

Questionable Practices in Foods and Nutrition: Definitions and Descriptions

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The past decade has seen an enormous increase in the promotion and use of questionable health practices, many of which are nutrition-related. The main factors have been the propaganda associated with “complementary” and “alternative” medicine (CAM) and the ease of acquiring misinformation through the Internet. As a result, alternative medicine has become the politically correct term for questionable practices formerly labeled as quack and/or fraudulent.

In recent years, most media reports have featured the views of proponents and their satisfied clients. Confusion has been accelerated by the erosion of standards that normally signify scientific legitimacy. Accreditation, once a reliable indicator of quality, has been granted to acupuncture, naturopathic, and chiropractic schools that teach unscientific methods. Many medical institutions and professional organizations are sponsoring CAM coursework and/or services that include senseless methods. Many medical journals have published poorly reasoned articles, and a few journals specializing in CAM misinformation are now indexed in *Index Medicus*. As a result, CAM-related literature searches are likely to include low-quality articles. Several government, voluntary, and professional organizations have added to the problem by withdrawing previously published position papers that accurately characterized certain practices as “quack” and/or by publishing “balanced” information that describes these methods without evaluating them. Consumer protection laws have also been weakened.

Pertinent Definitions

The alternative movement is part of a general societal trend toward rejection of science as a method of determining truths. This movement embraces the postmodernist doctrine that science is not necessarily more valid than pseudoscience.¹ In line with this philosophy, alternative proponents assert that scientific medicine (which they mislabel as allopathic, conventional, or traditional medicine) is but one of a vast array of health-care options. Alternative promoters often gain public sympathy by portraying themselves as a beleaguered minority fighting a self-serving, monolithic “Establishment.”

To avoid confusion, alternative methods should be classified as genuine, experimental, or questionable. *Genuine* alternatives are comparable methods that have met science-based criteria for safety and effectiveness. Under the rules of science, proponents who make health claims bear the burden of proof. It is their responsibility to conduct suitable studies and report them in sufficient detail to permit evaluation and confirmation by others. Detailed standards for reporting and evaluating studies have been published.²

Experimental alternatives are unproven but have a scientifically plausible rationale and are undergoing responsible investigation. The most noteworthy is the use of a 10%-fat diet for treating coronary heart disease. *Questionable* alternatives are groundless because they lack plausibility or have been disproved. The archetype is homeopathy, which claims that “remedies” so dilute that they contain no active ingredient can exert powerful therapeutic effects. When the three types of alternatives are lumped together, promoters of questionable methods can argue that because some have merit, the rest deserve equal consideration and respect. This section uses the word alternative in the questionable sense.

Proponents describe “complementary medicine” as a synthesis of standard and alternative methods that uses the best of both. However, no data have been reported in peer-reviewed scientific journals that compare standard methods with alternative ones. There is no indication of the extent to which the practitioners actually use proven versus unproven methods. These practitioners typically claim credit for any improvement experienced by the patient, and blame standard treatments for any negative effects. The result may be to undermine the patient’s confidence in standard care, reducing compliance or causing the patient to abandon it altogether.

The best way to avoid confusion is to sort methods into three groups: (1) those that work, (2) those that don’t work, and (3) those we are not sure about. Most methods described as alternative fall into the second group. A 1998 editorial in the *Journal of the American Medical Association* made this point in another way:

There is no alternative medicine. There is only scientifically proven, evidence-based medicine supported by solid data or unproven medicine, for which scientific evidence is lacking. Whether a therapeutic practice is “Eastern” or “Western,” is unconventional or mainstream, or involves mind-body techniques or molecular genetics is largely irrelevant except for historical purposes and cultural interest. We recognize that there are vastly different types of practitioners and proponents of the various forms of alternative medicine and conventional medicine, and that there are vast differences in the skills, capabilities, and beliefs of individuals within them and the nature of their actual practices. Moreover, the economic and political forces in these fields are large and increasingly complex and have the capability for being highly contentious. Nonetheless, as believers in science and evidence, we must focus on fundamental issues — namely, the patient, the target disease or condition, the proposed or practiced treatment, and the need for convincing data on safety and therapeutic efficacy.³

Under the rules of science, people who make the claims bear the burden of proof. It is their responsibility to conduct suitable studies and report them in sufficient detail to permit evaluation and confirmation by others. Instead of subjecting their work to scientific standards, promoters of questionable alternatives would like to change the rules by which they are judged and regulated. Alternative promoters may give lip service to these standards. However, they regard personal experience, subjective judgment, and emotional satisfaction as preferable to objectivity and hard evidence. Instead of conducting scientific studies, they use anecdotes and testimonials to promote their practices and political maneuvering to keep regulatory agencies at bay.

When someone feels better after using a product or procedure, it is natural to credit whatever was done. This can mislead, however, because most ailments resolve spontane-

ously, and those that persist can have symptoms that wax and wane. Even serious conditions can have sufficient month-to-month variation to enable spurious methods to gain large followings. In addition, taking action often temporarily relieves symptoms via the placebo effect. This effect is a beneficial change in a person's condition that occurs in relation to a treatment but is not due to the pharmacologic or physical aspects of the treatment. Belief in the treatment is not essential, but the placebo effect may be enhanced by such factors as faith, sympathetic attention, sensational claims, testimonials, and the use of scientific-looking charts, devices, and terminology. Another drawback of individual success stories is that they don't indicate how many failures might occur for each success. (In other words, no score is kept.) People unaware of these facts often give undeserved credit to alternative methods. Failure to keep score is the hallmark of quack therapies.

Each of the approaches listed below has one or more of the following characteristics: (a) its rationale or underlying theory has no scientific basis; (b) it has not been demonstrated safe and/or effective by well-designed studies; (c) it is deceptively promoted; or (d) its practitioners are not qualified to make appropriate diagnoses.

Treatment Systems

Many alternative approaches involve nutrition. Special diets and dietary supplements enable people to take an active role in their treatment and feel more in control of their fate. Their proponents typically claim that: (a) nutrient deficiency is widespread and causes a multitude of diseases; (b) various foods or nutrients have special ability to cure specific diseases; (c) certain foods are harmful and should be eliminated from the diet; and (d) "organically grown" and "natural" foods are best.

