous tissues. Their use in this way rests upon the fact that certain abnormal body tissues concentrate larger amounts of specific compounds than do normal tissues. When these compounds are tagged with radioactive isotopes, the tissues which require the greatest amount of the compounds can be located with a Geiger counter. Of the isotopes which have been used as diagnostic tracers, the best known is radioactive iodine for the diagnosis of metastatic cancers of the thyroid gland. Diiodofluorescein dye tagged with radioactive iodine has been used successfully in the localization of brain tumors, as has human serum albumin tagged with iodine. Radioactive phosphorus has been used with limited success in the diagnosis of cancers of the brain, breast, and testicle.
The field of cancer diagnosis has seen other changes in the last few years. For one thing, the concept of early diagnosis has changed. Some investigators believe that cancer can be reached by therapy at its preinvasive stage—before it exhibits any physical manifestations. In cancer of the uterine cervix, there is evidence that the cancer has a long latent period before it begins to invade underlying tissues, and that the early lesion, called carcinoma-in-situ, may be found in relatively young women. To learn more about the relationship between carcinoma-in-situ and cervical cancer, the University of Tennessee College of Medicine and the National Cancer Institute are engaged in a study in Memphis, applying the cytologic test in a mass screening program for uterine cancer. Besides answering some important questions about carcinoma-in-situ, this study is expected to determine the value of vaginal cytology as a mass screening procedure.

Sometimes cancer is not so hard to find. One-half of all cancers, in fact, develop in parts of the body that are accessible to direct examination by the physician. These accessible sites include the skin, breast, rectum, mouth and pharynx, thyroid gland, prostate gland, and uterus. The layman’s best protection against these as well as most other types of cancer is to get a thorough physical checkup by a physician at least once a year, and between regular physical examinations, to see the doctor promptly if any of the cancer danger signals appear.
Treatment of Cancer

Many thousands of people who have had cancer are alive and well today because they received the right treatment at the right time. The American Cancer Society estimates that each year in the United States more than 70,000 recover from cancer. These people are proof that present-day knowledge applied properly can do a lot to control malignant diseases.

There are no one-shot “sure cures” for cancer. The mainstays of treatment for it are: removal by surgery, destruction by X-rays or radium, or a combination of the two. In recent years, both surgery and radiation have become more effective because of scientific and medical advances which permit them to be used more extensively. For patients with cancer in the early, localized stage, modern surgery and radiation offer a greater opportunity for permanent cure than was possible 15 or 20 years ago. For patients with advanced cancer, surgery and radiation combined with other elements of good medical care can be of considerable palliative (alleviating) value by prolonging life in usefulness and comfort.

Advances in cancer surgery have been made along several lines. More extensive surgery has been made practical by better management of infections, hemorrhage, shock, anemia, faulty nutrition, and other secondary problems that limited until recently the amount of surgery and radiation which could be used in cancer treatment. As a result, many operations once regarded as procedures of last resort have become commonplace, and some never seriously considered before are being done with reasonable safety. In addition, palliative operations have been devised for use when direct attack on a cancer is not possible. Examples of these are castration and adrenalectomy, operations designed to retard cancers of the prostate gland and the breast by alteration of the body’s hormone balance.
In the last few years the comparative advantages of surgery and radiation have been under intensive study, and the question of when to operate and when to irradiate is better understood. Great advances have been made in the knowledge of the relative sensitivity of different types of cancer. Radiation therapy has been improved by the development of accurate techniques for the delivery of predetermined doses of radiation to cancer-bearing tissue, whether by X-rays or by radium. The armamentarium of the radiotherapist has been expanded from radium, radon, and medium voltage X-ray machines to include new radiation agents such as supervoltage X-ray generators, new types of powerful radiation from the cyclotron and the betatron, and radioactive isotopes.

The use of radioactive isotopes in the treatment of cancer is largely palliative. Radioactive iodine has been applied with good results in selected cases of inoperable cancer of the thyroid gland. Radioactive isotopes of phosphorus have been found of some value in the treatment of the blood disease known as polycythemia vera and of certain chronic forms of leukemia, gold in prostatic cancer, gallium in bone tumors, bromine in bladder cancers. The therapeutic application of radioactive isotopes needs further study. Better means must be found for localizing isotopes within the cancerous areas. Radioactive compounds with a high degree of tumor specificity must be developed.

Radioactive cobalt shows promise as a substitute for radium for routine radiotherapy. It costs less than radium and is thought to have advantages over radium for some kinds of therapy. At present, about one dozen cobalt therapy units are in production or use in the United States and Canada.

