



# TREATMENT OF CANCER AND ALLIED DISEASES

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## SECOND EDITION

VOLUME I

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# Principles of Treatment

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BY FIFTY-FIVE AUTHORS

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*With 505 Illustrations*

## **TREATMENT OF CANCER AND ALLIED DISEASES**

Second Edition

### **Volume I: Principles of Treatment**

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MEDICAL BOOK DEPARTMENT OF HARPER & BROTHERS

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For information address Paul B. Hoeber, Inc.,  
Medical Book Department of Harper & Brothers,  
49 East 33rd Street, New York 16, N.Y.

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# TREATMENT OF CANCER AND ALLIED DISEASES

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SECOND EDITION

## Volume I: Principles of Treatment



# **TREATMENT OF CANCER AND ALLIED DISEASES**

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## **SECOND EDITION**

- I: PRINCIPLES OF TREATMENT
- II: TUMORS OF THE NERVOUS SYSTEM
- III: TUMORS OF THE HEAD AND NECK
- IV: TUMORS OF THE BREAST, CHEST, AND ESOPHAGUS
- V: TUMORS OF THE GASTROINTESTINAL TRACT, PANCREAS,  
BILIARY SYSTEM, AND LIVER
- VI: TUMORS OF THE FEMALE GENITALIA
- VII: TUMORS OF THE MALE GENITALIA AND THE URINARY SYSTEM
- VIII: TUMORS OF THE SOFT SOMATIC TISSUES AND BONE
- IX: TUMORS OF THE SKIN: LYMPHOMAS AND ALLIED DISEASES

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# Foreword to the Series

Each year in the United States of America approximately 450,000 people are diagnosed as harboring cancer, while 40 million others, now healthy, will develop cancer during their remaining lifetime.\* These present and future patients must be treated. The treatment will vary from procedures that are aimed at being curative, through the entire spectrum of medical therapy, to the terminal care of the patient dying from cancer.

More than five thousand medical journals are published throughout the world. There are more than four thousand articles a year dealing with cancer in the English-language literature alone. It is obvious that no one person can digest and assimilate all the information contained in these articles. The growth of this second edition of *Treatment of Cancer and Allied Diseases* from the original three volumes to its present nine volumes has occurred in an attempt to create a reservoir of existing knowledge of therapy on which any physician can easily draw. The object is to bring together in one authoritative work the tremendous mass of detailed information concerning the technics of all phases of cancer therapy in current use. The care of the patient is emphasized throughout, and palliative procedures are presented with the same emphasis given to measures aimed at cure.

The treatment of cancer is based upon two main factors: (1) the histogenetic classifica-

tion of the tumor and (2) the clinical setting of the tumor—that is, its location and extent. Ewing demonstrated that the histogenetic classification of tumors allows a breakdown of tumor types and permits an understanding of the natural history of each specific tumor. His monumental work presented the first great attempt to “divide and conquer” cancer.

## PLAN AND SCOPE

There are nine volumes in the series, divided on a regional basis, within which framework are presented the treatment procedures best suited for a given histologic type of cancer. Volume I discusses principles of cancer therapy and includes such subjects as the prevention of cancer, the technics of biopsy, the preoperative and postoperative care of the cancer patient, the indications for, technics and accomplishments of radiation therapy, etc. Volume II describes the treatment of tumors of the nervous system; Volume III, the treatment of tumors of the head and neck; Volume IV, the treatment of tumors of the breast, chest, and esophagus; Volume V, the treatment of tumors of the gastrointestinal tract; Volume VI, the treatment of tumors of the female genitalia; Volume VII, the treatment of tumors of the male genitals and of the urinary system; Volume VIII, the treatment of tumors of the soft somatic tissues and of the osseous system; and Volume IX, the treatment of tumors of the skin and of lymphomas and allied diseases.

\* American Cancer Society, personal communication.

The present series correlates contributions from recognized authorities on neoplastic diseases from prominent cancer centers and treatment institutions in many parts of the world. At all times the editors have attempted to present the time-proved methods of cancer therapy. There is no easy way to measure the efficiency of a given therapeutic modality. The generally accepted criterion today is the so-called definitive five-year-cure rate obtained for a given form of cancer by the institution of a given treatment method. Accordingly, only those measures that have been utilized over a prolonged period, so that their accomplishments can be properly evaluated, are presented in detail. The editors, however, have not been unmindful of the newer and experimental methods, and the reader will find them appropriately discussed.