Some alternative approaches are rooted in vitalism, the concept that bodily functions are due to a vital principle or "life force" distinct from the physical forces explainable by the laws of physics and chemistry. Vitalistic methods are claimed to "stimulate the body's ability to heal itself" rather than treating symptoms. Homeopaths, for example, claim that illness is due to a disturbance of the body's "vital force," which they can correct with special remedies, while many acupuncturists claim that disease is due to imbalance in the flow of "life energy" (chi or Qi), which they can balance by twirling needles in the skin. Many chiropractors claim to assist the body's "innate intelligence" by adjusting the patient's spine. Naturopaths speak of *vis medicatrix naturae*. Ayurvedic physicians refer to prana. Some vitalists assert that food can be "dead" or "living" and that "live" foods contain a dormant or primitive life force that humans can assimilate. The "energies" postulated by vitalists cannot be measured by scientific methods. Although vitalists often pretend to be scientific, they really reject the scientific method with its basic assumptions of material reality, mechanisms of cause and effect, and testability of hypotheses. They regard personal experience, subjective judgment, and emotional satisfaction as preferable to objectivity and hard evidence.

Chinese Medicine

Traditional Chinese medicine (TCM), also called Oriental medicine, is based on metaphysical beliefs. Its advocates state that the body's vital energy (Chi or Qi) circulates through channels called meridians that have branches connected to bodily organs and functions. They attribute illness to imbalance or interruption of Chi and claim that acupuncture,

herbs, and various other modalities can restore balance. Many TCM practitioners are nonphysicians who are licensed as acupuncturists and permitted to prescribe dietary supplements and herbs. The diagnostic process they use may include questioning (medical history, lifestyle), observations (skin, tongue, color), listening (breath sounds), and pulse-taking. Medical science recognizes only one pulse, corresponding to the heartbeat, which can be felt in the wrist, neck, feet, and various other places throughout the body. TCM practitioners check six alleged pulses at each wrist and identify more than 25 alleged pulse qualities such as “sinking, slippery, soggy, tight, and wiry.” TCM’s pulses supposedly reflect the type of imbalance, the condition of each organ system, and the status of the patient’s Chi. The herbs they prescribe are not regulated for safety, potency, or effectiveness. Although some cases of adverse effects from herbs have been reported, no systematic assessment of this problem has been published. A National Council Against Health Fraud task force concluded that (a) acupuncture has not been proven effective for the treatment of any disease; (b) the greater the benefit claimed in a research report, the worse the experimental design; and (c) the best designed experiments — those with the highest number of controls on variables — found no difference between acupuncture and control groups.⁴ An NIH Consensus Conference reported more favorably but was dominated by acupuncture proponents.⁵

Macrobiotic Diets

Macrobiotics is a quasireligious philosophical system founded by the late George Ohsawa and popularized by Michio Kushi. (Macrobiotic means “way of long life.”) The system advocates a semivegetarian diet in which foods of animal origin are used as condiments rather than as full-fledged menu items. The optimal diet is achieved by balancing “yin” and “yang” foods. The yin/yang classification is based largely on sensory characteristics and is unrelated to nutrient composition. Macrobiotic practitioners may base their recommendations on pulse diagnosis and other unscientific procedures related to TCM.

Ohsawa outlined a ten-stage Zen macrobiotic diet in which each stage was progressively more restrictive. Current proponents espouse a diet that is less restrictive but still can be nutritionally inadequate. They recommend whole grains (50 to 60% of each meal), vegetables (25 to 30% of each meal), whole beans or soybean-based products (5 to 10% of daily food), nuts and seeds (small amounts as snacks), miso soup, herbal teas, and small amounts of white meat or seafood once or twice a week. Kushi Institute publications recommend chewing food at least 50 times per mouthful (or until it becomes liquid), not wearing synthetic or woolen clothing next to the skin, avoiding long hot baths or showers (unless you have been consuming too much salt or animal food), having large green plants in your house to enrich the oxygen content of the air, and singing a happy song every day.

Proponents claim that macrobiotic eating can help prevent cancer and many other diseases. They also present case histories of people whose cancers have supposedly disappeared after they adopted the macrobiotic diet. However, there is no scientific evidence of benefit, and the diet itself can cause cancer patients to undergo serious weight loss.⁶

Maharishi Ayur-Ved

Proponents state that ayurvedic medicine originated in ancient times but was reconstituted in the early 1980s by the Maharishi Mahesh Yogi, who also popularized transcendental meditation (TM). As popularized today, its basic theory attributes the regulation of body functions to three “irreducible physiologic principles” called doshas, whose Sanskrit names are *vata*, *pitta*, and *kapha*. These terms are used to designate body types as well as

the physical and mental characteristics of each constitutional type. Through various combinations of vata, pitta, and kapha, 10 body types are possible. However, one's doshas (and therefore one's body type) can vary from hour to hour and season to season.

Ayurvedic proponents state that the symptoms of disease are always related to balance of the doshas, which can be determined by feeling the patient's wrist pulse or completing a questionnaire. Balance is supposedly achieved through "pacifying" diets, "purification" (to remove "impurities due to faulty diet and behavioral patterns"), TM, and a long list of procedures and ayurvedic products, many of which are said to be formulated for specific body types. Most of these cost several hundred dollars, but some cost thousands and require the services of a practitioner.

Naturopathy

Naturopathy, sometimes referred to as natural medicine, is a largely pseudoscientific approach said to assist nature, support the body's own innate capacity to achieve optimal health, and facilitate the body's inherent healing mechanisms. Naturopaths assert that diseases are the body's effort to purify itself, and that cures result from increasing the patient's vital force. They claim to stimulate the body's natural healing processes by ridding it of waste products and toxins which are questionable and are not measurable in a lab.

Naturopaths offer treatment at their offices and at spas where patients may reside for several weeks. Their offerings include fasting, "natural food" diets, vitamins, herbs, tissue minerals, homeopathic remedies, cell salts, manipulation, massage, exercise, colonic enemas, acupuncture, Chinese medicine, natural childbirth, minor surgery, and applications of water, heat, cold, air, sunlight, and electricity. Radiation may be used for diagnosis, but not for treatment. They claim that many of these methods rid the body of unnamed toxins.

Naturopaths are licensed as independent practitioners in eleven states and may legally practice in a few others. The total number of practitioners is unknown but includes chiropractors and acupuncturists who practice naturopathy. Many naturopaths espouse nutrition and lifestyle measures that coincide with current medical recommendations. However, this advice is often accompanied by nonstandard advice that is irrational. Although naturopaths claim to emphasize prevention, most oppose or are overly critical of immunization.

Most naturopaths allege that virtually all diseases are within their scope. The most comprehensive naturopathic publications, *A Textbook of Natural Medicine*⁷ (for students and professionals) and *Encyclopedia of Natural Medicine*⁸ (for laypersons), recommend special diets, vitamins, minerals, and/or herbs for more than 70 health problems ranging from acne to AIDS. For many of these conditions, daily administration of ten or more products is recommended — some in dosages high enough to cause toxicity.

