

FOURTH EDITION

Clinical Guide to Antineoplastic Therapy

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# A Chemotherapy Handbook

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## *Dedication*

As senior editor, I wish to express deep appreciation to all the contributing authors (returning and new), consultants, and reviewers of this master work. Everyone was gracious, accommodating, and committed to the preparation of the chapter manuscripts. A very special and deep appreciation to the three coeditors who have labored tirelessly to help bring this fourth edition to fruition.

This fourth edition is in honor of the memory of both of my parents for instilling in me a strong work ethic, sense of self-esteem, and a “you can” attitude: my father, Bilbo Magee, a World War II U.S. Army Veteran and wonderful father and provider, and my mother, Hazel Magee.

To my brothers and sisters with much love: Selma, Billy, Lester, Winnie, Wallace, Amanda (deceased), Hope, Donna, and Sue Ann.

To my immediate family: my husband, Rodney, Sr., my son, Rodney, Jr., daughter-in-law, Iris Rivera, daughter, Ronda, and son-in-law, Ryan. Thanks for your love and for always being there for me and allowing me to pursue my personal and professional aspirations. You are my source of joy, strength, and support—always.

I would also like to dedicate this edition to our four grandchildren: Mary Carmen, Tatiana, Raven, and Isaiah. To each of you, I wish every happiness and success and encourage you to dream *BIG* and challenge your mind to be all you can be.

To all my colleagues, family, and friends, thanks and God bless you always.

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# Foreword

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Although the incidence of cancer has decreased and the number of cancer survivors has increased over the past decades in the United States, cancer is still one of the leading causes of death worldwide. For decades, chemotherapy has been one of the major treatments for cancer, beginning with the use of nitrogen mustard to treat lymphoma and aminopterin, an early predecessor to methotrexate, used to treat early childhood cancers. Over the years, countless nurses and cancer treatment team members have administered a myriad of chemotherapy agents in the fight against cancer. Because many of these drugs come with debilitating symptoms, such as nausea, vomiting, mucositis, and diarrhea, it was oncology nurses who led the charge for expert symptom care.

Today, the world of cancer treatment is changing rapidly thanks to clinical trials that test new antineoplastic agents. In 2018 alone, the U.S. Food and Drug Administration approved 19 new cancer drug treatments, and many more promising drugs are on the horizon of cancer care. New therapies include targeted therapies, immunotherapy, drugs associated with cancer genetics, and nanotechnology. A developing treatment is chimeric antigen receptor (CAR) T-cell therapy, which includes the administration of new immunotherapy drugs used for adult patients with certain types of lymphoma and for children and young adults with acute lymphoblastic leukemia.

Virtually every single chemotherapy drug comes with its own long list of side effects, which are only confounded when more than one agent is used in a treatment regimen. Because oncology nurses are almost always the providers who intervene when patients experience one or many symptoms, these nurses must remain knowledgeable about both old and new chemotherapy agents. In addition, many of the newer medications have associated side effects such as skin alterations and intense flu-like symptoms that, until recently, were not the usual mainstay. The days of nurses spending their time managing nausea, vomiting, and fatigue have passed. They now find themselves providing symptom care for increasingly complex side effects.

Dr. Mary Magee Gullatte and her astute team of oncology practitioners have created this fourth edition of *Clinical Guide to Antineoplastic Therapy: A Chemotherapy Handbook* to provide incredible information for healthcare professionals using antineoplastic agents to care for patients with cancer. In this edition, new chapters have been developed focusing on chemotherapy administration in the perioperative setting, strategies to improve adherence to oral chemotherapy agents, and extensive information on biosimilar antineoplastic agents. Returning chapters from the third edition have undergone revisions with significant new content.

This fourth edition of *A Chemotherapy Handbook* takes symptom management to a much higher level by providing timely education on old and new medications. These improvements help transform the care of patients with cancer and provide invaluable information for oncology nurses and other members of the treatment team.

