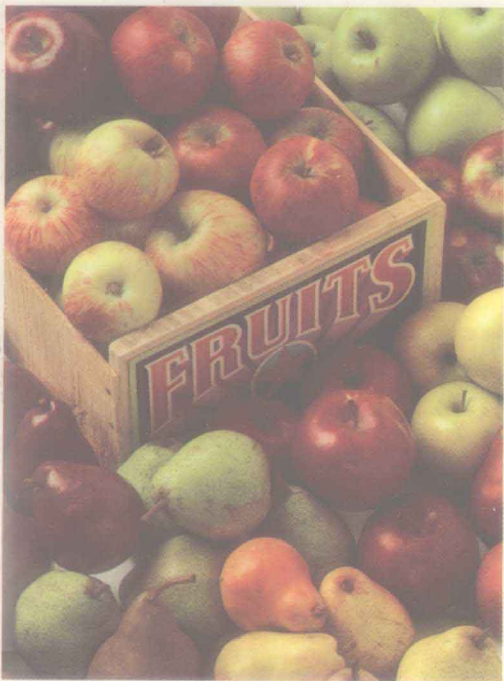


Third Edition



NUTRITION and YOU with READINGS



William A. Forsythe



NUTRITION and YOU with READINGS

Third Edition

William A. Forsythe, III

University of Southern Mississippi

Publisher: Charles E. Grantham
Production: Sarah M. Tayloe
Copyediting: Sheryl T. Fowler
Book Design: L. Sherri Powell
Printing: Edwards Brothers, Inc.

ACKNOWLEDGMENTS:

"How Quackery Sells," *Nutritional Forum Newsletter*, March/April 1991.
"Year 2000 Objective," *Obesity & Health*, January 1990.
"The Changing American Diet," *Nutrition Action Healthletter*, 1989.
"Preventing Food-Borne Illness," *FDA Consumer*, January/February 1991.
"How's Your Diet?," *Nutrition Action Healthletter*, May 1993.
"Rating the Diets," *Consumer Reports*, June 1993.
"The Importance of Fiber," *The University of California at Berkeley Wellness Letter*, April 1992.
"The Healthy Eater's Guide to Sugar," *The University of California at Berkeley Wellness Letter*, 1991.
"Cholesterol," *Mayo Clinic Health Letter*, June 1993.
"The Diet/Cancer Connection," *Health After 50*, May 1992.
"Things Nobody Told Rocky Balboa About Protein," *Tufts University Diet & Nutrition Letter*.
"Can Megadoses of Vitamin C Help Against Colds?," *Nutrition Forum*, September/October 1992.
"Vitamin Pushers and Food Quacks," *Nutrition Forum*, March/April 1993.
"Too Much Salt?," *Consumer Reports*, January 1990.
"Might Americans Be Taking In Too Much Iron?," *Tufts University Diet & Nutrition Letter*, January 1993.
"Facts and Fallacies About Eating and Pregnancy," *Tufts University Diet & Nutrition Letter*, December 1985.
"Performance Boosters," *Men's Health Magazine*, 1991.

ISBN: 0-89892-129-5


Copyright © 1988, 1989, 1990, 1992, 1995 by
Contemporary Publishing Company of Raleigh, Inc.

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the copyright owner and publisher.

Printed in the United States of America.

10 9 8 7 6 5 4 3 2

ACKNOWLEDGMENTS

he author would like to acknowledge and thank the following persons without whose help this book would not have been possible. Dr. Jane Boudreaux was instrumental in creating the one-credit nutrition course at the University of Southern Mississippi for which the book was written. Dr. Allison Yates secured the Department of Education (Title III) grant that provided support to write the book and also suggested the book's title. Mr. Chuck Grantham and the editors at Contemporary Publishing Company provided direction and much-needed editorial assistance. I would also like to thank Robin Bagby of Pennsylvania State University for invaluable editing and suggestions in the previous edition. Finally, I am especially thankful for the support and encouragement of my wife, Linda, and my children, Lara and William.

William Forsythe

October 1994

TABLE OF CONTENTS

1	Nutrition and You	1
	<i>Additional Readings:</i> How Quackery Sells	9
	Year 2000 Objective	14
2	Food Laws, Food Safety, and Food Labels	21
	<i>Additional Readings:</i> The Changing American Diet	30
	Preventing Food-Borne Illness	32
3	Nutritional Assessment, Obesity, and Eating Disorders	41
	<i>Additional Readings:</i> How's Your Diet?	54
	Rating the Diets	57
4	Dietary Carbohydrates	65
	<i>Additional Readings:</i> The Healthy Eater's Guide to Sugar	72
	The Importance of Fiber	74
5	Dietary Fats	79
	<i>Additional Readings:</i> Cholesterol	90
	The Diet/Cancer Connection	94
6	Dietary Proteins	101
	<i>Additional Reading:</i> Things Nobody Told Rocky Balboa About Protein	108
7	Vitamins – Water Soluble	115
	<i>Additional Reading:</i> Can Megadoses of Vitamin C Help Against Colds?	125
8	Vitamins – Fat Soluble.....	131
	<i>Additional Reading:</i> Vitamin Pushers and Food Quacks	139
9	Major Minerals	149
	<i>Additional Reading:</i> Too Much Salt?	158
10	Minerals – Trace Elements	165
	<i>Additional Reading:</i> Might Americans Be Taking In Too Much Iron?	173
11	Nutrition Through the Life Cycle	181
	<i>Additional Reading:</i> Facts and Fallacies About Eating and Pregnancy	190
12	Nutrition and Athletic Performance	197
	<i>Additional Reading:</i> Performance Boosters	201

NUTRITION AND YOU

Why should a student, or any other person, be interested in nutrition? It's simple: the process of life requires that we eat to obtain the nutrients that we need to survive. Over a period of many years, scientists and researchers have elucidated the specific nutrients that are essential for life. We know that all foods are a complex mixture of thousands of chemicals. In fact, all nutrients are chemicals. A **nutrient** is a chemical that has specific functions in the body – *providing energy, providing structural components to build the body, or providing regulators to oversee body functions*. A basic understanding of nutrition principles will allow one to make better and more nutritious food selections.