Natural Hygiene

Natural Hygiene, an offshoot of naturopathy, is a philosophy of health and natural living that advocates a raw food diet of vegetables, fruits, and nuts. It also advocates periodic fasting and food combining (avoiding food combinations it considers detrimental).¹⁸ Natural hygienists oppose immunization, fluoridation, and food irradiation, and eschew most forms of medical treatment.

Iridology

Iridology (iris diagnosis) claims that each area of the body is represented by a corresponding area in the iris of the eye (the colored area around the pupil) and that the body's state

of health and disease can be diagnosed from the color, texture, and location of pigment flecks in the eye. The leading proponent, Bernard Jensen, D.C., has written that "Nature has provided us with a miniature television screen showing the most remote portions of the body by way of nerve reflex responses." Iridology practitioners claim to diagnose "imbalances" that can be treated with vitamins, minerals, herbs, and similar products. Some also claim that the eye markings can reveal a complete history of past illnesses as well as previous treatment. Some iridologists use computers to help them analyze eye photographs and select the products they recommend. Two well-designed studies have found that iridology practitioners who examined the same patients (or photographs of their eyes) disagreed among themselves and were unable to state what was medically wrong with the patients.^{9,10}

Metabolic Therapy

Proponents of metabolic therapy claim to diagnose abnormalities at the cellular level and correct them by normalizing the patient's metabolism. They regard cancer, arthritis, multiple sclerosis, and other degenerative diseases as the result of metabolic imbalance caused by a buildup of toxic substances in the body. They claim that scientific practitioners merely treat the symptoms of the disease, while they treat the cause by removing toxins and strengthening the immune system so the body can heal itself. The toxins are neither defined nor objectively measurable. Metabolic treatment regimens vary from practitioner to practitioner and may include a "natural food" diet, coffee enemas, vitamins, minerals, glandulars, enzymes, laetrile, and various other nostrums that are not legally marketable in the United States. No controlled study has shown that any of its components has any value against cancer or any other chronic disease. However, many people find its concepts appealing because they do not seem far removed from scientific medicine's concerns with diet, lifestyle, and the relationship between emotions and bodily responses.

Orthomolecular Therapy

Proponents define orthomolecular therapy as "the treatment of disease by varying the concentrations of substances normally present in the human body." They claim that many diseases are caused by molecular imbalances that are correctable by administration of the right nutrient molecules at the right time. (Ortho is Greek for "right.") Linus Pauling coined the term orthomolecular therapy in 1968, but the approach actually dates back to the early 1950s when a few psychiatrists began adding massive doses of nutrients to their treatment of severe mental problems. The original substance was vitamin B₃ (nicotinic acid or nicotinamide), and the therapy was termed megavitamin therapy. Later the treatment regimen was expanded to include other vitamins, minerals, hormones, and diets, any of which may be combined with conventional drug therapy and electroshock treatments.

Pauling postulated that people's nutrient needs vary markedly and that to maintain good health, many people need amounts much greater than the RDAs. In 1970, he announced in *Vitamin C and the Common Cold* that taking 1000 mg of vitamin C daily will reduce the incidence of colds by 45% for most people, but that some people need much larger amounts. A 1976 expansion of the book suggested even higher dosages, and a third book, *Vitamin C and Cancer* (1979) claimed that high doses of vitamin C might be effective against cancer. Yet another book, *How to Feel Better and Live Longer* (1986) stated that megadoses of vitamins "can improve your general health ... to increase your enjoyment of life and can help in controlling heart disease, cancer, and other diseases and in slowing down the process of aging."

At least 16 well-designed, double-blind studies have shown that supplementation with vitamin C does not prevent colds and at best may slightly reduce the symptoms of a cold. Slight symptom reduction may occur as the result of an antihistamine-like effect, but whether this has practical value is a matter of dispute. Pauling's views are based on the same studies considered by other scientists, but his analyses are flawed.

The largest clinical trials, involving thousands of volunteers, were directed by Dr. Terence Anderson, professor of epidemiology at the University of Toronto. Taken together, his studies suggest that extra vitamin C may slightly reduce the severity of colds, but it is not necessary to take the high doses suggested by Pauling to achieve this result. Nor is there anything to be gained by taking vitamin C supplements year-round in the hope of preventing colds.

Another important study was reported in 1975 by scientists at the National Institutes of Health who compared vitamin C pills with a placebo before and during colds. Although the experiment was supposed to be double-blind, half the subjects were able to guess which pill they were getting. When the results were tabulated with all subjects lumped together, the vitamin group reported fewer colds per person over a nine-month period. But among the half who hadn't guessed which pill they had been taking, no difference in the incidence or severity was found. This illustrates how people who think they are doing something effective (such as taking a vitamin) can report a favorable result even when none exists.

In 1976, Pauling and Dr. Ewan Cameron, a Scottish physician, reported that a majority of 100 terminal cancer patients treated with 10,000 mg of vitamin C daily survived three to four times longer than similar patients who did not receive vitamin C supplements. However, Dr. William DeWys, chief of clinical investigations at the National Cancer Institute, found that the study was poorly designed because the patient groups were not comparable. The vitamin C patients were Cameron's, while the other patients were under the care of other physicians. Cameron's patients were started on vitamin C when he labeled them untreatable by other methods, and their subsequent survival was compared to the survival of the control patients after they were labeled untreatable by their doctors. DeWys reasoned that if the two groups were comparable, the lengths of time from entry into the hospital to being labeled untreatable should be equivalent in both groups. However, he found that Cameron's patients were labeled untreatable much earlier in the course of their disease — which means that they entered the hospital before they were as sick as the other doctors' patients, and would naturally be expected to live longer.

Nevertheless, to test whether Pauling might be correct, the Mayo Clinic conducted three double-blind studies involving a total of 367 patients with advanced cancer. The studies, reported in 1979, 1983, and 1985, found that patients given 10,000 mg of vitamin C daily did no better than those given a placebo.