Thank you, Mary, and your incredible team, for this superlative addition to expert oncology care.

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# Preface

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*One of the essential qualities of the clinician is interest in humanity, for the secret of the care of the patient is in caring for the patient.*

—Dr. Francis Weld Peabody, 1881–1927

As Dr. Peabody noted, a fundamental requirement to take care of all the patients we serve is interest, which is stimulated by curiosity and knowledge. In modern cancer treatment, up-to-date and complete information is critical for all clinicians who take on the responsibility and opportunity to provide care across the oncology spectrum. No group of clinicians is more patient-forward than nursing colleagues. Whether in the clinic, ambulatory infusion center, inpatient setting, research unit, or in leadership roles, our respect and admiration is the highest for our partners and colleagues who spend the most time with and deliver the most care to patients.

The knowledge, skills, and abilities needed to care for patients undergoing systemic treatment for cancer have changed dramatically in the 70 years since the U.S. Food and Drug Administration approved the first “modern” chemotherapy agent—nitrogen mustard. Oncology healthcare professionals are responsible for the safe preparation and administration of more drugs, in more diverse settings, and for more patients than ever before. This compels oncology nurses and providers to acquire knowledge of the science driving new therapies, to develop strategies that help patients manage symptoms and adverse effects, and to become adept at providing quality care in the ever-changing healthcare environment.

Registered nurses have a responsibility for all aspects of systemic cancer therapies; therefore, they must have access to up-to-date information about the safe and effective management of patients. This handbook was written by a collection of expert oncology professionals and was designed for clinicians providing care for oncology patients. It addresses every facet of therapy from understanding biomarkers that influence treatment decisions, to navigating cost and reimbursement issues, to supporting patients and their families throughout their treatment trajectory and survivorship.

It is, therefore, a great privilege to write the preface to this fourth edition of *Clinical Guide to Antineoplastic Therapy: A Chemotherapy Handbook*. Dr. Mary Magee Gullatte and her coeditors have curated and created a comprehensive and practical overview of the most commonly employed tool in cancer treatment—systemic therapy. An inter-professional selection of superb authors not only ensures a global perspective on relevant topics but also reflects the current and future state of systemic cancer care. As it

took a team of nurses, pharmacists, advanced practice providers, social workers, and physicians to craft this handbook, so too does it require these specialties to deliver increasingly complex care to patients. The chapter selection contains the most recent information on antineoplastic agent use and monitoring, from conventional cytotoxic chemotherapy to clinical trials and survivorship. New perspectives and topics, such as biosimilars, will help providers appreciate the nuances of the expanding categories of antineoplastic agent use. The approach of including scientific, operational, and psychosocial information across topics ensures the reader gains global information to ideally expand knowledge, increase curiosity, and aid in delivering exceptional care. Similarly, holistic topics, including support services, patient navigation, access devices, and legal concerns, provide a well-rounded approach to subject matter relevant to all disciplines involved in care.

It is our hope that as a lifelong learner, you appreciate the efforts of the editors, authors, and reviewers in publishing this exceptional and practical compilation. Thank you to all contributors of this fourth edition, all of whom made the commitment to share their expertise, knowledge, perspective, and values with cancer caregivers worldwide. This edition of *A Chemotherapy Handbook* is a superb resource for everyone from newly minted practitioners to seasoned veterans of oncology patient management.

Appreciation and thanks to senior editor Mary Magee Gullatte; mentored editors Rowena “Moe” Schwartz, Renee Spinks, and Deborah Kirk Walker; and the plethora of expert oncology providers and reviewers who authored chapters in this new edition and shared their expertise, knowledge, perspective, and values. They recognize not only the need for commitment by oncology professionals to provide excellent care but also the necessity for reliable tools that inform practice.

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Our hope is that this fourth edition will serve as a clinical reference for all nurses, advanced practice providers, physicians, and other healthcare professionals to inform their practices regarding the quality care and safety of patients undergoing cancer treatment with antineoplastic agents.

