DECISIONS IN
Nutrition

Vincent Hegarty

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Times Mirror/Mosby College Publishing
ST. LOUIS • TORONTO • SANTA CLARA • 1988

Publisher Nancy K. Roberson
Editor Ann Trump
Developmental Editor Kathy Sedovic
Project Manager Teri Merchant
Production Editor Robert A. Kelly
Design John R. Rokusek
Editing Editing, Design & Production, Inc.

Cover illustration Penny & Stermer Group/Julia Noonan

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A division of The C.V. Mosby Company
11830 Westline Industrial Drive
St. Louis, Missouri 63146

Printed in the United States of America

Library of Congress Cataloging-in-Publication Data

Hegarty, P. Vincent.
Decisions in nutrition.

Bibliography: p.
Includes index.
1. Nutrition. I. Title.
TX354.T39 1988 613.2 87-18078
ISBN 0-8016-2195-X

GW/GW/VH 9 8 7 6 5 4 3 2 01/A/032

ABOUT THE AUTHOR

Vincent Hegarty was the Evans Medical Research Fellow at the University of London, England, where he obtained a Ph.D. in human nutrition. He also holds a B.Sc. and M.Sc. in biochemistry, and a B.A. in political economy, philosophy, and history from the National University of Ireland. He is author or co-author of over 100 papers in more than 30 different journals in basic, agricultural, and biomedical sciences. Winner of the Amoco-Morse Foundation Award for Outstanding Contributions to Undergraduate Education when he was a professor at the University of Minnesota, he is presently Professor and Department Chairman at the University of Houston. He is also affiliated with the University of Texas Health Sciences Center, Houston, where he is Adjunct Professor, School of Public Health, and member of the Graduate School of Biomedical Sciences. Dr. Hegarty has taught the introductory nutrition course for over 15 years.

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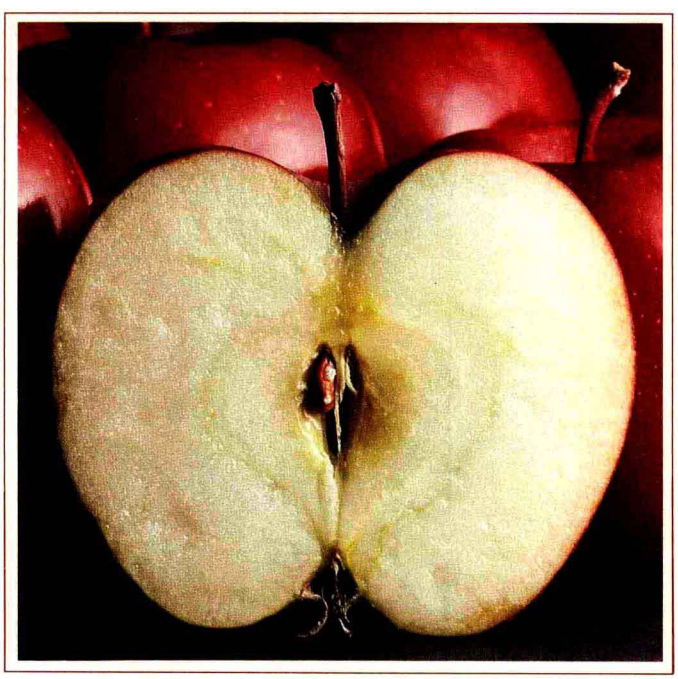


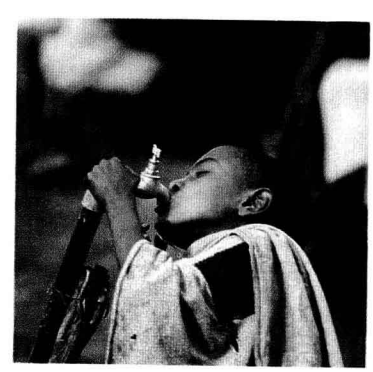
Preface

The health and well-being of individuals, families, and nations are determined by the quality of the diet. Likes and dislikes for food vary widely, as do dietary restrictions because of health, lifestyle, or religious or cultural reasons. *Decisions in Nutrition* emphasizes the importance of nutrition by capturing the student's personal involvement and illustrating the global consequences. It invites the reader to become actively involved in using basic nutrition information to make personal decisions and to examine national and global concerns in nutrition. Let me demonstrate how I will deliver on my promise of involving the student in the fascinating study of nutrition.