The greatest value of isotopes, both radioactive and stable, may be as tools for biological and medical research. The use of these sensitive tools in studies of fundamental body processes—studies which were impossible before isotopes became available—has brought about a new concept of the living organism. Formerly, the structures of the adult body were considered to be static. Now, from these investigations with isotopes, it is known that the individual chemical components
of the tissues are in a constant state of activity. This dynamic viewpoint of normal tissues has led to a new viewpoint of cancer. A number of studies employing isotopes have revealed certain important differences between cancer and normal tissue. In short, isotope techniques provide a highly promising new approach in the research attack on cancer and other diseases.

Two important techniques in radiation therapy have been introduced to work against the factors that limit the delivery of adequate doses of radiation to tumors. Both are attempts to apply greater radiation to the tumor without injuring the surrounding normal tissue. One technique involves a carefully calculated placement of the patient in such a position that he may be rotated during exposure to the radiation beam so that the tumor is at the center of rotation in line with the beam. Thus, a maximum amount of radiation is given to the tumor and a minimum amount is delivered to the skin and intervening tissues in any one area. Evaluation of this technique in comparison with other methods of treatment is in progress. It is too early to say if it offers any improvement over, or is more practical, than other methods.

The second technique recently introduced into radiation therapy is the use of very high or supervoltage radiation in attempts to treat deep-seated cancers beyond the effective range of conventional X-ray equipment. Studies are underway to evaluate the therapeutic possibilities of supervoltage radiation produced by instruments capable of delivering as much as 70 million electron volts and with differing qualities of radiation. Authorities in cancer research estimate at least 10 years more of exacting clinical evaluation studies must be carried out before the true value of the giant radiation instruments can be determined.

A large part of research in the field of radiation is devoted to studies of the biological effects of radiation in laboratory animals. Especially important are the studies on radiation sickness. Seeking ways to modify irradiation injuries, scientists have found that injections of bone marrow into mice and guinea pigs exposed to a normally fatal dose of radiation can
prevent or counteract many of the usual results of such exposure. It has also been established that lead shielding of the spleen or certain other organs or portions of the body increases the survival rate in animals exposed to high doses of radiation. These findings may prove valuable in radiation therapy of cancer and in preventing radiation sickness or in counteracting its effects. Much remains to be learned in this area of cancer research.
Chemotherapy of Cancer

One of the main goals of cancer research is the discovery of drugs—that is, a method of chemotherapy—which will seek out and destroy cancer tissue without injuring the other tissues in the patient. Such a discovery would be the ideal therapy, for not only could localized cancer be treated without the undesirable effects of surgery and radiation, but disseminated cancer could also be effectively treated. The proposal of a single drug for all cancers presupposes that tumor cells contain a component common to all types of cancer cells which distinguishes them from normal cells. No such component has been demonstrated. Indications are strong that each type of cancer in man represents a separate chemotherapeutic problem. It seems unlikely, then, that a single drug will be found which will control all the major types of human cancer.

In fact, despite intensive research in chemotherapy, no drug which will cure any kind of human cancer has been discovered. Well over 10,000 chemical agents, including many newly developed drugs, have been tested for the ability to damage cancers in experimental animals. Through such screening studies and much other careful research, a few drugs have been found which are beneficial but not curative in the treatment of certain types of human cancer.

The chemical agents which have an accepted role in cancer therapy are of several types. Some are cell poisons, intended to interfere with the division of cancer cells and stop their growth. Others are called metabolic antagonists. They are intended to starve cancer cells by blocking vital metabolic processes. Others are aimed at altering the hormonal environment in specific organs where certain cancers have been found to be hormone-dependent.

Among the clinically useful cell poisons are the nitrogen
mustards, triethylene melamine, and urethane. The nitrogen mustards, given intravenously, have produced temporary remissions in patients with certain types of cancers of the blood-forming tissues, such as Hodgkin’s disease, lymphosarcoma, and chronic leukemia. A newer agent, triethylene melamine (TEM), which can be given by mouth in tablet form, has produced similar effects in Hodgkin’s disease, lymphosarcoma, chronic leukemia, and neuroblastoma. A drug formerly used as an anesthetic for laboratory animals, urethane (ethyl carbamate) has shown limited usefulness in the treatment of some chronic leukemias and multiple myelomas.

Perhaps the most widely used of the metabolic antagonists are those called “antifolics,” notably aminopterin and amethopterin. They are related to and competitively inhibit the vitamin, folic acid. The antifolics were brought into clinical use against cancer in 1948 when aminopterin was found to produce improvements in leukemic children. Since then that observation has been extended by many clinics and amethopterin has come into clinical usage. The improvements that occur with antifolics are temporary. Antifolic treatment, however, has been reported to prolong life in some leukemic children beyond the survival time in untreated cases. A drug introduced in 1953, 6-mercaptopurine (6-MP), has been reported to be useful in the treatment of acute leukemia. It is not a cancer cure and has little effect on any cancers other than leukemia.