Several expert teams have concluded that the claims of orthomolecular psychiatry are unsubstantiated. In the early 1970s, a special American Psychiatric Association task force investigated the claims of psychiatrists who espoused the orthomolecular approach. The task force noted that these practitioners used unconventional methods not only in treatment but also for diagnosis.¹¹ Claims that megavitamins and megaminerals are effective against psychosis, learning disorders, and mental retardation in children were debunked in reports by the nutrition committees of the American Academy of Pediatrics in 1976 and 1981 and the Canadian Academy of Pediatrics in 1990.¹² Both groups warned that there was no proven benefit in any of these conditions, and that megadoses can have serious toxic effects. The 1976 report concluded that a "cult" had developed among followers of megavitamin therapy.¹³

In 1991, Dutch researchers reported their evaluation of controlled trials of the effects of niacin, vitamin B₆, and multivitamins on mental functions. They concluded that for hyper-

active children, children with Down's syndrome, IQ changes in healthy schoolchildren, schizophrenia, psychological functions in healthy adults, and geriatric patients, there was no adequate support from controlled trials in favor of vitamin supplementation.¹⁴ A subsequent review of 12 studies of B₆ and magnesium for autism concluded that although the majority of studies were favorable, most were poorly designed, were reported by researchers who were closely associated, and involved unsafe dosages of B₆.¹⁵ A recent randomized double-blind study published in 1999 found no evidence that regulating the vitamin levels of adult schizophrenics influenced the clinical status of these subjects. The experimental group received amounts of megavitamins based on their individual serum vitamin levels plus dietary restriction-based on radioallergosorbent (RAST) tests. The control group received 25 mg vitamin C and were prescribed substances considered allergenic from the RAST test. After five months, there were marked differences in serum levels of vitamins but no consistent symptomatic or behavioral differences between the groups.¹⁶

A few situations exist in which high doses of vitamins are known to be beneficial, but they must still be used with caution because of potential toxicity. Orthomolecular practitioners go far beyond this, however, by prescribing large amounts of supplements to all or most of the patients who consult them. This approach can result in great harm — particularly to psychiatric patients — when used instead of effective medications.

Chiropractic Nutrition

Chiropractic is based on the faulty notion that most ailments are related to spinal problems. Although some aspects of scientific nutrition are taught in chiropractic schools, many chiropractors use methods that clash with what is known about the anatomy and physiology of the body.

Applied kinesiology (AK), for example, is based on the notion that every organ dysfunction is accompanied by a specific muscle weakness, which enables health problems to be diagnosed through muscle-testing procedures. Testing is typically carried out by pulling on the patient's outstretched arm after placing the test substance (such as a vitamin or food extract) in the patient's mouth until salivation occurs. However, some practitioners place the test material in the patient's hand or touch it to other parts of the body. If a weak muscle becomes stronger when a nutrient (or a food high in the nutrient) is tested, that supposedly indicates "a deficiency normally associated with that muscle." Treatment may include special diets, food supplements, acupressure, and spinal manipulation.

Contact Reflex Analysis (CRA) proponents claim that over a thousand health problems can be diagnosed with a muscle test during which the chiropractor's finger or hand is placed on one of 75 "reflex points" on the patient's body. If the patient's arm can be pulled downward, a condition corresponding to the "reflex" is considered present, and dietary supplements (typically made from freeze-dried vegetables or animal organs) are prescribed. CRA's chief proponent teaches that 80% of disease is due to allergy, the two main causes of disease are gallbladder disease and staph infections, and obesity is commonly caused by parasites.

The Morter Health System is claimed to be "a complete alternative healthcare system" that can correct physical (biomagnetic), nutritional, and emotional stresses. Its followers postulate that an imbalance in the patient's electromagnetic field causes unequal leg length, which the chiropractor can instantly correct by applying his own electromagnetic energy to points on the body. Supposedly, two fingers on each of the chiropractor's hands are North poles, two are South poles, and the thumbs are electromagnetically neutral. When imbalance is detected, the hands are held for a few seconds at "contact points" on the patient's body until the patient's legs test equally long. Proponents recommend testing

early in infancy and at least monthly throughout life. The “nutritional” component is based on the belief that “patients can maintain life and vitality by consuming four times as much alkaline-forming as acid-forming foods.” Proponents claim that saliva pH testing can determine whether to use nutritional supplementation and/or spinal manipulation. The recommended supplements include a barley juice formula said to be the best “overall body alkalizer.”

NutraBalance is one of several systems in which the results of legitimate blood and urine tests are fed into a computer which determines alleged “metabolic types,” lists supposed problem areas, and recommends dietary changes and food supplements from a manufacturer chosen by the chiropractor. Neither the existence of the types nor the recommended nutritional strategies have been scientifically substantiated.

At least 50 companies are marketing irrationally formulated supplement products exclusively or primarily through chiropractors. Some of these companies (or their distributors) sponsor seminars at which chiropractors are taught pseudoscientific nutrition concepts — including the use of supplements to treat disease. These seminars enable manufacturers and distributors to provide information on alleged therapeutic uses that would not be legal to place on product labels. Most chiropractors who recommend supplements sell them to their patients at two to three times their wholesale cost.

Fad Diagnoses

Many practitioners label patients with diagnoses not recognized by the scientific community. Some apply one or more of these diagnoses to almost every patient they see.

Years ago, many people who were tired or nervous were said to have “adrenal insufficiency.” The vast majority of these people were not only misdiagnosed but were also treated with adrenal gland extract, a substance that the FDA later banned because it was too weak to treat the actual disease. “Low thyroid” (hypothyroidism) was likewise unjustifiably diagnosed in many cases of fatigue and/or obesity. Today’s fad diagnoses used to explain various common symptoms are chronic fatigue syndrome, hypoglycemia, food allergies, parasites, environmental illness, candidiasis hypersensitivity, Wilson’s Syndrome, leaky gut syndrome, and mercury amalgam toxicity. The first four on this list are legitimate conditions that unscientific practitioners overdiagnose. The rest lack scientific recognition.

Only a small percentage of people troubled by fatigue have chronic fatigue syndrome (CFS). The U.S. Centers for Disease Control and Prevention states that CFS should never be diagnosed unless fatigue persists or recurs for at least six months and is severe enough to reduce the patient’s activity level by more than half. In addition, the fatigue should be accompanied by several other symptoms, such as severe headaches, low-grade fever, joint or muscle pain, general muscle weakness, sleep disturbance, and various psychological symptoms.

Real cases of hypoglycemia exist but are rare. The diagnosis should be reserved for patients who get symptoms two to four hours after eating, develop blood glucose levels below 45 mg per 100 ml whenever symptoms occur, and are immediately relieved of symptoms when blood sugar is raised. Low blood sugar levels without symptoms have no diagnostic significance because they occur commonly in normal individuals fed large amounts of sugar.

Doctors who overdiagnose hypothyroidism typically base their diagnosis on low temperature readings determined by placing the thermometer under the armpit. Proper diag-

nosis requires blood tests that measure hormone levels. Wilson's Syndrome was coined in 1990 by E. Denis Wilson, M.D. Its supposed manifestations include fatigue, headaches, PMS, hair loss, irritability, fluid retention, depression, decreased memory, low sex drive, unhealthy nails, easy weight gain, and about 60 other symptoms. However, Wilson claims that his "syndrome" can cause "virtually every symptom known to man." He also claims that it is "the most common of all chronic" ailments and "probably takes a greater toll on society than any other medical condition." Wilson claims to have discovered a type of low thyroid function in which routine blood tests of thyroid are often normal and the main diagnostic sign is body temperature that averages less than 98.6°F (oral). In 1992, the Florida Board of Medicine fined him \$10,000, suspended his license for six months, and ordered him to undergo psychological testing. He has not reinstated his license. (Note: "Wilson's Syndrome" is not Wilson's disease, a rare condition caused by a defect in the body's ability to metabolize copper.)

