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Philip Rubin

临床肿瘤学

CLINICAL ONCOLOGY

A Multidisciplinary Approach for Physicians and Students

8th Edition

人民卫生出版社

HEALTH SCIENCE ASIA,
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CLINICAL ONCOLOGY

A Multidisciplinary Approach for Physicians and Students

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Dedication

IF THE PAST IS THE PROLOGUE TO THE FUTURE . . . On the occasion of the 150th anniversary of the University of Rochester and the 75th anniversary of the University of Rochester School of Medicine and Dentistry—

To the **James P. Wilmot Cancer Center Directors** for weaving the multi- and interdisciplinary fabric for us to wear and share proudly.

Thomas Hall	for the inspiration
Robert Cooper	for the implementation of the vision
Richard Borch	for maintaining the vision
Edward Messing	for reaffirming the role model of clinician-scientist
George Abraham	for navigating us into the new millennium

To the **James P. Wilmot Cancer Center Associate Directors** for representing their specialties while synergizing their disciplinary parts into a greater whole.

Brad Patterson	Surgical Oncology
John Bennett	Medical Oncology
Richard Bakemeier	Medical Oncology
Robert Sutherland	Cancer Biology

For their unselfish devotion to:
- Clinical care
- Translational research
- Clinical trials investigations
- Education
- Community outreach

To the **Deans of the University of Rochester School of Medicine and Dentistry** who created a more dynamic medical institution by allowing for the transition and a metamorphosis beyond the rigid departmental structure into a more interactive matrix model of multiple faculty appointments in more than one discipline.

Lowell Orbison	for his thoughtfulness and foresight
Frank Young	for his optimism and willingness to take risks
Robert Joynt	for his buoyant human and annealing abilities
Marshall Lichtman	for his scientific and academic astuteness and conception of centers of excellence
Lowell Goldsmith	for his humanity and recruitment of a new generation

Many of the individuals to whom this volume is dedicated have contributed to *Clinical Oncology* in past and present editions.

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Preface

Major "paradigm shifts" have occurred and will continue to occur on the pathway to curing cancer as we enter into the new millennium. The National Cancer Institute's goal of a 50% survival rate for all cancer patients by the year 2000 has, in general, been reached. Indeed, in the decades since the introduction of a multidisciplinary approach to cancer management, this survival rate has been exceeded for many specific sites, with clear evidence of a decrease in mortality rates. With each passing decade there have been incremental gains, with an associated paradigm shift:

- In the *1950s*, there were advances in each modality: in surgery, with better anesthesia, antibiotics, and blood replacement products; in radiation oncology, perhaps most dramatically, with the introduction of megavoltage irradiation using telecobalt units and linear accelerators; and in chemotherapy, with the introduction of numerous new agents. For the most part, the treatment plans and sequences were in the pattern of a relay race, with the surgeon passing the baton to the radiation oncologist, then on to the chemotherapist.
- In the *1960s*, a multidisciplinary approach to cancer was initiated as oncologists from surgery, radiation, medicine, gynecology, and pediatrics began to work together. National cooperative oncology groups, initially devoted to one disease and dominated by one discipline—for example, the Breast Surgical Adjuvant Group (BSAG), Eastern Chemotherapy Oncology Group (ECOG), and Radiation Therapy Oncology Group (RTOG)—merged and, over the decade, became multidisciplinary. The preplanning of protocols by all participating investigators and disciplines was a major shift away from the physician as a clinician only toward the physician as a clinician-scientist.
- In the *1970s*, The National Cancer Institute (NCI) declared a "War on Cancer," increasing funding to laboratory researchers and clinical protocol cooperative group and cancer center investigators. Pharmaceutical companies and the NCI, in its extramural screening of agents, spent millions searching for the "magic bullet" that would "blast" the malignancy. In particular, pediatric cooperative groups initiated intergroup studies and entered virtually the entire eligible pediatric cancer population on to studies, thereby setting the pace for the adult groups. These intergroup studies demonstrated that *less* treatment frequently was *more* and *better*, seen most dramatically in patients with Wilms' tumor. Organ structure preservation was emphasized and, indeed, treatment successes were so sufficiently dramatic that late effects in survivors became of increasing concern.
- In the *1980s*, there was an apparent stage migration, when an early diagnosis of breast cancer became possible through the wide utilization of the screening mammogram. This led to a "terrain" analogy: that well-coordinated and synchronized attacks by two or more conservative modalities could modify or avoid the need for aggressive, often mutilating surgery with a more conservative approach.
- In the *1990s*, use of molecular biomarkers—notably prostate specific antigen (PSA)—led to an apparent dramatic increase in the incidence of some cancers, with the incidence of prostate cancer almost doubling early in the decade. However, following the identification of an increase in observed prostate cancer incidence rate were a striking overall increase in the survival rate and a decrease in mortality rate by the end of the decade. In addition, the use of a single modality was found to be sufficient—for example, either nerve-sparing prostatectomy, three-dimensional conformal external megavoltage, or prostate radioactive seed implants. The end point of treatment then became a biologic one—that is, the monitoring and elimination of serum PSA—with any further elevation leading to the use of other modalities for salvage.

If past achievements are the prologue to innovations ahead, the vision of the continued curability of cancer rests on two emerging concepts. The first concept is that the multistage process leading to carcinogenesis can be viewed through a molecular biologic window; that is, the activation (or suppression) of intrinsic cellular oncogenes (or growth suppressor genes) can lead to dysregulation of the cell cycle, cell proliferation, or differentiation through gene expression. This process can lead to transformation of cells from a normal to a premalignant state and, ultimately, to malignancy and metastatic growth. However, evidence from epidemiologic studies indicates that only 20% of neoplasms are hereditary, suggesting that although intrinsic genetic factors are important, most cancers do not follow one slow recognizable pattern of inheritance. This optimistic message suggests that extrinsic environmental factors are causal and that the majority of cancers are not brought about by inherent factors as a consequence of aging; therefore, a high incidence of cancer is not an inevitable condition of being human.