A nutrient is a chemical in food that has specific functions in the body.

In addition, we should have a basic understanding of nutrition because as our knowledge of diseases grows, we have found that nutrition frequently plays a role in the development or treatment of these diseases as well as in the prevention of them. We know, for instance, that blood cholesterol levels can be affected by the type of fat one eats, that people with diabetes (high blood sugar) need to be concerned with the type and quantity of sugar they eat, and that a woman's lifelong calcium intake can determine the strength of her bones as she ages. These are all instances of the interaction between nutrition and disease that we call health.

Individuals must take responsibility for their health. This text is titled *Nutrition and You* to emphasize that an individual can, through moderate lifestyle changes, improve his or her health. Good nutrition is one of the most important factors in good health.

A third reason that we should understand basic nutrition concepts is that in our society people are constantly evaluating nutritional claims. The American public is inundated with claims that it should increase this, decrease that, reduce this, or change that in its diet. The public is constantly told that its food is over-processed, that its food is not natural, or that its food contains unhealthy additives or pesticides. The public receives its nutrition information from many sources: peers, advertisements, television, and so-called experts.

An uninformed public is often unable to distinguish between valid and invalid health claims. Many people believe that if something is stated on television or written in a magazine, then it must be true. But, in fact, the food product's label is the only place where claims are regulated. An understanding of nutrition will help one sort through and evaluate the many claims made about food products and supplements.

Table 1-1: Separating Food Facts and Myths

1. MYTH: Use of anecdotes and personal testimonies to support claims.	FACT: Personal testimonies are not reliable. First, when a person thinks something is going to help, the person's symptoms often improve. This is called the placebo effect . The only way that one can prove that the supplement was responsible for the recovery is through controlled, double-blind testing. In a controlled test one group receives the placebo while the other receives the treatment. A double-blind study is one in which neither the recipient nor the tester knows which person is getting which treatment. Only through valid testing can the real effects of a supplement be determined.
2. MYTH: Promises of quick results or miraculous cures.	FACT: When ads for a diet aid state that you can lose 22 pounds in the first week, without dieting, without feeling hungry, and without exercise, does this really seem plausible? These kinds of outrageous claims are made all of the time. Also, it is important to note that the claims are often made in advertising, but not on the package or insert of the product. Package labels are much more tightly regulated than general advertising claims.
3. MYTH: Guaranteed results.	FACT: Those 100% money-back guarantees are often true. Many companies will refund your money if you ask. This is because less than 3% of customers request a refund. There is such a profit margin in the product that a small number of refunds is acceptable to the manufacturer.
4. MYTH: Supplements are harmless.	FACT: Almost all supplement manufacturers have a statement in their advertisement or literature that states: "Please check with your physician before taking these supplements." This relieves them of liability: if you check with your physician and then have a health problem, it is the physician's problem; he said it was OK. If you take the supplement without checking with a physician, then the company has no liability because you didn't check with a physician first. Remember, most supplements, unlike drugs or food additives, do not have to be proven safe (or even effective) before being marketed. The consumer serves as the guinea pig, often with very serious health consequences.
5. MYTH: Quacks are experts in nutrition and health.	FACT: Quacks often use fraudulent credentials, or degrees from unaccredited universities or programs. A popular false degree is the D.N. (Doctor of Nutrition). It is possible to purchase degrees and diplomas through the mail. Be especially wary of persons advertising themselves as nutritionists. There are few regulations restricting the use of this term and studies have shown that up to 70% of so-called nutritionists (culled from yellow-pages telephone book advertisements) have questionable credentials. One credential that is very rarely misrepresented is the Registered Dietitian (R.D.). Registered dietitians are certified by the American Dietetic Association after completing approved programs at a university and approved clinical instructions. Most states restrict the use of the term to those having undertaken this training.
6. MYTH: Quacks are only interested in helping people and have no monetary interests.	FACT: Each year over 25 billion dollars is spent on health quackery. Almost half of that amount (\$12 billion) is spent on nutritional supplements and aids. Remember the phrase " <i>Caveat Emptor</i> " — " <i>let the buyer beware.</i> " When someone is selling you something, they have a vested interest in promoting the product. Our hope as nutritional professionals is that all you lose when you buy the latest supplement or herbal treatment is your money — not your life.

From the **Mount Sinai School of Medicine Complete Book of Nutrition**. (V. Herbert, editor), St. Martin's Press, New York, NY. (1990).

FOOD FADISM

How can you, as a consumer, with little formal nutrition training, evaluate all of the claims made for the various products and supplements? While it is not always easy to distinguish between valid and fraudulent claims, most fraudulent claims have many things in common. The adage, "if something sounds too good to be true, it probably is," should be kept in mind when evaluating claims. A major goal of this text is to provide you with fundamental knowledge about nutrition and health. With this knowledge, you can make more informed choices throughout your life.

THE NUTRIENTS WE EAT

As stated previously, the foods we eat contain nutrients. We generally classify the nutrients as either macronutrients or micronutrients. The macronutrients are those nutrients consumed in large amounts. Micronutrients are those nutrients that are consumed or needed in very small quantities. Although each macronutrient and micronutrient class is covered further in separate chapters of this book, they will be introduced here.