Hormone therapy of cancer goes back many years. Extensive clinical trials have shown that hormones, like other drugs that have been tried against cancer, have a narrow range of therapeutic activity. Hormones exert their greatest effect when the disease is beyond the control of the surgeon and the radiologist. In cases of inoperable prostatic cancer in men, castration and the administration of estrogens (female sex hormones) have given clinical improvement and increased life expectancy. Estrogen therapy of inoperable cancer of the breast in women past the menopause sometimes produces improvement. Even though the beneficial effects of hormones seem to be temporary, present studies are promising and may
lay the groundwork for hormonal cure of certain specific cancers.

Other hormonal agents which have been studied for use against cancer are cortisone and ACTH. They have shown limited value in temporary control of some cancers of the blood-forming tissues, particularly acute leukemia in children. Research findings reported in 1954 by one medical center suggest that cortisone treatment may benefit patients with advanced breast cancer.

An indirect form of chemical therapy is adrenalectomy, an operation designed to stop or to slow the growth of cancers of the prostate gland and the breast by alteration of the hormonal balance. The operation has been performed in patients beyond the reach of other therapy and has obtained improvement in their condition for variable periods of time. Evaluation of adrenalectomy is in progress at several clinics.

The cure of cancer still remains with surgery and radiation, but in contrast to the dismal outlook of a few years ago, chemotherapy is regarded as a valuable adjunct to these methods. The therapeutic results obtained with the few drugs now available for clinical use have been far from ideal. Nevertheless, they give encouragement to more intensive research on the chemotherapy of cancer.
Epidemiology of Cancer

The control of cancer, like the conquest of many other diseases, may be achieved through prevention and cure. Vital to both lines of attack is the understanding of the epidemiology of cancer—that is, the factors which are related to or govern cancer's occurrence and distribution in populations. To put it another way, epidemiology is pathology in populations. Unlike other clinical research, it is interested as much in people who escape the disease as in those who acquire it. Although epidemiological investigations have contributed much to the control of many diseases, only recently have the methods of epidemiology been applied to the enigma of cancer.

The long-range objective of cancer epidemiology is to explain the etiology or causation of cancer. The problem of etiology is more complex in cancer than in most other diseases. Cancer is not a single clear-cut disease entity. Rather, it is a group of diseases, involving a multitude of possible causative factors and often being concealed by a long latent period.

The immediate objective of this research is to describe the group characteristics associated with cancer and those associated with its absence. What characteristics—physiological and environmental—do cancer patients have in common? What characteristics, if any, do cancer-free persons have in common? By analyzing available data—morbidity and mortality records, case histories, and clinical observations in medical literature—and by special surveys to collect data not otherwise available, epidemiologists seek the answers to these questions.

Significant age, sex, geographic, racial, social, and environmental differences in the distribution of cancer have been found. Among recent studies which have yielded information on such differences are surveys of cancer illness in the popula-
tions of 10 metropolitan areas of the United States. In these surveys, conducted by the National Cancer Institute, various important data were obtained on virtually all cancer patients treated or under observation during 1937 and 1947 in Chicago, Detroit, Philadelphia, Pittsburgh, Atlanta, Birmingham, Dallas, New Orleans, Denver, and San Francisco. The surveys, which make up the first comprehensive study of cancer illness in the United States, show that the incidence of cancer among the residents of these areas increased substantially between 1937 and 1947. Based on these surveys, the outlook for the country as a whole is that cancer will continue to increase for years to come.

Generally, illness and death from cancer increase with age, but the 10-city surveys indicate there is a reversal of this trend during the early years of life. The cancer illness rates for children under 5 years of age are higher than for children between the ages of 5 and 15. Illness from cancer increases very rapidly, however, during adult life and old age. While cancer is found at about the same rate among men and women, it becomes a major problem earlier in life in females than it does among males. In persons between the ages of 25 and 45, cancer is found almost twice as often in women as in men.

Marked differences exist in the distribution of cancer by site of origin in males and females. In females, nearly one-half of all cancers originate in the reproductive organs (the breast and the genitals) and nearly one-fourth in the digestive system. Among males, about one-eighth of all cancers originate in the reproductive organs, while one-third start in the digestive system. Cancers of the lung and bronchus occur almost five times as often in males as in females. The difference between the sexes in susceptibility to cancer of the reproductive organs may arise from differences in function and structure. The more frequent development of most other forms of cancer in males may be due largely to exogenous factors. Men are exposed to some environmental factors to which women generally are not subjected, and exposure to common etiologic agents may be more prolonged or intense for males.