The second concept involves the ongoing revolution in imaging, including the powerful new techniques of low-dose, spiral computed tomography and the merging of magnetic resonance imaging and magnetic resonance spectroscopy with fusion techniques. These techniques are akin to *in vivo*, noninvasive biopsy, allowing for anatomic spatial resolution and a histologic/chemical analysis at the

cellular level. Both advances in molecular biologic understanding and the latest innovations in imaging techniques are described for each major cancer site.

Each site-specific chapter in this, the eighth edition of *Clinical Oncology*, begins with clear and concise data regarding *Epidemiology and Etiology*. Imaging procedures are described in the *Detection and Diagnosis* section. In the *Classification and Staging* section, there is a brief description of the histopathology of the cancer, and the updated staging figures and tables will assist physicians in defining the cancer in its various extentions and spread patterns. Once the histopathologic type of cancer is known and the staging procedure is complete, the process moves towards multidisciplinary decision making, described in the *Principles of Treatment* section. The *Results* section gives the current status of clinical trials, and it is supported by an extensive and updated bibliography.

In addition to the site-specific chapters, there is a series of general introductory chapters on basic concepts in the oncologic sciences of cancer biology, pathology, radiation biology, physics, and gene therapy. The clinical science of oncology is presented in the chapters on the principles of surgery, radiation oncology, medical oncology, psychosocial oncology, and oncologic emergencies. Concluding chapters cover metastases, pain, palliation, and late effects.

As in the past edition, we emphasize the increased curability of cancer and the optimization of combining modalities to reduce morbidity, to decrease complications, and to preserve vital structures. Because past achievements are indeed the prologue to the future, I predict that cancer will be eliminated through continued translational research in the multiple disciplines involved in the science of oncology, through the interaction of the participating clinicians and scientists, and through the synergism of their ideas.

Philip Rubin, MD

Acknowledgments

In the early 1960s, I had the privilege of publishing a textbook devoted to managing cancer patients in the University of Rochester Medical School entitled *Clinical Oncology for Medical Students*; this book had an emphasis on radiation therapy, with the first two editions appearing in 1963 and 1965. In 1967, the title was changed to *Clinical Oncology for Medical Students: A Multidisciplinary Approach*, with updates appearing in 1970 and 1971. These first three editions had contributions from faculties of clinical departments and provided a multidisciplinary syllabus with an interdepartmental editorial board. *Clinical Oncology for Medical Students and Physicians* represented the 1974, 1978, and 1983 editions, which were sponsored by the American Cancer Society. These editions reflected the University of Rochester Cancer Center faculty and environment that created a spirit of cooperation arising in the oncologic departments and divisions in our medical center.

Clinical Oncology: A Multidisciplinary Approach for Physicians and Students has been published by W.B. Saunders for the last two editions, nominally the seventh and eighth, although in reality the ninth and tenth editions. Unique to this eighth edition is the authorship, which is not only multidisciplinary but also multi-institutional. The contributing authors are outstanding leaders in the field of oncologic specialization. With this expansion in authorship, we hope to establish this volume as a long-lasting textbook devoted to the multidisciplinary approach to cancer. Furthermore, it will be the most comprehensive textbook, including both a hard copy and a CD-ROM version.

Therefore, my first and foremost acknowledgment must go to the contributors, not only of the current edition but also of all past editions of this book over the preceding 40 years. The current expanded, multi-institutional authorship, both national and international, provides a comprehensive understanding in each field of oncologic expertise. I am very appreciative of all the authors, who are leaders in oncologic practice, investigation, and research and who have given considerable effort and time out of their busy schedules to assist in the production of the chapters during the long publishing process.

Special thanks and my deepest gratitude go to my hard-working Associate Editor, Jacky Williams, for her assistance in the completion of this book. Her abilities and dedication, combined with her acute insights and scholarship, are truly remarkable and are evident throughout the book. This project could not have been completed without her work. Assisting her was Amy Huser, whose meticulous organizational, literary, research, and editing skills deserve special mention. They both assumed the responsibility of seeing the book through to its completion, working with the authors to check overall accuracy, and fine-tuning the figures and tables. Amy's background in journalism has contributed to the clear and concise text presented in this volume.

Because this edition has been in progress for 4 years, the efforts of other editorial assistants need to be mentioned: Taimi Marple worked on the first round of the book with the many authors; Koren Bakkegard assisted in the editorial process and also spent hours diligently tracking down permission requests for tables and figures in this book. The artwork in the updated staging figures is that of Glen Hintz, Chair of Art Studies at Rochester Institute of Technology; he produced the beautiful graphic displays of the cancer staging systems in the T, N, and M categories.

Finally, I wish to thank the publisher, W.B. Saunders, and especially Richard Zorab, Editor-in-Chief, Medicine, for their vision in realizing the continued need to publish this book. The future of cancer patient treatment rests with the accurate transfer of past and current experience in the field of oncology—its science and clinical investigations—to the next generations of medical students and physicians.

NOTICE

Medicine is an ever-changing field. Standard safety precautions must be followed, but as new research and clinical experience broaden our knowledge, changes in treatment and drug therapy may become necessary or appropriate. Readers are advised to check the most current product information provided by the manufacturer of each drug to be administered to verify the recommended dose, the method and duration of administration, and contraindications. It is the responsibility of the treating physician, relying on experience and knowledge of the patient, to determine dosages and the best treatment for each individual patient. Neither the Publisher nor the editor assume any liability for any injury and/or damage to persons or property arising from this publication.

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