The three most important macronutrients are **carbohydrates**, **lipids** (fats), and **proteins**. Carbohydrates' major function is as a dietary energy source. Dietary fats, while supplying much of the diet energy, also contribute to cell structure. Dietary proteins are used for cellular structure and also to provide the building blocks for many regulatory proteins in the body (such as hormones and enzymes). If carbohydrates and fats are restricted in the diet, protein is used for energy.

The three most important macronutrients are carbohydrates, lipids, and proteins.

The micronutrients consist of **vitamins** and **minerals**. **Vitamins** are **organic** (contain carbon) compounds that regulate body processes. Nutritionists recognize thirteen vitamins: four fat-soluble and nine water-soluble vitamins. Fat-soluble vitamins are consumed with the fat portion of our foods and water-soluble vitamins are found in the watery (non-fat) part of our foods. For instance, in whole milk there is a substantial amount of vitamin A (a fat-soluble vitamin). Skim milk contains no vitamin A because in removing the fat, the vitamin A is also removed. In the United States, vitamin A must, by law, be added back to the skim milk to replace that lost in processing.

Micronutrients are vitamins and minerals.

Minerals are **inorganic** (don't contain carbon) chemicals that, like vitamins, regulate body processes. Some of the minerals are also used as structural components (like calcium for bones and teeth). The minerals are divided somewhat arbitrarily into two different classes: **major minerals** and **trace elements**. There are seven major minerals found in the body in comparatively large amounts. There are fifteen different trace elements.

RECOMMENDED DAILY ALLOWANCES

These 38 nutrients — 3 macronutrients, 13 vitamins and 22 minerals — are needed by the body in various quantities on a regular basis. Consumption above or below the required amounts is called **malnutrition**. Because overconsumption of nutrients is generally as bad as underconsumption, the amounts of most

nutrients that individuals need to consume have been determined by the National Research Council of the National Academy of Sciences. These suggested amounts are called the **Recommended Dietary Allowances (RDA)**. Data for each nutrient are compiled, resulting from many experiments in both humans and animals, and an RDA for each nutrient is established.

RDAs take several factors into account:

- ***age***
- ***sex***
- ***health***

Recommended Dietary Allowances are ***age-*** and ***sex-adjusted***, and based on the needs of a ***healthy population***. These adjustments reflect the different requirements of men and women for certain nutrients such as iron, and of both sexes at different ages in the life cycle. These requirements are valid only for healthy people; the needs of the sick and infirm often differ from those of people in good health. Other sets of RDAs are available for pregnant or lactating (breast-feeding) women.

Finally, the RDAs are ***population-based***. The recommended intake of a certain nutrient is set so that the intake will meet the requirements of almost all (over 97 percent) of the people in whatever sex and age group one is considering. They are not absolute values for each individual in the category because individuals are different and have different needs.

Remember that RDAs are only estimates and recommendations.

Given that the RDAs are based on general-population data, how can you best use this information to evaluate your dietary intake? First, you must remember that any information compiled about the nutrients in the foods you eat is only an estimate or approximation. When you evaluate your intake by keeping a record of the food you eat, rarely is the food accurately weighed. Most of the time portion size is just estimated. Plate waste is often ignored, so that a person can easily over- or under-estimate the food that is consumed.

Another consideration is that when you compare the food you eat to a reference food, either using tables or nutritional-analysis software, you are assuming that both foods have identical nutrient composition. Usually that is not so. You should not be overly worried if you determine that you are consuming 45 milligrams (mg) of vitamin C when the RDA is 60 mg per day. But, if your intake is consistently less than 50 percent of the RDA and your food consumption for the period approximates a normal food-intake pattern, you should adjust your diet to increase consumption of that nutrient. Again, no one number should be taken as an individual's absolute requirement for a nutrient.