AUDIENCE

A typical introductory class in nutrition may have students with backgrounds as diverse as the components of nutrition itself. Students taking this course may be majoring in psychology, sociology, economics, nursing, science, premedicine, business, engineering, home economics, physical or health education, and many other areas. They will be male and female, young students and older ones returning to further their education. Some students will be athletes interested in the relationships between food and athletic performance. Others may be interested in keeping their weight under control. The course may be taught in a 2- or 4-year college or university, or as part of a continuing education workshop/course. *Decisions in Nutrition* is appropriate for all of the above. It could also be used by professionals in the health, recreation, food, and agricultural industries, as well as by individuals who are simply interested in learning about nutrition. *Most important, a background in nutrition or science is not needed to understand the concepts presented in this text.*

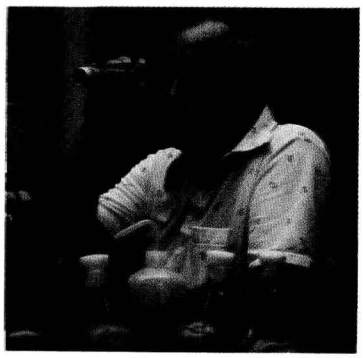
CONTENT HIGHLIGHTS



Some important features *unique* to *Decisions in Nutrition* make it distinctive from other texts.

Chapter 8: Oxygen, Water, and Other Fluids looks at nutrients frequently taken for granted—is it because air and water are free? Yet these are vitally important for the utilization of other nutrients in maintaining life and essential to the student's understanding of topics discussed throughout the text (e.g., iron deficiency anemia). Although other texts include coverage of water, *Decisions in Nutrition* provides a unique discussion of the role of oxygen as well.

Chapter 15: Nutrition and Current Lifestyles discusses circumstances that have arisen recently or become more common because of the pressures of today's lifestyles. It includles *unique* examinations of nutrition and stress, legal and illegal drug use,



the effects of working patterns on food intake in families, the role of exercise, food faddism and food quackery, and the role of the federal government as a surrogate provider of food.

Chapter 16: Nutrition and the Future includes a *unique* and fascinating look at the role of biotechnology and bioengineering in providing new sources of food, the food-producing capabilities of the earth to provide enough food for an expanding population, and the nutritional requirements for prolonged space flights. This chapter offers an interesting and appropriate conclusion to the text, highlighting information and trends that may influence the future of food availability and consumption.

Consumer-Oriented and Practical

We are all consumers and users of food. This common factor is highlighted throughout the book through practical applications of nutrition concepts.

This text contains relevant, accurate, practical nutrition information. The production and consumption of food is an economic exercise. Therefore, the consumer must make correct food choices to maximize both the sensory satisfaction and nutritive value of the food dollar. This is done from birth until death—a fascinating lifelong challenge.

The reader will be given the tools needed to distinguish between real and false anxieties about the quality of our diet. The unbiased presentation found in *Decisions in Nutrition* will enable the student to make informed decisions in nutrition.

Personalized Information

It is not selfish to ask, "Is it good for *me?*" The "me" part of the answer requires consideration of the gender, age, socioeconomic status, health, and possibly race, religion, and occupation. The "is it good" part requires a knowledge of food production and preparation. This text presents the information necessary to address a wide range of needs, allowing students to make decisions or evaluate their own dietary practices.

Up-to-date Information

Nutrition is a rapidly changing and growing subject. A lot of effort was put into using the most up-to-date information from the widest range of journals, books, and reports. *Seventy-five percent of the references in each chapter are from 1985 or later.* Journal listings in each chapter are extensive, ranging from the behavioral and social sciences to the natural, agricultural, and medical sciences. These are provided in the hope that the reader will explore further, and also to demonstrate that the information in the text comes from far-ranging current sources.

ORGANIZATION

Decisions in Nutrition is organized into four sections. There is enough flexibility to allow instructors to change the sequence of chapters within each section.

The reader is introduced to nutrition in Part I—Food, Nutrients, and You. Chapter 1 sets the stage by examining the close relationship between the nutrients, the vehicle in which they are carried—food, and the consumer of the nutrients. In Chapter 2, methods of determining the nutritional quality of the diet, the nutritional status of individuals, present food consumption trends, and U.S. and Canadian guidelines for good eating practices are discussed. The student is also shown how to calculate nutrient values from food composition tables and how to apply RDAs.

The nutrients are discussed in Part II—Nutrients: Their Sources and Functions. The energy nutrients are examined first. Carbohydrates, fats, and proteins are presented in Chapters 3, 4, and 5. These are followed by discussions of vitamins and minerals in Chapters 6 and 7.