Reported illness from cancer is considerably lower among
Negroes than among whites, the 10-city surveys show. The low incidence of skin cancer among Negroes accounts for a large part of this difference. This type of cancer is found approximately seven times more often in white persons. While Negroes have far less cancer of the skin they have much more cancer of the genital organs than whites do. The difference in skin cancer is generally considered to result from a true racial difference in susceptibility.

Among females, the higher rate of genital cancer in Negroes is due largely to cancer of the cervix, which occurs much more frequently in Negro women than in white women. Available evidence indicates that extrinsic factors, rather than biological variations, are responsible for the racial differences in the occurrence of cervical cancer. Observers in several countries have found that cervical cancer selects women of low economic status more often than women of high economic status. In the United States, it is more frequent among white women in the South than among white women in the North. In both the North and the South, Negro women show a higher incidence of the disease than white women. Another factor which appears to influence its frequency is marital history. For instance, cervical cancer occurs more often in married women than in single women. Among married women it is more frequent among those who have had several pregnancies than those who have had none. Several studies reported in the medical literature suggest that cervical cancer is rare among Jewish women. These curious findings are being explored by large-scale studies in Israel and New York City. The studies are aimed at determining if Jewish women actually do have less cervical cancer than other women, and at evaluating the various factors thought to influence the development of this form of cancer.

Another form of cancer which has come under intensive investigation is cancer of the lung. During the last 15 or 20 years, alarming increases in the death rates for lung cancer—especially in men—have been recorded in North America and the industrialized countries of Europe. Observers in England and the United States have found that in both countries lung
cancer occurs more often in city people than in people who live in rural areas. The preponderance of the disease among city dwellers has led researchers and physicians to suspect polluted air as a leading cause of the increase in lung cancer. Special occupational hazards, such as exposure to certain chemical agents and radioactive matter, are suspect, too. Studies on air pollution, occupational hazards, tobacco smoking, and other factors which may play a part in the development of lung cancer are in progress in several countries. In the long run, cancer of the lung and of other important sites may be controlled by the elimination of precipitating factors rather than by radical advances in treatment.

While epidemiologic studies are yielding much-needed information describing the extent and nature of the cancer problem, they are also turning up hopeful signs of progress in the management of the problem. New evidence of improvements in the diagnosis of cancer and in the quality of medical care given cancer patients was brought out by the National Cancer Institute's 10-city surveys. The improvements are reflected in the reduction between 1937 and 1947 in death rates for cancers of several important sites. Among residents of the 10 cities, cancer of the female genitalia showed no change in incidence, but the mortality rate from this form of cancer was reduced 10 percent. Incidence of cancer of the digestive system was unchanged; the mortality rate was reduced 8 percent. Incidence of cancer of the urinary organs went up 16 percent, but deaths caused by these cancers went down 8 percent. The incidence rate for cancer of the male genital organs showed a 16-percent increase between 1937 and 1947, while the mortality rate dropped 2 percent.

In a report on the postwar cancer record, the Metropolitan Life Insurance Company cited gratifying changes in mortality from cancer among some of its policyholders. The report stated: "Some encouraging signs are already evident in the postwar record of industrial policyholders. A comparison of death rates for 1946–47 and 1949–50 shows reductions in mortality from the malignant neoplasms among white females at ages 25 to 74 years. For the accessible sites as a group, both
sexes experienced declines in mortality, white males by 2.4 percent and white females by 7.2 percent. Both sexes were favored with reductions in mortality for such specific sites as the stomach, the intestines and duodenum, the rectum and anus, the liver and biliary passages, and the bladder.” Another analysis of the cancer death rate among Metropolitan’s female policyholders showed an 11-percent decline in the total cancer death rate during the decade, 1938 to 1948.

In the statewide cancer registry of Connecticut, steadily increasing survivorship rates were recorded in the interval from 1935 to 1941. Of the males with cancer who were registered in 1935, 18 percent were living 5 years later, while of those registered in 1941, 25.7 percent passed the 5-year mark. For males and females combined, 5-year survivorship rose from 22.1 percent of the group recorded in 1935 to 33.5 percent of those registered in 1941.
Source Materials

Bibliography

Material for this supplement to "The Challenge of Cancer" was taken from many sources. Some of the source material is listed for reference.

Recent Progress in Cancer Research, John R. Heller (Public Health Reports, March 1953).


An Evaluation of the Cancer Problem, Paul E. Steiner (Cancer Research, July 1952).


Progress and Promise in Cancer Research (Scope, Summer 1954, The Upjohn Company).


Annual Report, 1953, American Cancer Society.


Hearings before the Committee on Interstate and Foreign Commerce, House of Representatives, 83d Congress, First Session, on The Causes, Control, and Remedies of the Principal Diseases of Mankind, Part 1, October 1–3, 1953.