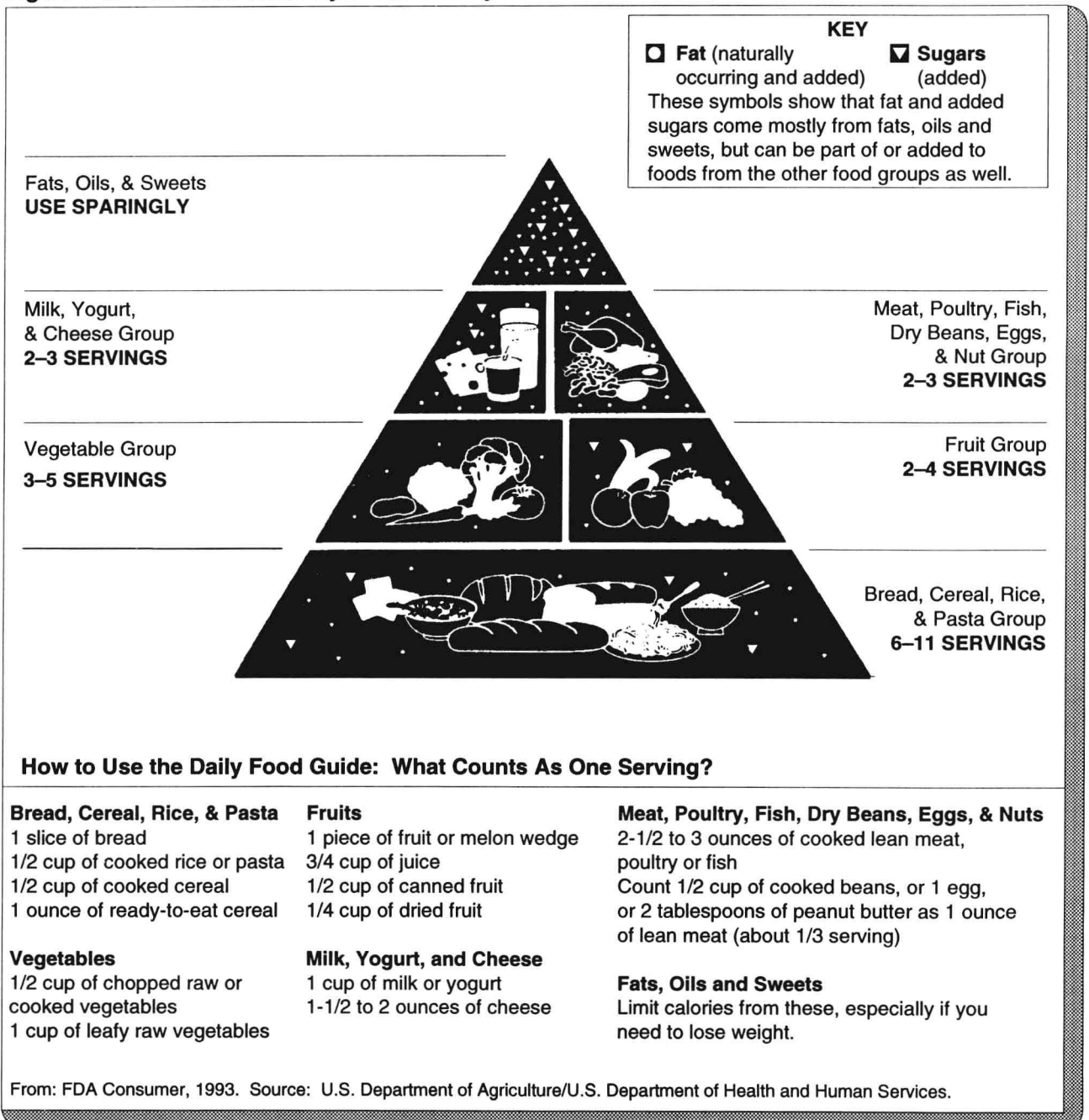
DAILY FOOD GROUPS

RDAs have been established for nineteen different nutrients.

RDAs have been established for nineteen different nutrients. For many of the other nutrients (those for which the data is more limited or the nutrient is required in minute quantities) safe and adequate levels have been established. No one can remember each of these requirements. People consume foods not nutrients, and for the most part nutritionists would like people to think in terms of food consumption and not individual nutrients. A reasonable approach, based on concepts developed many years ago, has been used to help people think of nutrient intake in food terms. This approach was called the basic four food groups. This concept has been expanded and called the Daily Food Groups.

The **Daily Food Groups** allows you to assess your nutrient intake based on the amount and types of foods you consume (**Figure 1-1**). The premise is that eating a variety of foods from four different groups will ensure an adequate intake of all the necessary nutrients. This system assumes that you are consuming at least 1500 kcal from a variety of sources. If you consume most of your calories from one food, say ice cream, the diet is too limited to provide all the nutrients necessary although you are eating a lot of calories. Conversely, even if you eat a variety of foods, unless you are eating approximately 1200 kcal, your overall intake is not sufficient to provide enough of each nutrient.

Figure 1-1. The Food Guide Pyramid: A Daily Guide to Food Choices



Meats and meat alternatives

The first group is the **meats and meat alternatives group**. This group provides the protein one needs as well as energy, vitamins, and minerals. You need to eat two to three meat servings per day, with one serving consisting of approximately 2-3 ounces. You can consume vegetable products in place of animal meats. Two cups of soy beans or two cups of peanuts also meet your protein requirements.

Milk and milk products

The second group is the **milk and milk products group**. You need to consume two to three 8-ounce glasses of milk per day to meet the requirements for this group. Substitutions are 1 - 2 ounces of cheese (including cottage cheese) and 2 cups of ice cream. This group primarily provides your daily calcium requirement. As calcium is very important in bone formation, many experts suggest that three to four servings of the milk group are necessary to optimize your calcium intake. Pregnant or lactating women, because they have an increased calcium need, should consume four milk-group servings per day. Growing children should also consume four servings of milk products per day.

Fruits and Vegetables

The third and fourth groups are the **fruits and vegetables groups**. These groups supply you with many of the vitamins and minerals you need. You should consume 2 - 4 different servings of fruits and 3 - 5 servings of vegetables each day. As previously suggested, nutritionists want people to think of their nutrient needs in terms of foods, not specific nutrients. The fruits and vegetables groups provide two exceptions to this idea. You should try to eat one fruit or vegetable serving from foods rich in ascorbic acid (vitamin C) and one vegetable serving from foods rich in vitamin A. Both of these vitamins are somewhat lacking in the American diet, especially if a person does not eat a variety of foods. Good sources of ascorbic acid (vitamin C) are citrus fruits, broccoli, potatoes, and strawberries. Good sources of vitamin A are dark green, leafy vegetables and orange vegetables.

Cereals or grains

The final daily food group and the food group that should be the foundation of your diet is the **cereals and grains group**. You should try to eat 6 - 11 servings of grains each day. A serving of grain is one slice of bread or one cup of cereal.



The grains, including rice and pasta, provide complex carbohydrates and many of our necessary vitamins and minerals. To increase your intake of dietary fiber, two of the four grains servings should be whole grains, such as whole-wheat bread instead of white bread.

While this classification is not foolproof, especially if you do not consume enough calories each day, this pattern of food intake does provide an easy and complete framework from which to make sound nutritional choices. For example, you could substitute a salad for a hamburger when eating at a fast-food restaurant if you needed another fruits and vegetables exchange.