Air (oxygen), water, and other liquids are discussed separately in Chapter 8. Both the importance of a number of nutrients in getting oxygen to the cells for energy release and the importance of water in metabolism are stressed. The negative effects of alcoholic drinks and the positive effects of milk and natural fruit drinks are discussed.

Energy requirements/energy balance and their application to obesity, eating disorders (anorexia nervosa and bulimia), and starvation from famine are evaluated in Chapters 9 and 10. This is more logical than the formats in other texts, which place energy and body weight problems immediately after the energy nutrient. Diets low in some vitamins and minerals cause health problems for some dieters. Athletes take vitamin and mineral supplements in a mistaken hope that their utilization of energy will be improved. Therefore, a knowledge of vitamins and minerals is necessary before one can understand their effect on energy balance and overeating or malnutrition. But it is, of course, possible to follow the more traditional format in this book also is you so desire. Chapter 11 examines the long process of bringing food from the farm to every cell in our body, including intermediate stops in the supermarket and the kitchen.

The varying need for nutrients throughout our life is discussed in Part III—Nutrition Throughout Life. The physiological need for nutrients is viewed in the context of developmental and behavioral changes, the effect of employment, recreation, family status, and other influences on our lives. Topics include the recommended diet for pregnancy and breastfeeding (Chapter 12), childhood obesity (Chapter 13), the diet of college athletes and nonathletes and diseases that may be related to diet—coronary heart disease, hypertension, cancer, and others (Chapter 14).

In Part IV—Applications and Implications we examine the role of nutrition in our modern lifestyles. Some topics that are becoming increasingly important as we cope with everyday pressures include the role of nutrition on stress, in the use of both legal and illegal drugs, and in excessive use of alcohol and tobacco. The significance of exercise and "eating on the run" on nutritional status is discussed. These topics and the impact of the changing structure of the family on dietary intake are examined in Chapter 15. In Chapter 16, future trends in nutrition research including food for space travel and new sources of food are addressed, a *unique* and upbeat way of ending an exciting subject.

PEDAGOGICAL FEATURES

Decisions in Nutrition has a variety of learning aids to assist instructors and to enhance student learning.

Illustrations

Unique and visually appealing illustrations are presented in two and four color throughout the text, supporting important concepts and aiding student comprehension of the material. All of the line art has been specifically created for *Decisions in Nutrition.*

Connections

We eat mouthfuls of nutrients when we eat mouthfuls of food. However, nutrition information must be presented and "digested" one nutrient at a time. Every text presents the nutrients this way. In this text, a *unique* section, entitled Connections, is provided at the beginning of each chapter. This section incorporates information from preceding chapters into an overview of what is covered from one chapter to the next, and enables the student to form a clear understanding of the interrelationships of nutrition concepts.

Marginal definitions

Key terms are italicized in the narrative and repeated in the margin, along with the definition, to reinforce important nutrition concepts where they are presented in the text. The definitions are repeated in a comprehensive glossary at the end of the text.

Marginal notations

Keeping in touch with reality (a title we do not use because of its length) is the purpose of the marginal notes in each chapter. The information in the margin helps relate basic information with the real world. It is placed in the margin rather than "buried" in the text so that the reader can take time out to note and reflect on the implications.

Marginal discipline key

Relationships between nutrition and other disciplines are highlighted by referencing the appropriate discipline and a key symbol ⚲ in the margin to nutrition information being discussed (e.g., economics, sociology, medicine). This *unique* feature demonstrates for students the extensive interactions between nutrition and other disciplines and will increase their involvement in understanding the full implications of the information while making learning more interesting.

Debates

Nutrition information is constantly changing. New information is presented continuously, resulting in discussion and study about its basis in fact and potential implications for consumers. Topics may currently be debated by some nutrition experts, or new research may be presented that has not yet been proved or supported by additional study. In recognition of this fact, students are alerted to these topics by the use of colored arrows ⇄ in the text discussions, highlighting such topics while maintaining the narrative flow. This should prove to be a helpful feature

that can be used to stimulate student discussion and encourage critical evaluation of new nutrition information as it becomes available from the scientific literature and media.

Section summaries

Each chapter contains brief summaries following major sections to reinforce student comprehension of the material before proceeding to the next secton. This should allow time for reflection and be useful for quick reviews.

Pictorial summaries

We live in a visual age. At the end of each chapter the *unique* visual summary provides an interesting and effective review of each chapter, as well as giving a visual break from a chapter of words. The supplementary package of transparency acetates includes the pictorial summaries from all 16 chapters.