Multiple chemical sensitivity is based on the notion that when the "total load" of physical and psychological stresses exceeds what a person can tolerate, the immune system goes haywire and hypersensitivity to tiny amounts of common foods and chemicals can trigger a wide range of symptoms. Doctors advocating this notion call themselves clinical ecologists or specialists in environmental medicine. Their treatment approach involves elimination of exposure to foods and environmental substances to which they consider the patient hypersensitive. Extreme restrictions can involve staying at home for months or living in a trailer designed to prevent exposure to airborne pollutants and synthetic substances. In many cases, the patient's life becomes centered around the treatment. In 1986, the American Academy of Allergy, Asthma and Immunology, the nation's largest professional organization of allergists, warned that, "Although the idea that the environment is responsible for a multitude of health problems is very appealing, to present such ideas as facts, conclusions, or even likely mechanisms without adequate support is poor medical practice."¹⁷ In 1997, it reviewed the evidence again and reached similar conclusions.¹⁸

Clinical ecologists base their diagnoses primarily on "provocation" and "neutralization" tests in which patients report symptoms that occur soon after suspected substances are administered under the tongue or injected into the skin. If any symptoms occur, the test is considered positive, and lower concentrations are given until a dose is found that "neutralizes" the symptoms. Researchers at the University of California have demonstrated that these procedures are not valid. In a double-blind study, eighteen patients each received three injections of suspected food extracts and nine of normal saline over a three-hour period. The tests were conducted in the offices of clinical ecologists who had been treating them. In nonblinded tests, these patients had consistently reported symptoms when exposed to food extracts and no symptoms when given injections of saline (dilute salt water). But during the experiment, they reported as many symptoms following saline injections as they did after food-extract injections, indicating that their symptoms were nothing more than placebo reactions.¹⁹

Candidiasis hypersensitivity is another alleged diagnosis with multiple symptoms that include fatigue, depression, inability to concentrate, hyperactivity, headaches, skin problems (including hives), abdominal pain and bloating, constipation, diarrhea, respiratory symptoms, and problems of the urinary and reproductive organs. The main proponent claims that, "If a careful checkup doesn't reveal the cause for your symptoms, and your medical history [as described in his book] is typical, it's possible or even probable that your health problems are yeast-connected." The recommended treatment includes anti-fungal drugs, vitamin and mineral supplements, and diets that avoid refined carbohydrates, processed foods, and (initially) fruits and milk. The American Academy of Allergy, Asthma and Immunology regards the concept of candidiasis hypersensitivity as "specu-

lative and unproven,” and notes that everyone has some of its supposed symptoms from time to time.²⁰ The Academy has warned that some patients who take the inappropriately prescribed antifungal drugs will suffer side effects and that overuse of these drugs could lead to the development of drug-resistant microorganisms that endanger everyone.

Some unscientific practitioners claim that food allergies can cause virtually any symptom. Some measure the responses of white blood cells exposed to food extracts. Others measure the blood levels of various immune complexes. Some practitioners use muscle testing (described below) to diagnose allergies. The test results are then used to explain the patient’s symptoms and dietary modification and supplements are recommended. Neither the tests nor the supplement regimens have a scientifically plausible rationale.

Another popular diagnosis among supplement promoters is “parasites,” which may be treated with laxatives and other intestinal cleansers, colonic irrigation, plant enzymes, dietary measures, and homeopathic remedies. Yet another, “leaky gut syndrome,” is described by proponents as a condition in which the intestinal lining becomes irritated and porous so that unwanted food particles, “toxins,” bacteria, parasites, and “Candida” enter the bloodstream and result in “a weakened immune system, digestive disorders, and eventually chronic and autoimmune disease.” Treatment of this alleged condition can include dietary changes (such as not eating protein and starch at the same meal); “cleansing” with herbal products; “reestablishing good balance” of intestinal bacteria; and supplemental concoctions claimed to strengthen and repair the intestinal lining.

Several hundred dentists, physicians, and various other holistic advocates claim that mercury-amalgam (silver) fillings are toxic and cause a wide range of health problems including multiple sclerosis, arthritis, headaches, Parkinson’s disease, and emotional stress. They recommend that mercury fillings be replaced with either gold or plastic ones and that vitamin supplements be taken to prevent trouble during and after the process. Scientific testing has shown that the amount of mercury absorbed from fillings is only a tiny fraction of the average daily intake from food and is insignificant.²¹ In 1996, the leading anti-amalgamist, Hal A. Huggins, D.D.S., of Colorado Springs, Colorado, had his license revoked. During the revocation proceedings the administrative law judge concluded that Huggins had diagnosed “mercury toxicity” in all patients who consulted him in his office, even some without mercury fillings.

Dubious Tests

Many unscientific practitioners use nonstandard tests as gimmicks for recommending supplements. The most widely used include hair analysis, muscle-testing, live-cell analysis, Functional Intracellular Analysis, EAV testing, and symptom-based questionnaires.

Hair analysis is performed by obtaining a sample of hair, usually from the back of the neck, and sending it to a laboratory for analysis. The customer and the referring source usually receive a computerized printout that supposedly indicates deficiencies or excesses of minerals. Some also report supposed deficiencies of vitamins. Medical authorities agree that hair analysis is not appropriate for assessing the body’s nutritional state but has very limited usefulness as a screening procedure for detecting toxic levels of lead or other heavy metals. Nor can it identify mineral deficiencies, because the lower limits of normal have not been scientifically established. Moreover, the mineral composition of hair can be affected by a person’s age, natural hair color, and rate of hair growth, as well as the use of hair dyes, bleaches, and shampoos.²²

When 52 hair samples from two healthy teenagers were sent under assumed names to 13 commercial hair analysis laboratories, the reported levels of minerals varied considerably between identical samples sent to the same lab and from lab to lab. The labs also disagreed about what was normal or usual for many of the minerals. Most reports contained computerized interpretations that were voluminous, bizarre, and potentially frightening to patients. Six labs recommended food supplements, but the types and amounts varied widely from report to report. Literature from most of the labs suggested falsely that their reports were useful against a wide variety of diseases and supposed nutrient imbalances.²³ The study demonstrated that even if the minerals can be accurately measured, the data have little or no practical value. A recent 2-year study of students exposed to fumes from metal welding found that hair analysis did not consistently reflect blood levels of 11 heavy metals.²⁴