Besides eating a variety of foods, most Americans could make small changes in their diets which would provide lifelong benefits. The U.S. Department of Agriculture and the U.S. Department of Health and Human Services have provided dietary recommendations in a pamphlet titled *Dietary Guidelines for Americans* (Table 1-2). In later chapters in this book, more specific information will be provided about each nutrient and its effect on health and diseases.

NUTRIENT DENSITY

Foods that supply "empty calories" – calories without many nutrients – are not considered nutrient-dense. Soft-drinks, potato chips, candy bars, and cookies are not very nutrient-dense and are sometimes called "junk foods." However, many foods labeled as junk foods supply more than calories even if they are not considered traditional sources of nutrients. For instance, cookies are made with flour, usually enriched, that provides some nutrients. Also, some people need calories, just as some people need to limit calories. Foods that supply just calories are not inherently bad. It is the overeating of these foods, precluding or limiting the intake of more nutritionally valuable foods, that can create problems. Within the framework of sound nutritional practices, the consumption of these so-called junk foods is, and should be, permitted. Therefore, the term junk food is considered by most nutritionists to be inappropriate. All foods supply some nutrients, albeit sometimes in limited amounts.

What should be considered when choosing foods is their *nutrient density*. Nutrient density is a concept that evaluates foods on the basis of the nutrients per calorie. In the United States, we generally eat foods that are not very nutrient dense; many of the processed foods that we consume contain a lot of calories but not as many nutrients (vitamins and minerals) as we need. Within the framework of a sound diet, you should not feel guilty about eating a candy bar, cola drink, or potato chip. But you should be aware that these foods are providing few nutrients except for fats and sugars. By thinking in terms of nutrient density and the basic four food groups, it is possible to partake of a diet that contains all of the nutrients you need.

The milk group provides a good example of nutrient density. Milk and other milk-group products are the major source of dietary calcium. A glass of whole milk, while containing about 250 mg of calcium, also provides about 150 calories. A glass of skim milk, containing approximately the same amount of

calcium, contains only about 80 calories. Thus, skim milk is more nutrient dense than whole milk; while both provide the same amount of calcium, skim milk does so with less calories. To consume the same amount of calcium as in a glass of whole milk, you would need to consume about 320 calories-worth of ice cream. Cheese is also less nutrient dense than whole milk. To get an equivalent amount of calcium, you must consume 250 calories-worth of cheese. (And whole wheat bread is more nutrient dense than white bread.) Using the concept of nutrient density, a person can try to substitute more nutrient dense foods for less nutrient dense foods.

Table 1-2: Dietary Guidelines for Americans

- Eat a variety of foods
- Maintain a healthy weight
- Choose a diet low in fat, saturated fat, and cholesterol
- Choose a diet with plenty of vegetables, fruits, and grain products
- Use sugars only in moderation
- Use salt and sodium only in moderation
- If you drink alcoholic beverages, do so in moderation

From ***Dietary Guidelines for Americans***, U.S. Department of Agriculture and Health and Human Services, U.S. Government Printing Office #273-930, Washington DC, 1990.

HOW QUACKERY SELLS

William T. Jarvis, Ph.D.
Stephen Barrett, M.D.

Dr. Jarvis is a professor in the Department of Preventive Medicine at Loma Linda University and president of the National Council Against Health Fraud.

Dr. Barrett, who practices psychiatry in Allentown, Pennsylvania, is a board member of the National Council Against Health Fraud. In 1984 he received the FDA Commissioner's Special Citation Award for Public Service in fighting nutrition quackery.

Modern health quacks are supersalesmen. They play on fear. They cater to hope. And once they have you, they'll keep you coming back for more . . . and more . . . and more. Seldom do their victims realize how often or how skillfully they are cheated. Does the mother who feels good as she hands her child a vitamin think to ask herself whether he really needs it? Do subscribers to "health food" publications realize that articles are slanted to stimulate business for their advertisers? Not usually.

Most people think that quackery is easy to spot, but it is not. Its promoters wear the cloak of science. They use scientific terms and quote (or misquote) scientific references. On talk shows, they may be introduced as "scientists ahead of their time." The very word "quack" helps their camouflage by making us think of an outlandish character selling snake oil from the back of a covered wagon—and, of course, no intelligent people would buy snake oil nowadays, would they?

Well, maybe snake oil isn't selling so well, lately. But acupuncture? "Organic" foods? Mouthwash? Hair analysis? The latest diet book? Megavitamins? "Stress" formulas? Cholesterol-lowering teas? Homeopathic remedies? Nutritional "cures" for AIDS? Or shots to pep you up? Business is booming for health quacks. Their annual take is in the *billions*! Spot reducers, "immune boosters," water purifiers, "ergogenic aids," systems to "balance body chemistry," special diets for arthritis. Their product list is endless.

What sells is not the quality of their products but their ability to influence their audience. To those in pain, they promise relief. To the incurable, they offer hope. To the nutrition-conscious, they say, "Make sure you have enough." To a public worried about pollution, they say, "Buy natural." To one and all, they promise better health and a longer life. Modern quacks can

reach people emotionally, on the level that counts the most. This article shows how they do it.

Appeals to Vanity

An attractive young airline stewardess once told a physician that she was taking more than 20 vitamin pills a day. "I used to feel run-down all the time," she said, "but now I feel really great!"

"Yes," the doctor replied, "but there is no scientific evidence that extra vitamins can do that. Why not take the pills one month on, one month off, to see whether they really help you or whether it's just a coincidence. After all, \$300 a year is a lot of money to be wasting."

"Look, doctor," she said. "I don't care what you say. I **KNOW** the pills are helping me."