Wherever controversy exists as to the best method of treatment, the editors have attempted to achieve a perspective by including the different modalities applicable to a given cancer. In introducing several of the chapters, forewords have been included to give the reader a broad perspective of cancer therapy in the special field discussed.

The aim throughout has been to secure a work that is practical. Although the text comprises a total of nine volumes, there will be found little deviation at any point from the general title of applied therapy. Except insofar as an immediate and direct bearing on treatment could be demonstrated, all data concerning etiology, pathology, symptomatology, differential diagnosis, or research, have been excluded. Despite the size of the published work, it has been necessary to exclude as much, if not more, material from the original submitted manuscripts than was utilized in the final printing. We are grateful to the individual authors for their consideration and tolerance with regard to these condensations. Because of the arduous and prolonged editorial task, each of the over five hundred contributors was given the opportunity to review his manuscript and to include new developments, so that on publication each volume reflects the authors' current thinking.

In a work of such scope, it is but natural that certain conflicts of opinion and a limited amount of reiteration should occur. This has

insured that all sides of the major problems of treatment are given full consideration; this advantage to the reader is exemplified, for instance, in the presentation of the difficult subjects of management of metastatic carcinoma to the cervical lymph nodes, cancer of the cervix, cancer of the larynx, as well as other topics. The reader is urged to view the clearly identified contributions of each author, as well as the editorial comments, as expressions of individual conviction based on personal experience, except where these are accompanied by an assessment of factual data.

The cancer patient as a rule first consults a family physician or a general medical clinic; therefore, the first physician who suspects or proves the presence of cancer plays an important role in a therapeutic emergency in regard to time of treatment, choice of treatment, and the mental attitude with which the patient approaches the necessary therapeutic steps. This series of manuals of treatment accordingly is directed at all who play a part in the management of cancer and not at the cancer specialist alone.

## CHANGES IN THERAPY

This second edition is an entirely rewritten and reorganized work. The vast strides made in cancer therapy in the past two decades and the increased knowledge of all phases of the cancer problem have demanded a complete rewriting, with deletion of those procedures now either obsolete or considered to be irrelevant to the direct problem of tumor treatment.

Advances in our knowledge of anatomy and physiology are reflected in the more radical operative procedures described in these volumes, e.g., bilateral neck dissection, radical pneumonectomy, right hepatic lobectomy, pelvic exenteration, and major exarticulations. Intrathoracic cancer has increased steadily in incidence through the years since the first edition, and *pari passu* has followed a corresponding betterment in chest surgery. From sixty-eight pages in the first edition, coverage has grown to an entire volume largely devoted to this aspect of cancer therapeutics.

Attention is directed throughout all volumes to the proper preoperative and postoperative care of patients subjected to surgical

removal of their cancers. Techniques of anesthesia are discussed. Authorities in these fields present these important aspects of cancer treatment in separate chapters. These subjects have therefore been omitted from the chapters dealing with surgical technics, except where certain procedures require special consideration of anesthesia and of preoperative and postoperative care.

The great advances in radiologic technic and the use of these complex and powerful tools aimed at controlling cancer are presented in terms of therapy.

### HORMONAL THERAPY

The observation that hormonal balance influences human cancer is most significant, dispelling the theory that the cancer is an absolutely autonomous growth and indicating that it is under certain body controls. This concept opens up great vistas for further investigation into the biologic behavior of cancer in addition to providing important measures for treating patients bearing certain forms of neoplasm. The use of hormones for the growth control of specific cancers and the ablative hormonal surgery such as orchidectomy, oophorectomy, adrenalectomy, and hypophysectomy are discussed in these volumes because of their important roles in the palliative management of certain cancers.

