Clinical Nutrition for Oncology Patients

Edited by

Mary Marian, MS, RD, CSO
Clinical Nutritionist, Curriculum Specialist, and Clinical Lecturer
University of Arizona
College of Medicine and Department of Nutritional Sciences
Arizona Cancer Center and Center for Excellence in Integrative Medicine
Tucson, AZ

Susan Roberts, MS, RD, LD, CNSD
Assistant Director of Clinical Nutrition and Nutrition Support Team Coordinator
Baylor University Medical Center
Dallas, TX
This book is dedicated to our families for their support and love,
to our authors and colleagues for their valuable time and contributions to this project,
and
to all cancer survivors and their caregivers that may we continue to support you on your journey.
Preface .............................................................. vii
Foreword ........................................................... ix
About the Authors .................................................. xi
Contributors ........................................................ xii
Reviewers ........................................................... xiv

Chapter 1 Introduction to the Nutritional Management of Oncology Patients .... Mary Marian, MS, RD, CSO
Susan Roberts, MS, RD, LD, CNSD

Chapter 2 Nutrition Screening and Assessment in Oncology ...................... Pamela Charney, PhD, RD
Andreea Cranganu, RD, LD, CNSD

Chapter 3 Nutrition Support for Oncology Patients ................................ M. Patricia Fuhrman, MS, RD, LD, FADA, CNSD

Chapter 4 Medical/Radiation Oncology ............................................. Carole Havrila, RD, CSO
Paul W. Read, MD, PhD
David Mack, MD

Chapter 5 Surgical Oncology ..................................................... Maureen B. Huhmann, DCN, RD, CSO
David August, MD

Chapter 6 Nutrition and Cancer Prevention ....................................... Nicole Stendell-Hollis, MS, RD
## Contents

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Esophageal and Head and Neck Cancer</td>
<td>165</td>
</tr>
<tr>
<td></td>
<td>Elisabeth Isenring, PhD, AdvAPD</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Breast Cancer</td>
<td>187</td>
</tr>
<tr>
<td></td>
<td>Deborah Straub, MS, RD</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Reproductive Cancers</td>
<td>231</td>
</tr>
<tr>
<td></td>
<td>Heather Hendrikson, RD, CSP, LD</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Prostate Cancer</td>
<td>245</td>
</tr>
<tr>
<td></td>
<td>Natalie Ledesma, MS, RD, CSO</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Lung Cancer</td>
<td>269</td>
</tr>
<tr>
<td></td>
<td>Jayne M. Camporeale, MS, RN, OCN, APN-C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Susan Roberts, MS, RD, LD, CNSD</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Hematologic Malignancies</td>
<td>297</td>
</tr>
<tr>
<td></td>
<td>Kim Robien, PhD, RD, CSO, FADA</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Brain Tumors</td>
<td>321</td>
</tr>
<tr>
<td></td>
<td>Cathy Scanlon, MS, RD, LD</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Palliative Care</td>
<td>351</td>
</tr>
<tr>
<td></td>
<td>Kelay Trentham, MS, RD, CD</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Pharmacologic Management of Cancer</td>
<td>379</td>
</tr>
<tr>
<td></td>
<td>Cachexia–Anorexia and Other Gastrointestinal Toxicities Associated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>with Cancer Treatments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Todd W. Mattox, PharmD, BCNSP</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dawn E. Goetz, PharmD, BCOP</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Integrative Oncology</td>
<td>409</td>
</tr>
<tr>
<td></td>
<td>Mary Marian, MS, RD, CSO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Index</td>
<td>447</td>
</tr>
</tbody>
</table>
Cancer is the second leading cause of death in the United States for adults. While everyone diagnosed with cancer reacts differently, the diagnosis is often associated with fear, anger, hopelessness, and a range of other emotions. The American Cancer Society states that as many as one third of cancer deaths in the United States could be prevented if Americans consumed a diet rich in plants and maintained a healthy body weight. Scientific evidence has shown consumption of a diet that consists mostly of plant-based foods such as vegetables, fruits, whole grains, and legumes together with restricting intake of saturated and trans fats and added sugars, and maintaining a body mass index (BMI) < 25, is associated with a reduced risk for chronic diseases such as cancer. Evidence strongly suggests that obesity is associated with an increased risk for breast, colorectal, endometrial, esophageal, and kidney cancer; obesity is also linked with cancers of the cervix, gallbladder, ovary, pancreas, and thyroid; multiple myeloma, Hodgkin’s lymphoma, and aggressive prostate cancer are also associated with excess body fat. Alcohol consumption is associated with cancers of the mouth, larynx, pharynx, esophagus, and liver. Smoking is the leading cause of lung cancer, laryngeal and oral cavity and pharyngeal cancers; cancers of the mouth, esophagus, kidney, bladder, cervix, pancreas, and acute myelogenous leukemia are also linked with tobacco use. Inadequate physical activity is strongly associated with the risk for developing many types of cancer. Sun exposure is another lifestyle habit influencing the risk for cancer. The World Health Organization (WHO) expects worldwide cancer rates to continue increasing because of lifestyle choices, including poor dietary intake and the increasing incidence of overweightness, obesity, physical inactivity, and tobacco use.