How was this bright young woman converted into a true believer? First, an appeal to her curiosity persuaded her to try and see. Then an appeal to her vanity convinced her to disregard scientific evidence in favor of personal experience—to *think for herself*. Supplementation is encouraged by a distorted concept of *biochemical individuality*—that everyone is unique enough to disregard the Recommended Dietary Allowances (RDAs). Quacks will not tell you that scientists deliberately set the RDAs high enough to allow for individual differences. A more dangerous appeal of this type is the suggestion that although a remedy for a serious disease has not been shown to work for other people, *it still might work for you. (You are extraordinary!)*

A more subtle appeal to your vanity underlies the message of the TV ad quack: *Do it yourself—be your own doctor*. "Anyone out there have 'tired blood'?" he used to wonder. (Don't bother to find out what's wrong with you, however. Just try my tonic.) "Troubled with irregularity?" he asks. (Pay no attention to the doctors who say you don't need a daily movement. Just use my laxative.) "Want to kill germs on contact?" (Never mind that mouthwash doesn't prevent colds.) "Trouble sleeping?" (Don't bother to solve the underlying problem. Just try my sedative.)

Turning Customers Into Salespeople

Most people who think they have been helped by an unorthodox method enjoy sharing their success stories with their

friends. People who give such *testimonials* are usually motivated by a sincere wish to *help their fellow humans*. Rarely do they realize how difficult it is to evaluate a “health” product on the basis of personal experience. Like the airline stewardess, the average person who feels better after taking a product will not be able to rule out coincidence—or the placebo effect (feeling better because he thinks he has taken a positive step). Since we tend to believe what others tell us of personal experiences, testimonials can be powerful persuaders. Despite their unreliability, they are the cornerstone of the quack’s success.

Multilevel companies that sell nutritional products systematically turn their customers into salespeople. “When you share our products,” says the sales manual of one such company, “you’re not just selling. You’re passing on news about products you believe in to people you care about. Make a list of people you know; you’ll be surprised how long it will be. This list is your first source of potential customers.” A sales leader from another company suggests, “Answer all objections with *testimonials*. That’s the secret to *motivating* people!”

Don’t be surprised if one of your friends or neighbors tries to sell you vitamins. More than a million Americans have signed up as multilevel distributors. Like many drug addicts, they become suppliers to support their habit. A typical sales pitch goes like this: “How would you like to look better, feel better and have more energy? Try my vitamins for a few weeks.” People normally have ups and downs, and a friend’s interest or suggestion, or the thought of taking a positive step, may actually make a person feel better. Many who try the vitamins will mistakenly think they have been helped—and continue to buy them, usually at inflated prices.

Faked endorsements are being used to promote anti-aging products and other nostrums sold by mail. The literature, which resembles a newspaper page with an ad on one side and news on the other, contains what appears to be a handwritten note from a friend (identified by first initial). “Dear Anne,” it might say, “This really works. Try it! B.” Although both the product and the “newspaper page” are fakes, many recipients wonder who among their acquaintances might have signed the note.

The Use of Fear

The sale of vitamins has become so profitable that some otherwise reputable manufacturers are promoting them with misleading claims. For example, for many years, Lederle Laboratories (makers of *Stresstabs*) and Hoffmann-La Roche advertised in major magazines that stress “robs” the body of vitamins and creates significant danger of vitamin deficiencies. Another slick way for quackery to attract customers is the *invented disease*. Virtually everyone has symptoms of one sort or another—minor aches or pains, reactions to stress or hormone variations, effects of aging, etc. Labeling these ups and downs of life as symptoms of disease enables the quack to provide “treatment.”

Reactive hypoglycemia⁴ is one such diagnosis. For decades, talk show “experts” and misguided physicians have preached that anxiety, headaches, weakness, dizziness, stomach upset, and other common reactions are often caused by “low blood sugar.” But the facts are otherwise. Hypoglycemia is rare. Proper administration of blood sugar tests is required to make the

diagnosis. A study of people who thought they had hypoglycemia showed that half of them had symptoms during a glucose tolerance test even though their blood sugar levels remained normal.

“Yeast allergy” is another favorite quack diagnosis. Here the symptoms are blamed on a “hidden” infection that is treated with antifungal drugs, special diets, and vitamin concoctions.

Food safety and environmental protection are important issues in our society. But rather than approach them logically, the food quacks exaggerate and oversimplify. To promote “organic” foods, they lump all additives into one class and attack them as “poisonous.” They never mention that natural toxicants are prevented or destroyed by modern food technology. Nor do they let on that many additives are naturally occurring substances.

Sugar has been subject to particularly vicious attacks, being (falsely) blamed for most of the world’s ailments. But quacks do more than warn about imaginary ailments. They sell “antidotes” for real ones. Care for some vitamin C to reduce the danger of smoking? Or some vitamin E to combat air pollutants? See your local supersalesman.

Quackery’s most serious form of fear-mongering has been its attack on water fluoridation. Although fluoridation’s safety is established beyond scientific doubt, well-planned scare campaigns have persuaded thousands of communities not to adjust the fluoride content of their water to prevent cavities. Millions of innocent children have suffered as a result.

Hope for Sale

Since ancient times, people have sought at least four different magic potions: the love potion, the fountain of youth, the cure-all, and the athletic superpill. Quackery always has been willing to cater to these desires. It used to offer unicorn horn, special elixirs, amulets, and magical brews. Today’s products are vitamins, bee pollen, ginseng, *Gerovital*, “glandular extracts,” and many more. Even reputable products are promoted as though they are potions. Toothpastes and colognes will improve our love life. Hair preparations and skin products will make us look “younger than our years.” And Olympic athletes tell us that breakfast cereals will make us champions.