### CHEMOTHERAPY

The discovery of a cancer cure by means of chemotherapy is the fervent hope of both the public and the medical profession. The ultimate cure of cancer some day by methods other than surgical extirpation or radiation sterilization is a probability, but to predate the time for such a discovery is not only faulty logic but dangerous propaganda. The regression of cancers in mice or the temporary amelioration of acute leukemia by chemotherapy is evidence of progress, but these should not be exploited beyond their actual significance. At this writing, *no known human cancer can be cured by chemotherapeutic measures.*

Chemotherapy, as developed and practiced during the past fifty years, has made important contributions to the management of cancer, viz.:

1. Tools for research into the nature of cancer, with a mustering of all the chemical sciences, including immunology, endocrinology, enzymology, and the chemical identification of antitumor derivatives of bacteria and viruses

2. The curbing of the progression of certain cancers and the marked palliation in patients harboring them (leukemia and prostatic and breast carcinoma)

3. A measurable relief from suffering and the prolongation of life in comfort for patients with incurable cancer which have altered the philosophical attitudes concerning this disease. Cancer, even when beyond the stage of complete eradication, need no longer be regarded as the hopeless, miserable disease that it has been but may be considered with such conditions as heart disease, cirrhosis, chronic nephritis, and others, of which the patient is never cured but with which he may live pleasantly for prolonged periods.

### END RESULTS OF TREATMENT

A reliable presentation of end results has been stressed in all the volumes. There may be a margin of error in the classification of a regional or histologic type of cancer as operable or inoperable because of the variable factors in the pronouncement of a given cancer as nonresectable by any surgeon. These are, first, the condition of the patient as regards his age, the coexistence of degenerative diseases, and the complications attendant on the presence of the cancer; second, the extent of the disease, meaning the degree of local or organic involvement, the specific organ or tissue implicated, the extension to, and the incorporation of, neighboring viscera by the cancer, and metastases to regional and distant sites; and, third, the surgical philosophy, moral point of view, courage, and experience of the surgeon.

The concept of cancer as an incurable disease is widely accepted, in spite of the educational efforts of the American Cancer Society and other organizations. The hopelessness of a given case may be recognized by the physician at the initial examination, but the published figures of thousands of cancer cures should encourage a more hopeful attitude toward cancer as a whole.

## DEFINITION OF PALLIATIVE TREATMENT

Palliative treatment is eagerly accepted for all incurable diseases except cancer; its employment for cancer generally is regarded with skepticism and without enthusiasm by the patient and his family. A diagnosis of arteriosclerosis, chronic nephritis, diabetes mellitus, myocarditis, coronary vascular disease, osteitis deformans, and many other degenerative conditions is accepted with equanimity, fortitude, and optimism by the majority of patients, yet the end results of treatment show that they are all *incurable* diseases. These patients usually ask of their physicians only that treatment that lies within the realm of possibility, hoping that it will successfully arrest the process for the time being, avoid the complications and disabilities attendant on the disease, and prolong life in comfort. If the diagnosis be cancer, however, nothing short of a guarantee of cure seems to suffice, and an expression by the physician of a reasonable doubt concerning ultimate cure frequently leads to a profound and unreasonable reaction and a refusal of all treatment—either surgical or radiologic.

The medical profession has not been faultless in fostering this attitude. Accent has been on cure rather than on palliation. Published figures on the end results of treatment usually present the percentages of so-called five-year cures, or survivals without recurrence for five

years. The great group of cases in which life has been prolonged for less than five years does not receive the attention it deserves.

The prolongation of life itself is, of course, not the only measure of palliation. No one wishes to live longer in order to suffer more. The objectives of palliative efforts are the relief of pain and discomfort, the healing of ulcerated lesions, the lessening of hemorrhage and infection, the repair of certain pathologic fractures, the healing of metastases in bone, the eradication of cough and dyspnea, the restitution of sleep, and the delay in spread of the cancer, among many others. Appropriate irradiation, for example, might give relief of some symptoms without prolonging the life of the patient. None would deny that such efforts are worthwhile.

The editors paradoxically hope that these volumes may soon become obsolete with the discovery of more efficient means of curing cancer, such as a chemotherapeutic remedy or, better yet, by the creation of an immunity against the disease. In the meantime, these manuals of present-day therapy are offered with the wish that the best treatment plan now available can be instituted for any patient bearing any form of cancer.