The number of cancer survivors in the United States is over 11 million people; therefore, healthcare clinicians are likely to care for someone with cancer or who has had cancer. Many cancer survivors become interested in changing their diets and lifestyle habits after being diagnosed with cancer. During treatment for cancer, many face a number of challenges, including trying to consume adequate food or liquid in order to maintain nutrition and
hydration status. After treatment, some survivors continue to struggle with intake while others strive to improve their diets to promote recovery and prevent cancer recurrence.

Because of the significant relationship between lifestyle and cancer, it is imperative for healthcare providers to serve as knowledgeable resources. This book is written by a variety of clinicians who not only care for cancer survivors and their caregivers but are also experts in the field of nutritional oncology. The goal of this text is to provide all clinicians interacting with cancer survivors with information to help their patients make informed choices and improve long-term outcomes. The chapters provide nutritional management recommendations for care prior to, during, and after treatment. Given the prevalence of widely available misinformation regarding nutrition and cancer, this text also serves as a reliable and accurate resource. Our hope is that the information provided by this text will assist all clinicians caring for cancer survivors to promote not only survivorship but also optimal quality of life.

Mary Marian and Susan Roberts

REFERENCES


Recent advantages in the recognition and treatment of many malignancies have allowed the development of effective and curative treatments for numerous patients with cancer. More than ever, patients who were diagnosed with cancer can say they have been cured. The mainstay of treatment involves chemotherapy, radiation, and surgery. Typically, these treatment modalities impair a patient’s capacity to maintain adequate nutrition.

Chemotherapy utilized to eliminate cancer cells takes advantage of the growth preferential of malignant cells over normal cells. This implies, however, that normal healthy cells are also going to be affected by these therapies. Abnormalities of the mucosal lining or gastrointestinal tract are a major problem in the delivery of effective chemotherapy and radiotherapy. This results in significant mucositis, esophagitis, gastritis, and enteritis, with the end result of nausea, vomiting, abdominal pain, diarrhea, and often malabsorption.

Maintaining adequate nutrition during treatment for cancer is often a major ordeal. Treating physicians may have difficulty completing or keeping a patient on schedule due to the known side effects of the treatment. Also, it is not uncommon for cancer therapies to severely impair a patient’s nutritional status.

In this book, leading experts in the field of cancer and nutrition provide insight into the challenges associated with the evaluation and maintenance of cancer patients’ nutritional status. It is certainly a welcome asset to all health professionals who treat patients with cancer.

Luis Piñeiro, MD, FACP
Hematopoietic Stem Cell Transplant Program
Director of Marrow and Apheresis Laboratory
Baylor University Medical Center
Sammons Cancer Center
Dallas, TX
Mary Marian has been practicing as a clinical dietitian in Tucson, Arizona, for over 20 years. She is currently employed at the University of Arizona as a clinical lecturer and nutritionist at the College of Medicine and Sunstone Cancer Resource Centers. Mary is also a faculty member at the University of Arizona’s Center for Excellence in Integrative Medicine. Her current practice focuses on preventive medicine, cancer, and specialized nutrition support. Mary is also a faculty member at the University of Phoenix in Tucson. She is widely published and has given numerous lectures locally, nationally, and internationally. Additionally, she is involved in several professional organizations, including the American Dietetic Association and the American Society of Parenteral and Enteral Nutrition (A.S.P.E.N.). She is married to her husband, Jim, and has two adult children, Scott and Brittney.