False hope for the seriously ill is the cruelest form of quackery because it can lure victims away from effective treatment. Even when death is inevitable, however, false hope can do great damage. Experts who study the dying process tell us that while the initial reaction is shock and disbelief, most terminally ill patients will adjust very well as long as they do not feel abandoned. People who accept the reality of their fate not only die psychologically prepared, but also can put their affairs in order. On the other hand, those who buy false hope can get stuck in an attitude of denial. They waste financial resources and, worse yet, their remaining time.

The choice offered by the quack is not between hope and despair but between false hope and a chance to adjust to reality. Yet hope springs eternal. The late Jerry Walsh was a severe arthritic who crusaded coast-to-coast debunking arthritis quackery on behalf of the Arthritis Foundation. After a television appearance early in his career, he received 5,700 letters. One hundred congratulated him for blasting the quacks, but 4,500 were from arthritis victims who asked where they could obtain the very fakes he was exposing!

Clinical Tricks

The most important characteristic to which the success of quacks can be attributed is probably their ability to exude confidence. Even when they admit that a method is unproven, they can attempt to minimize this by mentioning how difficult and expensive it is to get something proven to the satisfaction of the FDA these days. If they exude *self-confidence* and enthusiasm, it is likely to be contagious and spread to patients and their loved ones.

Because people like the idea of making choices, quacks often refer to their methods as “*alternatives*.” Correctly used, it can refer to aspirin and Tylenol as alternatives for the treatment of minor aches and pains. Both are proven safe and effective for the same purpose. Lumpectomy can be an alternative to radical mastectomy for breast cancer. Both have verifiable records of safety and effectiveness from which judgments can be drawn. Can a method that is unsafe, ineffective or unproven be a genuine alternative to one that is proven? Obviously not.

Quacks don't always limit themselves to phony treatment. Sometimes they offer legitimate treatment as well—the quackery is promoted as *something extra*. One example is the “orthomolecular” treatment of mental disorders with high dosages of vitamins in addition to orthodox forms of treatment. Patients who receive the “extra” treatment often become convinced that they need to take vitamins for the rest of their life. Such an outcome is inconsistent with the goal of good medical care, which should be to discourage unnecessary treatment.

The *one-sided coin* is a related ploy. When patients on combined (orthodox and quack) treatment improve, the quack remedy (e.g., laetrile) gets the credit. If things go badly, the patient is told that he arrived too late, and conventional treatment gets the blame. Some quacks who mix proven and unproven treatment call their approach *complementary therapy*.

Quacks also capitalize on the natural healing powers of the body by *taking credit* whenever possible for improvement in a patient's condition. One multilevel company—anxious to avoid legal difficulty in marketing its herbal concoction—makes no health claims whatsoever. “You take the product,” a spokesperson suggests on the company's introductory videotape, “and tell me what it does for you.” An opposite tack—*shifting blame*—is used by many cancer quacks. If their treatment doesn't work, it's because radiation and/or chemotherapy have “knocked out the immune system.”

To promote their ideas, quacks often use a trick where they bypass an all-important basic question and *ask a second question* which, by itself, is not valid. An example of a “second question” is “Why don't the people of Hunza get cancer?” The quack's answer is “because they eat apricot pits” (or some other claim). The first question should have been “Do the people of Hunza get cancer?” The answer is “Yes!” Every group of people on earth gets cancer. So do all animals (vegetarians and meat-eaters alike) and plants. Another common gambit is the question, “Do you believe in vitamins?” The real question should be, “Does the average person eating a well balanced diet need to take supplements?” The answer is no.

Another selling trick is the use of *weasel words*. Quacks often use this technique in suggesting that one or more items on a

list is reason to suspect that you *may* have a vitamin deficiency, a yeast infection, or whatever else they are offering to fix.

The *money-back guarantee* is a favorite trick of mail-order quacks. Most have no intention of returning any money—but even those who are willing know that few people will bother to return the product.

Another powerful persuader—*something for nothing*—is standard in advertisements promising effortless weight loss. It is also the hook of the telemarketer who promises a “valuable free prize” as a bonus for buying a water purifier, a 6-month supply of vitamins, or some other health or nutrition product. Those who bite receive either nothing or items worth far less than their cost. Credit card customers may also find unauthorized charges to their account.

The willingness to believe that a stranger can supply unique and valuable “inside” information—such as a tip on a horse race or the stock market—seems to be a universal human quirk. Quacks take full advantage of this trait in their promotion of *secret cures*. True scientists don't keep their breakthroughs secret. They share them with all mankind. If this were not so, we would still be going to private clinics for the vaccines and other medications used to conquer smallpox, polio, tuberculosis, and many other serious diseases.

Seductive Tactics

The practice of healing involves both art and science. The art includes all that is done for the patient psychologically. The science involves what is done about the disease itself. If a disease is psychosomatic, art may be all that is needed. The old-time doctor did not have much science in his little black bag, so he relied more upon the art (called his “bedside manner”) and everyone loved him. Today, there is a great deal of science in the bag, but the art has been relatively neglected.

In a contest for patient satisfaction, art will beat science nearly every time. Quacks are masters at the art of delivering health care. The secret to this art is to make the patient believe that he is cared about as a person. To do this, quacks *lather love lavishly*. One way this is done is by having receptionists make notes on the patients' interests and concerns in order to recall them during future visits. This makes each patient feel special in a very personal sort of way. Some quacks even send birthday cards to every patient. Although seductive tactics may give patients a powerful psychological lift, they may also encourage over-reliance on an inappropriate therapy.

