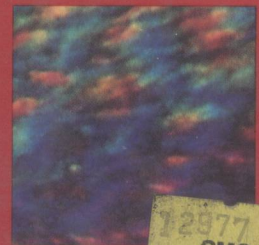


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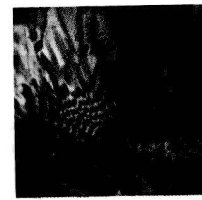
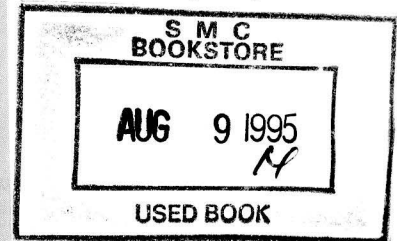


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Understanding Normal and Clinical Nutrition

THIRD EDITION

*Eleanor Noss Whitney
Corinne Balog Cataldo
Sharon Rady Rolfes*



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To my mother Edith Noss, my father Henry Noss, my children Lynn, Kara, and Russ, and my special friends Tonya and Sally, who enhance my world with their wisdom, compassion, goodness, and love—my gratitude always.

Ellie

To health care professionals everywhere, who work small miracles by applying their knowledge to prevent disease, to restore health, and to ease suffering.

Corkie

To my family and friends, who comfort me in times of sadness and celebrate with me in times of joy—especially to Tom and Linda DeBruyne, whose generosity, love, and support exemplify the meaning of friendship.

Sharon

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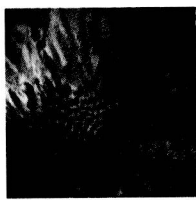
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Eleanor Noss Whitney, Ph.D., R.D., received her B.A. in biology from Radcliffe College in 1960 and her Ph.D. in biology with an emphasis on genetics from Washington University, St. Louis, in 1970. Formerly an associate professor at the Florida State University, she now devotes full time to research, writing, and consulting on nutrition, health, and the environment. Her earlier publications include articles in *Science*, *Genetics*, and other journals. Her textbooks include *Nutrition: Concepts and Controversies*, *Understanding Nutrition*, *Nutrition and Diet Therapy*, *Life Choices*, *Life Span Nutrition*, and *The Fitness Triad*. She is editor of *Nutrition Clinics*, a bimonthly monograph series published by J. B. Lippincott, and she serves as president of the Nutrition and Health Associates, an information resource center in Tallahassee.

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Preface



When we wrote the first edition of *Understanding Normal and Clinical Nutrition*, our goal was to provide an up-to-date and accurate textbook that included both normal and clinical nutrition. We wanted the book to hold the reader's attention—to provide more than just facts. We also wanted readers to understand how the facts apply to people and to everyday life. Our goals for this third edition of the book are basically unchanged. However, we have revised the book substantially to reflect the many changes that have taken place in the field of nutrition over the years.

This book presents the core information of an introductory nutrition course for students entering the health care profession. Based on the principles of chemistry and molecular biology, the first eleven chapters describe the nutrients and how the body handles them. Chapter 1 provides an overview of the nutrients, and Chapter 2 presents current recommendations and guides for diet planning. In Chapter 3, readers follow the journey of digestion and absorption as the body transforms foods into nutrients. Chapters 4 through 6 describe carbohydrates, fats, and proteins—their chemistry, their health effects, their roles in the body, and their place in the diet. Then Chapter 7 shows how the body yields energy from these three nutrients. Chapters 8 through 11 complete the introductory lessons by describing water, the vitamins, and the minerals—their roles in the body, their deficiency and toxicity symptoms, and their sources.

The next six chapters weave that basic information into pieces that illustrate how nutrition influences people's lives. Several of these chapters are new to this edition and reflect the trend toward promoting optimal health through optimal nutrition. Chapter 12 looks at the energy balance equation and explores the possible causes and treatments of obesity and underweight. Chapter 13 recognizes that the partnership of nutrition with fitness enhances health, and shows how the nutrients work together to support physical activity. Chapters 14 and 15 show the special nutrient needs of people through the life span—pregnancy, infancy, childhood, adolescence, and adulthood. Chapter 16 addresses consumer concerns about the safety of the food supply, and Chapter 17 displays the problems of domestic and world hunger and environmental degradation, together with some approaches to the solutions.