Susan Roberts has been a registered dietitian for 20 years and has 14 years of experience with oncology and hematopoietic stem cell transplant patients. Susan’s current roles at Baylor University Medical Center are Assistant Director of Clinical Nutrition, Nutrition Support Coordinator, and Dietetic Internship Director. She has numerous publications and presentations and is also involved as a professional volunteer with the American Dietetic Association, Dietitians in Nutrition Support, the American Society for Parenteral and Enteral Nutrition (A.S.P.E.N.), and the North Texas Society for Parenteral and Enteral Nutrition. Susan is married to her husband, Chris, and has two young boys, Ross and Griffin.
About the Authors

Contributors

David August, MD
Professor, Department of Surgery and Oncology
Robert Wood Johnson Medical School—University of Medicine and Dentistry, New Jersey
Chief, Surgical Oncology
The Cancer Institute of New Jersey
New Brunswick, NJ

Jayne M. Camporeale, MS, RN, OCN, APN-C
Adult Nurse Practitioner
The Cancer Institute of New Jersey
New Brunswick, NJ

Pamela Charney, PhD, RD
Clinical Coordinator
Graduate Coordinated Program in Dietetics
Lecturer, Department of Epidemiology
Nutrition Sciences Program
School of Public Health and Community Medicine
Affiliate Associate Professor
School of Pharmacy
University of Washington
Seattle, WA

Andreea Cranganu, RD, LD, CNSD
Clinical Dietitian
Baylor University Medical Center
Dallas, TX

M. Patricia Fuhrman, MS, RD, LD, FADA, CNSD
National Director of Nutrition Services
DCRX Infusion
Ballwin, MO

Dawn E. Goetz, PharmD, BCOP
Clinical Pharmacist
H. Lee Moffitt Cancer Center and Research Institute
Tampa, FL
Contributors

Carole Havrila, RD, CSO
Registered Dietitian
University of Virginia Cancer Center
Charlottesville, VA

Heather Hendrikson, RD, CSP, LD
Clinical Dietitian
Baylor University Medical Center
Dallas, TX

Maureen B. Huhmann, DCN, RD, CSO
Assistant Professor, Department of Nutrition Sciences, School of Health Related Professions
University of Medicine and Dentistry, New Jersey
Clinical Dietitian
The Cancer Institute of New Jersey
New Brunswick, NJ

Elisabeth Isenring, PhD, AdvAPD
NHMRC Postdoctoral Fellow, Institute of Health and Biomedical Innovation, School of Public Health
Queensland University of Technology
Australia

Natalie Ledesma, MS, RD, CSO
Oncology Dietitian
UCSF Helen Diller Family Comprehensive Cancer Center
University of California
Cancer Resource Center
San Francisco, CA

David Mack, MD
Assistant Professor of Medicine
Duke Oncology Network
Durham, NC

Todd W. Mattox, PharmD, BCNSP
Coordinator, Nutrition Support Team
H. Lee Moffitt Cancer Center and Research Institute
Tampa, FL
About the Authors

Paul W. Read, MD, PhD
Associate Professor
University of Virginia Department of Radiation Oncology
UVA Medical Center
Department of Radiation Oncology
Charlottesville, VA

Kim Robien, PhD, RD, CSO, FADA
Assistant Professor
Division of Epidemiology and Community Health, School of Public Health and Population Sciences Program, Masonic Cancer Center
University of Minnesota
Minneapolis, MN

Cathy Scanlon, MS, RD, LD
Clinical Dietitian
University of Iowa Hospitals and Clinics
Iowa City, IA

Nicole Stendell-Hollis, MS, RD
Nutritional Sciences Department
University of Arizona
Tucson, AZ

Deborah Straub, MS, RD
Integrative Medicine Nutritionist
Canyon Ranch Health
Tucson, AZ

Kelay Trentham, MS, RD, CD
Oncology Dietitian
MultiCare Regional Cancer Center
Tacoma, WA

Reviewers

Susan Brantley, MS, RD, LDN, CNSD
Metabolic Support Nutritionist
University of Tennessee
Knoxville, TN
About the Authors

Edwina Hall, PharmD
Clinical Pharmacist
Northwest Medical Center
Tucson, AZ

Kathryn Hamilton, MA, RD, CSO
Clinical Oncology Dietitian
Atlantic Health Carol G. Simon Cancer Center
Morristown Memorial Hospital
Morristown, NJ

Dianne Kiyomoto, RD
Oncology Dietitian
California Cancer Center
Fresno, CA

Jessica Monczka, RD, LD/N, CNSC
Clinical Dietitian
Arnold Palmer Hospital for Children
Orlando, FL

Eric Nadler, MD, MPP
Medical Oncologist
Baylor Sammons Cancer Center
Dallas, TX

Mary K. Russell, MS, RD, LDN, CNSD
Director of Nutrition Services
University of Chicago Hospitals
Chicago, IL

Cynthia A. Thomson, RD, PhD, FADA, CSO
Associate Professor
Nutritional Sciences, Medicine, and Public Health
Member Arizona Cancer Center
University of Arizona
Tucson, AZ

Ching Ueng, PharmD
Clinical Pharmacist
Baylor University Medical Center
Dallas, TX