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New York

# Preface

In this first volume of the series *Treatment of Cancer and Allied Diseases*, the editors have tried to approach the subject in a logical manner, with preliminary emphasis on cancer prevention, immediately followed by suggestions for the organization of adequate facilities for the detection of cancer. Because the pathologic features of a given cancer have a direct influence on its behavior and response to treatment, chapters are devoted to specific diagnosis and classification in terms of microscopic grading, biopsy, examination of exfoliated cells, and tissue cultures. Tumors are classified into Grades I to IV, Grade I being the more differentiated and Grade IV the more anaplastic, based on the work of Broders (1920). However, the extent of the cancer at the time of its diagnosis is also important from a prognostic standpoint, and the reader will find a discussion of criteria utilized to grade the malignant quality of cancers: the extent of infiltration into the surrounding parenchyma, the presence or absence of encapsulation, the quantity and character of host reaction, and the evidence and distribution of metastases. With certain clinical indexes, such as age, menstrual status, and pregnancy, these grading features offer important signposts for the prediction of prognosis following treatment. The formal biopsy has become an obligatory pretherapeutic procedure, and methods for aspiration or punch biopsy are presented. Technics for the collection and examination of exfoliated cells for the cytodiagnosis of cancer are presented.

The ancients destroyed cancer either by cutting it out or by burning it out. The only methods of curing human cancer today are by surgical extirpation of the growth or its destruction by ionizing radiations; the basic principles are essentially the same as those of the ancients, but the methodology is more refined. In the section on surgery an attempt is made to afford guidance for the safe conduct of a patient through the ordeal of a surgical procedure. Principles of preoperative and postoperative care are adumbrated, as are the control of concomitant metabolic or degenerative diseases. Particular attention is paid to estimation of the operative risk. The chapter on vascular surgery points out the major achievement of replacement by grafts of excised segments of critically important blood vessels.

As a cure for cancer, radiation therapy is second only to surgery. Irradiation is superior for the curative treatment of certain cancers and is of far greater importance in offering palliation to patients suffering from widespread dissemination of cancer. In this book the reader will find a logical discussion of all phases of irradiation, from the physical basis of radiation therapy and the radiosensitivity of tumors through the technics of clinical application of low-voltage, short-distance, medium-voltage, supervoltage, moving-field, and betatron x-ray therapy. Sections are devoted to the clinical uses of radium and of radioactive isotopes. The methods of applying radium, the radium element pack, and the

multiple source radium beam are discussed in separate chapters. The production of radioactive isotopes, such as radioactive iodine and radioactive phosphorus, is discussed as are the clinical applications of systemic radioactive isotopes, small sources of radioactive gold, iridium and cobalt, and the use of the radioactive cobalt beam (cobalt teletherapy).

The general care of the patient with an inoperable cancer is discussed in detail, including the use of hormonal therapy and chemother-

apy for modifying the growth of certain cancers in addition to ameliorating symptoms. The proper methods of reporting end results of cancer therapy are also discussed here.

In this volume the editors have tried to adhere to the principles of cancer treatment, describing those methods used for cure as well as those aimed at palliation and leaving it to subsequent volumes in the series to discuss the therapy of specific types of cancer within a framework of regional division.

G. T. P.  
I. M. A.

# Acknowledgments

It is a duty and a pleasure to acknowledge with appreciation our indebtedness to the many authorities who have made this book possible. The quality of their chapters and their co-operative spirit have contributed to the completion of this introductory volume, the first in an ambitious encyclopedia planned to encompass the entire scope of therapy of all neoplastic diseases.

The superior medical illustrations contribute greatly to the value of the text. We express our gratitude to each of the medical illustrators and to our own medical artist, Mr. Alfred Feinberg.

We join the authors in acknowledging the generous co-operation of the many authors, journals, and publishers who freely permitted the use of graphic and statistical material. Specific acknowledgments are given throughout the text.

Our research assistants, Miss Mildred Ashley and Miss Sybil Harris, have been most assiduous and competent in the assemblage of statistical and referential data.

Miss Ebba M. Rogstad, our editorial associate, tirelessly reviewed the manuscripts, critically read the galley and page proofs, and indexed this volume.

The American Cancer Society, Inc. has given a substantial grant-in-aid, which has made possible the presentation of colored illustrations in these volumes.

The Paul D. Perutz Fund has established an important grant-in-aid which has been of inestimable service in furthering the editorial tasks entailed in this laborious and time-consuming undertaking. To Mr. Julius Schure, in particular, the editors owe a personal note of thanks for his encouragement.

We have had continued support from the Pack Medical Foundation, Inc. throughout the years that these volumes have been in preparation.

Finally, we are indebted to Mr. Paul B. Hoeber, our publisher, for his zealous and enthusiastic guidance.

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