Muscle testing is part of a pseudoscientific system of diagnosis and treatment called applied kinesiology (AK). AK is based on the notion that every organ dysfunction is accompanied by a specific muscle weakness, which enables diseases to be diagnosed through muscle-testing procedures. Its practitioners, most of whom are chiropractors, also claim that nutritional deficiencies, allergies, and other adverse reactions to food substances can be detected by placing substances in the mouth so that the patient salivates. "Good" substances will make specific muscles stronger, whereas "bad" substances will cause specific weaknesses. Treatment may include special diets, food supplements, acupressure, and spinal manipulation. Applied kinesiology should be distinguished from kinesiology (biomechanics), which is the scientific study of movement. The concepts of applied kinesiology do not conform to scientific facts about the causes of disease. Controlled studies have found no difference between the results with test substances and with placebos.²⁵ Differences from one test to another may be due to suggestibility, variations in the amount of force or leverage involved, and/or muscle fatigue.

Live-cell analysis is carried out by placing a drop of blood from the patient's fingertip on a microscope slide under a glass coverslip to slow down the process of drying out. The slide is then viewed with a dark-field microscope to which a television monitor has been attached. Both practitioner and patient can see the blood cells, which appear as dark bodies outlined in white. The practitioner may also take Polaroid photographs of the television screen or make a videotape for himself and the patient. Proponents of live-cell analysis claim that it is useful for diagnosing vitamin and mineral deficiencies, enzyme deficiencies, tendencies toward allergic reactions, liver weakness, and many other health problems.

Dark-field microscopy is a valid scientific tool in which special lighting is used to examine specimens of cells and tissues. Connecting a television monitor to a microscope for diagnostic purposes is also a legitimate practice. However, experts believe that live-cell analysis is useless in diagnosing most of the conditions that its practitioners claim to detect.²⁶ Many of the reported observations are the result of cell changes that occur as the preparation begins to dry out.

Functional Intracellular Analysis (FIA) is claimed to precisely measure an individual's nutrient status. Its marketers have claimed that most Americans have nutrient deficiencies, and that "intracellular nutrient deficiencies" even occur in over 40% of the more than 100 million Americans taking multivitamins as "insurance." During the test, lymphocytes from the patient's blood are placed into petri dishes containing various concentrations of nutrients. A growth stimulant is added and, a few days later, technicians identify the dishes in which greatest cell growth takes place, which supposedly points to a deficiency. Properly performed lymphocyte cultures have a legitimate role in medical practice, but they are not appropriate for general screening or for diagnosing nutrient deficiencies in the manner used by FIA. The test merely measures the amounts of nutrients stored in the lymphocytes at the time of the test and not whether the body has a shortage.²⁷

Some practitioners operate devices they claim can detect diseases, food allergies, and/or nutrient deficiencies by measuring “imbalances in the flow of electromagnetic energy along acupuncture meridians.” The procedure is called electroacupuncture of Voll (EAV) or electrodermal testing. The devices are fancy galvanometers that measure electrical resistance of the patient’s skin when touched by a probe. One wire from the device goes to a brass cylinder covered by moist gauze, which the patient holds in one hand. A second wire is connected to a probe that the operator touches to the patient’s other hand or a foot. This completes a low-voltage circuit, and the device registers the flow of current. The information is then relayed to a gauge or computer screen that provides a numerical readout. However, the size of the number actually depends on how hard the probe is pressed against the patient’s skin. The findings are then used to prescribe homeopathic remedies, acupuncture, dietary change, and/or vitamin supplements. These devices cannot be legally marketed in the U.S. for diagnostic or treatment purposes, but state and federal agencies have done little to curtail their use.

Some practitioners and retailers use questionnaires to help decide what supplements to recommend. The tests usually involve completion of questionnaires about diet, other lifestyle factors, and symptoms that supposedly signify deficiency. Some tests are scored by hand, and others are scored by a computer. Tests of this type are also available online. Questionnaires or computer programs used by supplement sellers invariably recommend supplements for everyone.

Herbal Treatment

Americans spend billions of dollars per year for capsules, tablets, bulk herbs, and herbal teas used for supposed medicinal qualities. Most are purchased over the counter, but some are prescribed by practitioners. Many herbs contain hundreds or even thousands of chemicals that have not been completely catalogued. While some may ultimately prove useful as therapeutic agents, others could well prove toxic. Most herbal products sold in the U.S. are not standardized. This means that determining the exact amounts of their active ingredients can be difficult to impossible. Moreover, many herbal practitioners are non-physicians who are not qualified to make appropriate diagnoses or to determine how herbs compare to proven drugs.

The Dietary Supplement Health and Education Act of 1994 includes herbal products in its definition of dietary supplements, even though herbs have little or no nutritional value. Since herbs are not regulated as drugs, no legal standards exist for their processing, harvesting, or packaging. In many cases, particularly for products with expensive raw ingredients, contents and potency are not accurately disclosed on the label. Many products marked as herbs contain no useful ingredients, and some even lack the principal ingredient for which people buy them. Some manufacturers are trying to develop industrywide quality-assurance standards, but possible solutions to the problem of product identification and standardization are a long way off.

Herbal advocates like to point out that about half of today’s medicines were derived from plants. (Digitalis, for example, was originally derived from leaves of the foxglove plant.) This statement is true but misleading. Drug products contain specified amounts of active ingredients. Herbs in their natural state can vary greatly from batch to batch and often contain chemicals that cause side effects but provide no benefit. Surveys have found that the ingredients and doses of similar products vary considerably from brand to brand and even between lots of the same product. For example, researchers at the University of

Arkansas tested 20 supplement products containing ephedra (ma huang) and found that half the products exhibited discrepancies of 20% or more between the label claim and the actual content, and one product contained no ephedra alkaloids.²⁸ Ephedra products are marketed as “energy boosters” and/or “thermogenic” diet aids, even though no published clinical trials substantiate that they are safe or effective for these purposes. The researchers also noted that hundreds of such products are marketed, and that their number exceeds that of conventional prescription and nonprescription ephedra products, which are FDA-approved as decongestants. Products that combine ephedra with caffeine or a high-caffeine herb such as guarana or kola nut have harmed many users.