Decisions

A *unique* feature of this text, each chapter contains several nutrition-related questions that directly involve the reader in using the information in the chapter in making decisions on many popular topics (e.g., What type of fiber, and how much, is good for me? Should supplements be taken during pregnancy?). In some instances, the student is then guided through the necessary steps involved in making a particular nutrition-related decision. In other cases, the student is simply given the factual information about a topic and asked to draw his or her own conclusions, incorporating or extending information contained in that chapter.

Documentation

It is important for both instructor and student that the information in a text is scientifically accurate, fully documented, and as current as possible. The reference list at the end of each chapter is a guarantee that this is so in this text. Seventy-five percent of the references in each chapter are from 1985 or later.

Metabolism notes

The reader who desires a deeper understanding of how nutrients work in the human body will find this information in the metabolism notes. This *unique* section is independent from the chapter and intended as an *optional* tool available to instructors who require that their students obtain additional information about how nutrients are used in our bodies. It is separated from the main body of the chapter and located at the end of the relevant chapters (1-10). Instructors who may be teaching this course to a class of combined majors and nonmajors may find this feature particularly useful.

Appendices

In addition to the standard reference tables, such as food composition and nutrient content of fast foods, some particularly helpful appendices have been provided for the student.

For students who would like to briefly review the basic anatomy and physiology of the digestive system, Appendix A, Nutrition and The Human Body, has been included.

Appendix B, Calculating Your Nutrient Intake, includes a description and

examples of the steps involved in measuring the student's nutritional status. The reader can refer to this appendix during or following the study of a particular topic, such as carbohydrates, to determine his or her own intake, and make comparisons with recommended intakes.

Appendix E provides a comprehensive listing of reliable Sources of Nutrition Information to which the student can refer for additional information.

The end papers include conversion factors, height and weight tables, and the RDAs.

SUPPLEMENTS

A complete package of supplements is available for use with *Decisions in Nutrition.* As with the text itself, producing supplements of extraordinary quality and utility was a primary objective of the author and publisher. All supplements accompanying this text that are to be used with students, from the test items to the study guide, have been reviewed by many of the same instructors who critiqued the text.

Instructor's Manual and Test Bank

Prepared by Evelyn Day of Weber State College, the Instructor's Manual and Test Bank provides text adopters with substantial support in preparing for and teaching introductory nutrition with this text. The manual is perforated and three-hole punched for convenience.

Conversion notes. Each chapter of this manual begins with a section entitled "What's Different and Why." This *unique* feature indicates how the coverage of each chapter in *Decisions in Nutrition* differs from other introductory nutrition texts. These conversion notes enable the instructor to make a convenient transition to *Decisions in Nutrition* from other texts.

Chapter overview. A brief summary of the major concepts presented in each chapter.

Dietary assessments. Self-evaluation exercises are provided in each chapter and can be easily photocopied to be used as handouts to the student.

Related issues. Each chapter includes current issues for class discussion related to the chapter topic.

Transparency masters. Key illustrations and charts appearing in the text are reproduced as full-page transparency masters at the back of the manual. Masters are also provided for supplemental material not appearing in the textbook.

Test bank. An extensive test bank, including over 2000 multiple-choice, completion, true-false, and essay questions, is contained in the manual. Test questions have been carefully evaluated by reviewers of the text for clarity, accuracy, and level of difficulty.

Transparency Acetates

A set of 50 overhead transparency acetates in 2-color is available to adopters of the text for use as teaching aids. These include the most important illustrations from the text (including all the pictorial summaries), as well as additional illustrations that have been developed to supplement the text and help teach important concepts.

Computerized Test Bank

A computerized version of the test bank (Microtest II) is available to instructors on disks for IBM-PC, Apple II+, Apple IIe, Apple IIc, and IBM-compatible computers. Microtest II also provides instructors with the opportunity to add questions of their own, as well as to modify or rearrange existing questions.

Nutrient-Analysis Software

This interactive software allows students to assess their dietary intake for multiple days. The data disk contains over 1500 food items, including fast foods and fad diet preparations. Unlike any other software available with introductory nutrition texts, *this program allows the student to enter food items by their names.*

Study Guide

Prepared by Joanne Spaide of the University of Northen Iowa, the study guide is uniquely designed to help students become involved in the learning process. It encourages students to apply what they have learned in the text. Features in the study guide include key terms and definitions, guidepoints targeting the key points of each chapter, a chapter outline, student activities, self-quizzes, enrichment activities, and a comprehensive resource directory.