Handling the-Opposition

Quacks are involved in a constant struggle with legitimate health care providers, mainstream scientists, government regulatory agencies, and consumer protection groups. Despite the strength of this orthodox opposition, quackery manages to flourish. To maintain their credibility, quacks use a variety of clever propaganda ploys. Here are some favorites:

“*They persecuted Galileo!*” The history of science is laced with instances where great pioneers and their discoveries were met with resistance. Harvey (nature of blood circulation), Lister (antiseptic technique), and Pasteur (germ theory) are notable examples. Today's quack boldly asserts that he is another

example of someone ahead of his time. Close examination, however, will show how unlikely this is. First of all, the early pioneers who were persecuted lived during times that were much less scientific. In some cases, opposition to their ideas stemmed from religious forces. Second, it is a basic principle of the scientific method that the burden of proof belongs to the proponent of a claim. The ideas of Galileo, Harvey, Lister, and Pasteur overcame their opposition because their soundness could be demonstrated.

A related ploy, which is a favorite with cancer quacks, is the charge of “*conspiracy*.” How can we be sure that the AMA, the FDA, the American Cancer Society, and others are not involved in some monstrous plot to withhold a cancer cure from the public? To begin with, history reveals no such practice in the past. The elimination of serious diseases is not a threat to the medical profession—doctors prosper by curing diseases, not by keeping people sick. It should also be apparent that modern medical technology has not altered the zeal of scientists to eliminate disease. When polio was conquered, iron lungs became virtually obsolete, but nobody resisted this advancement because it would force hospitals to change. Neither will medical scientists mourn the eventual defeat of cancer.

Moreover, how could a conspiracy to withhold a cancer cure hope to be successful? Many physicians die of cancer each year. Do you believe that the vast majority of doctors would conspire to withhold a cure for a disease that affects them, their colleagues, and their loved ones? To be effective, a conspiracy would have to be worldwide. If laetrile, for example, really worked, many other nations’ scientists would soon realize it.

Organized quackery poses its opposition to medical science as a philosophical conflict rather than a conflict about proven versus unproven or fraudulent methods. This creates the illusion of a “holy war” rather than a conflict that could be resolved by examining the facts.

Quacks like to charge that “*Science doesn’t have all the answers*.” That’s true, but it doesn’t claim to have them. Rather, it is a rational and responsible process that can answer many questions—including whether procedures are safe and effective for their intended purpose. It is quackery that constantly claims to have answers for incurable diseases. The idea that people should turn to quack remedies when frustrated by science’s inability to control a disease is irrational. Science may not have all the answers, but quackery has no answers at all! It will take your money and break your heart.

Many treatments advanced by the scientific community are later shown to be unsafe or worthless. Such failures become grist for organized quackery’s public relations mill in its ongoing attack on science. Actually, “failures” reflect a key element of science: its willingness to test its methods and beliefs and abandon those shown to be invalid. True medical scientists have no philosophical commitment to particular treatment approaches, only a commitment to develop and use methods that are safe and effective for an intended purpose.

When a quack remedy flunks a scientific test, its proponents merely reject the test. Science writer John J. Fried provides a classic description of this in his book, *Vitamin Politics*:

Because vitamin enthusiasts believe in publicity more than they believe in accurate scientific investigation, they use the media to perpetuate their faulty ideas without ever having to face up to the fallacies of their nonsensical theories. They announce to the world that horse manure, liberally rubbed into the scalp, will

cure, oh, brain tumors. Researchers from the establishment side, under pressure to verify the claims, will run experiments and find that the claim is wrong. The enthusiasts will not retire to their laboratories to rethink their position. Not at all. They will announce to the world that the establishment wasn’t using enough horse manure, or that it didn’t use the horse manure long enough, or that it used horse manure from the wrong kind of horses. The process is never-ending. . . . The public is the ultimate loser in this charade.

Promoters of laetrile were notorious for shifting their claims. First they claimed that laetrile could cure cancer. Then they said it could not cure but could prevent or control cancer. Then they claimed laetrile was a vitamin and that cancer was a disease caused by a vitamin deficiency. Today they say that laetrile alone is not enough—it is part of “metabolic therapy,” which includes special diet, supplement concoctions, and other modalities that vary from practitioner to practitioner.

The *disclaimer* is a related tactic. Instead of promising to cure your specific disease, some quacks will offer to “cleanse” or “detoxify” your body, balance its chemistry, release its “nerve energy,” bring it in harmony with nature, or do other things to “help the body to heal itself.” This type of disclaimer serves two purposes. Since it is impossible to measure the processes the quack describes, it is difficult to prove him wrong. In addition, if the quack is not a physician, the use of nonmedical terminology may help to avoid prosecution for practicing medicine without a license.

Books espousing unscientific practices typically suggest that the reader consult a doctor before following their advice. This disclaimer is intended to protect the author and publisher from legal responsibility for any dangerous ideas contained in the book. Both author and publisher know full well, however, that most people will not ask their doctor. If they wanted their doctor’s advice, they probably would not be reading the book in the first place. Sometimes the quack will say, “You may have come to me too late, but I will try my best to help you.” That way, if the treatment fails, you have only yourself to blame. Patients who see the light and abandon quack treatment may also be blamed for stopping too soon.

“Health Freedom”

If quacks cannot win by playing according to the rules, they try to change the rules by switching from the scientific to the political arena. In science, a medical claim is treated as false until proven beyond a reasonable doubt. But in politics, a medical claim may be accepted until proven false or harmful beyond a reasonable doubt. This is why proponents of laetrile, chiropractic, orthomolecular psychiatry, chelation therapy, and the like, take their case to legislators rather than to scientific groups.

Quacks use the concept of “*health freedom*” to divert attention away from themselves and toward victims of disease with whom we are naturally sympathetic. “These poor folks should have the freedom to choose whatever treatments they want,” cry the quacks—with crocodile tears. They want us to overlook two things. First, no one wants to be cheated, especially in matters of life and health. Victims of disease do not demand quack treatments because they want to exercise their “rights,” but because they have been deceived into thinking that