The clinical portion of the book begins with Chapter 18, which introduces the relationships between nutrition and illness, including the body's responses to severe stress, to attacks on the immune system, and to drug therapy. More complete than previous editions, Chapter 19 describes the methods commonly used to assess nutrition status, and Chapter 20 shows how nutrition care providers develop, implement, and evaluate nutrition care

plans to meet their clients' needs. Chapters 21 and 22 focus on enteral and parenteral nutrition. The remaining eight chapters examine the specific dietary care required for clients with particular medical conditions—conditions that involve trauma, upper and lower GI dysfunctions, liver disease, diabetes, heart and blood abnormalities, lung disorders, kidney disease, and the wasting disorders of cancer and AIDS.

To the person reading this text, it will be obvious that, like even the most exact sciences, nutrition possesses no absolute certainties. Nutrition scientists simply do not have all the answers yet; in some cases, we have not even asked all the questions yet. This is true in many areas of nutrition; it is a growing, young science dating only from around the turn of the century. One of the missions of this text is to show readers how researchers and health care providers ascertain the “facts.” Scattered throughout this edition's chapters, are “Nutrition Detective Work” boxes, which step behind the scenes to explain the workings of research; and “Clinical Detective Work” boxes, which ask the reader to search through the facts of case studies looking for clues to the best care for clients.

Many of the chapters in this edition also include skill boxes that guide readers through problem-solving tasks. For example, one shows readers how to calculate a person's niacin intake from a given protein consumption; another shows how to determine the energy needs of a client with burns.

Each chapter closes with study questions and a self-study exercise. Study questions offer readers an opportunity to review the major concepts presented in the chapter. In the normal nutrition chapters, the self-study sections ask readers to examine their own diets; for example, to calculate nutrient intakes for a day's meals. The clinical self-studies ask readers to experience therapeutic diets first-hand; for example, one instructs them to plan and follow a pureed diet for a day.

Highlights on current issues of interest alternate with the chapters. Each highlight provides readers with a brief look at a topic that relates to its companion chapter. The new highlights in this edition address such subjects as nutrition experts, artificial fats, the health aspects of vegetarian diets, dental health, lead toxicity in children, supplements used by athletes to enhance performance, fetal alcohol syndrome, the aging brain, and relationships between nutrition and the environment. Several of the new highlights in the clinical portion of the book describe how clients live with their diseases and treatments. Other new clinical highlights include health messages on food labels, healthful ethnic food choices, and cost containment in nutrition care.

The appendixes are valuable references for a number of purposes. Appendix A summarizes background information on the hormonal and nervous systems, complementing Appendixes B and C on basic chemistry, the chemical structures of nutrients, and major metabolic pathways. Appendix D assists readers with calculations and conversions. Appendix E contains supplemental information on nutrition assessment, and Appendix F lists nutrition resources, including book and journal recommendations as well as addresses. Appendix G presents the U.S. Four Food Group Plan, the U. S. Exchange System, and the Canadian Food Group System. Appendix H is a 1600-item food composition table made from the latest nutrient data base assembled by ESHA Research, Inc., of Salem, Oregon. Appendix I presents

the Recommended Dietary Allowances (1989 RDA) and the Canadian Recommended Nutrient Intakes (1990 RNI). Appendix J describes measures of protein quality and Appendix K provides the forms needed to complete the self-study exercises presented at the ends of chapters. Appendix L offers the latest product information on enteral formulas.

We have tried to keep the number of footnotes to a minimum. Most statements that have appeared in previous editions with footnotes now appear without them, but every statement is backed by evidence, and the authors will supply references upon request.

We hope our informal, conversational writing style makes the study of nutrition an enjoyable experience. Nutrition is a fascinating subject, and we hope our enthusiasm for it comes through on every page.

*Eleanor Noss Whitney
Corinne Balog Cataldo
Sharon Rady Rolfes
April 1991*

Acknowledgments

To produce a book requires the coordinated effort of a team of people—and, no doubt, each team member has another team of support people as well. We salute, with a big round of applause, everyone who has worked so diligently to ensure the quality of this book.

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