To make a rational decision about an herbal product, it would be necessary to know what it contains, whether it is safe, and whether it has been demonstrated to be as good or better than pharmaceutical products available for the same purpose. For most herbal ingredients this information is incomplete or unavailable. However, more than 60 natural remedies have been implicated in reactions that were fatal or potentially fatal.²⁹

Even when a botanical product has some effectiveness, it may not be practical to use. For example, allicin, which is present in whole garlic cloves, has been demonstrated to moderately lower high blood pressure and high blood cholesterol. However, prescription drugs are more potent and predictable for this purpose. Some garlic supplement products contain no allicin, and some studies of these garlic products have found no beneficial effects. Allicin also has anticoagulant properties, which means that it may enhance the anticoagulant effects of such commonly used products as vitamin E, ginkgo, fish oil, aspirin, and prescription anticoagulants.

The best source of information about herbs is the *Natural Medicines Comprehensive Database*, which is available online (<http://www.naturaldatabase.com>) and in print³⁰ for \$92 per year (or \$132 for both versions). The online version is updated daily, while the print version is updated several times a year. The 1999 book covered 964 herbs and dietary supplements, of which only 15% had been proven safe and 11% had been proven effective.³¹ Another excellent resource is the *Professional's Handbook of Complementary and Alternative Medicines*, which provides practical advice for over 300 herbs.³² The widely touted Commission E report and its derivative, the *PDR for Herbal Medicine*, are not as reliable or practical.³³

The recent entry of drug companies into the herbal marketplace may result in standardization of dosage for some products; and recent public and professional interest in herbs is likely to stimulate more research. However, with safe and effective medicines available, treatment with herbs rarely makes sense; and many of the conditions for which herbs are recommended are not suitable for self-treatment.

Other Questionable Methods

Chelation Therapy

Chelation therapy is a series of intravenous infusions containing EDTA, vitamins, and various other substances. It is claimed to be effective against kidney and heart disease, arthritis, Parkinson's disease, emphysema, multiple sclerosis, gangrene, psoriasis, and many other serious conditions. However, no well-designed research has shown that chelation therapy can help these conditions, and manufacturers of EDTA do not list them as appropriate for EDTA treatment. A course of treatment consisting of 20 to 50 intravenous infusions costs several thousand dollars.

Chelation therapy is heavily promoted as an alternative to coronary bypass surgery. It is sometimes claimed to be a “chemical Roto-Rooter” that can clean out atherosclerotic plaque from the body’s arteries. However, there is no scientific evidence to support this claim. Lifestyle modification, which includes stress reduction, caffeine avoidance, alcohol limitation, smoking cessation, exercise, and nutritional counseling, is encouraged as part of the complete therapeutic program and may be responsible for some of the reported improvements.

The primary organization promoting chelation therapy is the American College for Advancement in Medicine (ACAM), which conducts courses, sponsors a journal, and administers a “board certification” program not recognized by the scientific community. ACAM’s chelation protocol calls for intravenous infusion of 500 to 1000 ml of a solution containing 50 mg of disodium EDTA per kg of body weight, plus heparin, magnesium chloride, a local anesthetic (to prevent pain at the infusion site), several B-vitamins, and 4 to 20 g of vitamin C. This solution is infused slowly over 3.5 to 4 hours, one to three times a week. Additional vitamins, minerals, and other substances — prescribed orally — “vary according to preferences of both patients and physicians.”

Chelation therapy is one of several legitimate methods for treating cases of heavy metal poisoning, but the chelating substance is calcium EDTA and the frequency of visits is different. Some chelation therapists submit fraudulent insurance reports claiming to have treated lead poisoning or another alleged toxic state. Lead poisoning in adults is uncommon and occurs primarily through (a) occupational exposure or (b) failing to take proper precautions when repainting an old house that had been painted with lead paint. If lead poisoning actually exists, whether discontinuation of exposure is sufficient treatment or chelation therapy should be administered depends on the blood lead concentration, the severity of clinical symptoms, the biochemical and blood abnormalities, and the nature of the exposure. The appropriate test for lead poisoning is a blood lead level, but some chelation therapists test urine and/or hair, which is unreliable to worthless.

In 1998, the Federal Trade Commission (FTC) secured a consent agreement barring ACAM from making unsubstantiated claims that chelation therapy is effective against atherosclerosis or any other disease of the circulatory system. Although the FTC could act against individual doctors who advertise falsely, it usually leaves that up to the state licensing boards. A few chelation therapists have had their licenses revoked, but most practice without government interference.

Colonic Irrigation

Some chiropractors and naturopaths advocate colonic irrigation as part of their treatment system. In this procedure, a rubber tube is passed into the rectum for a distance of up to 20 or 30 inches, and warm water is pumped in and out, a few pints at a time, typically using 20 or more gallons. Some practitioners add herbs, coffee, or other substances to the water. The procedure is said to “detoxify” the body. Its advocates claim that as a result of intestinal stasis, intestinal contents putrefy and toxins are formed and absorbed, which causes chronic poisoning of the body.

This “auto-intoxication” theory was popular around the turn of the century but was abandoned by the scientific community during the 1930s. No toxins have ever been identified, and careful observations have shown that individuals in good health can vary greatly in bowel habits. Proponents may also suggest that fecal material collects on the lining of the intestine and causes trouble unless removed by laxatives, colonic irrigation, special diets, and/or various herbs or food supplements that “cleanse” the body. The falsity of this notion is obvious to doctors who perform intestinal surgery or peer within

the large intestine with a diagnostic instrument. Fecal material does not adhere to the intestinal lining, which is continuously desquamated as part of every stool.

Colonic irrigation is not only therapeutically worthless but can cause fatal electrolyte imbalance. Cases of death due to intestinal perforation and infection (from contaminated equipment) have also been reported.³⁴

The Feingold Diet

In 1973, Benjamin Feingold, M.D., a pediatric allergist from California, proposed that salicylates, artificial colors, and artificial flavors caused hyperactivity in children. (Hyperactivity is now medically classified as an attention deficit disorder [ADD] or attention deficit-hyperactivity disorder [ADHD]). To treat or prevent this condition, Feingold suggested a diet free of such chemicals. Feingold's followers now claim that asthma, bed wetting, ear infections, eye-muscle disorders, seizures, sleep disorders, stomach aches, and a long list of other symptoms may respond to the Feingold program and that sensitivity to synthetic additives and/or salicylates may be a factor in antisocial traits, compulsive aggression, self-mutilation, difficulty in reasoning, stuttering, and exceptional clumsiness. The "Symptom Checklist" of the Feingold Association of the United States (FAUS) includes many additional problems.

Adherence to the Feingold diet requires a change in family lifestyle and eating patterns, particularly for families who prepare many meals from scratch. Feingold strongly recommends that the hyperactive child help prepare the special foods, and encourages the entire family to participate in the dietary program. Parents are also advised to avoid certain over-the-counter and prescription drugs and to limit their purchases of mouthwash, toothpaste, cough drops, perfume, and various other nonfood products to those published in FAUS's annual "Food List and Shopping Guide."