ACKNOWLEDGMENTS

My thanks go to the following people who can take part in the credit for what I think is an exciting and refreshing introduction to nutrition text:

- Students in universities in different parts of the world where I was fortunate to experience the excitement of teaching nutrition. Their challenging questions were the inspiration for this book.
- Teachers and colleagues for their wisdom and guidance. Special thanks go to the reviewers listed below. Their suggestions were invaluable. Their efforts indicated to me that there is a place for this text in introductory courses in nutrition. Thanks are also extended to the many other professors contacted by Times Mirror/Mosby College Publishing in preliminary surveys of the characteristics of a good introductory text in nutrition.

Nancy Betts
University of Nebraska

Carol Bishop
Solano College

Virginia Campbell
Acadia University

Evelyn Day
Weber State College

Ethel Fowler
Palm Beach Junior College

Betty Friedman
Southwest Texas State University

Margarette Harden
Texas Tech University

Margaret Hedley
University of Guelph

Paula Howat
Louisiana State University

Jan Johnson
Illinois State University

Sooja Kim
Bowling Green State University

Melinda Manore
Arizona State University

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North Carolina State University

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University of Minnesota, Duluth

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Southwest Missouri State University

Jean Skinner
University of Tennessee

Helen Smith
Ball State University

Joanne Spaide
University of Northern Iowa

Susan Strahs
California State University, Long Beach

Kathryn Sucher
San Jose State University

Sheron Sumner
University of North Carolina, Greensboro

Anna Svacha
Auburn University

Billie Wood
Daytona Beach Community College

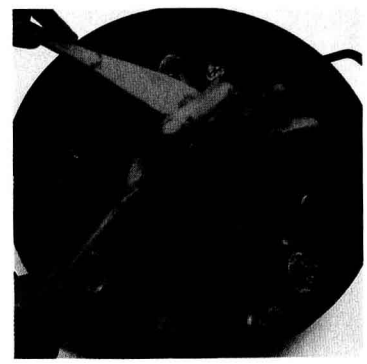
Franklin Young
West Chester University

Joan Yuhas
Ohio University

The staff at Times Mirror/Mosby College Publishing have left their mark of excellence on this book. Special thanks go to Kathy Sedovic—she is any author's dream of a developmental editor. Her professional wisdom, patience, and good humor were most helpful. Nancy Roberson, Ann Trump, and Jean Babrick helped in innumerable ways.

The text was carefully crafted by Brian Williams who brought his unique writing skills to refine the final draft. Ralph Zickgraf tidied up my editorial loose-ends, and Donald O'Connor translated my amateur attempts at art into the fine line art throughout the text.

Some special people in my life deserve thanks—my sons Adrian and Neal did the word processing, my wife Maura provided support, nutrients, and encouragement, and my parents gave me the great gift of an education.



AN INVITATION

If you have any comments or suggestions for revisions after using this text, I invite you to share them with me for consideration in the second edition. Send your comments to the publisher—I will be glad to respond to all letters.

Vincent Hegarty

To the Student

Nutrition has fascinated me for over 25 years. I want to transfer that fascination to you through the pages of this book.

Our partnership starts with many advantages. We know the foods we like and dislike, and we can list some reasons why—taste, appearance, cultural/ethnic preferences, happy personal experiences associated with food, and many others. We will draw on these shared experiences to understand all aspects of nutrition. We will learn about its history: if you were reading this book in 1900 there would be no information on the vitamins, little on the minerals, and a poor understanding of the workings of the human body. We will get to know each individual nutrient and understand how nutrients interact with our bodies. We will be startled by the effects of too much and too little food. We will taste the great joy food brings to our lives and feel the suffering of those less fortunate without food. We will appreciate why nutrition is important to our modern lifestyles, in health promotion, and in disease prevention. We will look to the future and see the possibilities of eating in space and of getting foods from new sources.

We will distinguish between information accepted by nutrition scientists and information still debated. More important, you will be given reasons for the debate. You will be involved in the decision-making process on some nutrition issues at the end of each chapter.

We must remember that we are social animals, made up of a bunch of chemicals called nutrients, dependent on the fruits of the soil for our survival, and on medical science for our health and well-being. Come with an inquiring mind ready to explore all of these fascinating interactions between so many disciplines. The personal satisfaction and the intellectual excitement obtained from the study of nutrition will ensure your own personal health and well-being and ideally heighten your sensitivity to the nutritional circumstances of others.

Contents In Brief

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