Current recommendations advise a two-stage plan that begins by eliminating artificial colors and flavors, the antioxidants BGA, BHT, and TBHQ; aspirin-containing products, and foods containing natural salicylates. If improvement occurs for four to six weeks, certain foods can be carefully reintroduced, one at a time. However, the *Feingold Cookbook* (published in 1979 but still in print) warns that, "A successful response to the diet depends on 100 percent compliance. The slightest infraction can lead to failure: a single bite or drink can cause an undesirable response that may persist for 72 hours or more."

Many parents who have followed Feingold's recommendations have reported improvement in their children's behavior, but carefully designed experiments fail to support the idea that additives are responsible for such symptoms in the vast majority of children.³⁵⁻³⁷ Most improvement, if any occurs, appears related to changes in family dynamics, such as paying more attention to the children. Sugar and aspartame have also been blamed for hyperactivity, but well-designed studies have found no evidence supporting such claims.³⁸⁻⁴⁰

Questionable Cancer Methods

Cancer quackery is as old as recorded history and presumably has existed since cancer was recognized as a disease. Thousands of worthless folk remedies, diets, drugs, devices, and procedures have been promoted for cancer management. Questionable methods can be defined as diagnostic tests, or alleged therapeutic modalities that are (a) promoted for general use for cancer prevention, diagnosis, or treatment; (b) unsubstantiated; and (c) lack a scientifically plausible rationale. They include corrosive agents, plant products, diets and dietary supplements, herbs, drugs, correction of "imbalances," biologic methods,

TABLE 72.1**Signs of Quackery**

When talking about nutrients, they tell only part of the story
They claim that most Americans are poorly nourished
They recommend “nutrition insurance” for everyone
They say that most diseases are due to faulty diet and can be treated with “nutritional” methods
They allege that modern processing methods and storage remove all nutritive value from our food
They claim that diet is a major factor in behavior
They claim that fluoridation is dangerous
They claim that soil depletion and the use of pesticides and “chemical” fertilizers result in food that is less safe and less nourishing
They claim you are in danger of being “poisoned” by ordinary food additives and preservatives
They charge that the Recommended Dietary Allowances (RDAs) have been set too low
They claim that under everyday stress your need for nutrients is increased
They recommend “supplements” and “health foods” for everyone
They claim that “natural” vitamins are better than “synthetic” ones
They suggest that a questionnaire can be used to indicate whether you need dietary supplements
They say it is easy to lose weight
They promise quick, dramatic, miraculous results
They routinely sell vitamins and other “dietary supplements” as part of their practice
They use disclaimers couched in pseudomedical jargon
They use anecdotes and testimonials to support their claims
They claim that sugar is a deadly poison
They display credentials not recognized by responsible scientists or educators
They offer to determine your body’s nutritional state with a laboratory test or a questionnaire
They claim they are being persecuted by orthodox medicine and that their work is being suppressed because it’s controversial
They warn you not to trust your doctor
They encourage patients to lend political support to their treatment methods

Note: Quackery can be defined as the promotion of unsubstantiated health methods for profit. Profit includes personal aggrandizement as well as monetary gain. The above are 25 ways to spot nutrition quacks.

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devices, psychologic approaches, and worthless diagnostic tests. Many promoters combine methods to make themselves more marketable.

Promoters typically explain their approach in commonsense terms and appear to offer patients an active role in their care. They claim that:

- Cancer is a symptom, not a disease
- Symptoms are caused by diet, stress, or environment
- Proper fitness, nutrition, and mental attitude allow biologic and mental defense against cancer
- Conventional therapy weakens the body’s reserves, treats the symptoms rather than the disease

Questionable therapies are portrayed as natural and nontoxic, while standard (responsible) therapies are portrayed as highly dangerous. Nutrition-related methods are compatible with each of these selling points. Most include self-care components that enable patients to feel more in control of their destiny. Many are claimed to cure by strengthening the immune system, even though cancer does not represent a failure of the immune system.⁴¹ Cures attributed to questionable methods usually fall into one or more of five categories:

1. The patient never had cancer
2. A cancer was cured or put into remission by proven therapy, but questionable therapy was also used and erroneously credited for the beneficial result

TABLE 72.2

More Ploys That Can Fool You

"We really care about you!"
"We treat the whole patient."
"We attack the cause of disease."
"Our treatments have no side effects."
"We treat medicine's failures."
"Think positive!"
"Jump on the bandwagon."
"Our methods are time-tested"
"Backed by scientific studies"
"Take charge of your health!"
"Think for yourself."
"What have you got to lose?"
"If only you had come earlier."
"Science doesn't have all the answers."
"Don't be afraid to experiment."

Note: "Alternative" promoters offer solutions for virtually every health problem, including some they have invented. To those in pain, they promise relief. To the incurable, they offer hope. To gain a patient's allegiance it is not necessary to persuade the patient that all of the statements above are true. Just one may be enough.

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3. The cancer is progressing but is erroneously represented as slowed or cured
4. The patient has died as a result of the cancer (or is lost to followup) but is represented as cured
5. The patient had a spontaneous remission (very rare) or slow-growing cancer that is publicized as a cure

Maintaining adequate nutrition is important for the general health of cancer patients, as it is with all patients, and diet plays a role in preventing certain cancers. However, no diet or dietary supplement product has been proven to improve the outcome of an established cancer. Detailed information on today's questionable cancer methods is available on the Quackwatch web site.⁴²

Consumer Protection Laws

The Food, Drug, and Cosmetic Act defines drug as any article (except devices) "intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease" and "articles (other than food) intended to affect the structure or function of the body." These words permit the FDA to stop the marketing of products with unsubstantiated drug claims on their labels. The Dietary Supplement Health and Education Act (DSHEA) of 1994 undermined this situation by increasing the amount of misinformation that can be transmitted to prospective customers through third-party literature.⁴³ It also expanded the types of products that could be marketed as supplements. The most logical definition of dietary supplement would be something that supplies one or more essential nutrients missing from the diet. DSHEA went far beyond this to include vitamins, minerals, herbs or other botanicals, amino acids, other dietary substances to supplement the diet by increasing dietary intake, and any concentrate, metabolite, constituent, extract, or combination of

TABLE 72.3**Recipe for a New Fad Disease**

Pick any symptoms — the more common the better

Pick any disease — real or invented (Real diseases have more potential for confusion because their existence can't be denied)

Assign lots of symptoms to the disease

Say that millions of undiagnosed people suffer from it

Pick a few treatments — Including supplements which will enable health food stores and chiropractors to get in on the action

Promote your theories through books and talk shows

Don't compete with other fad diseases; say that yours predisposes people to the rest or vice versa

Claim that the medical establishment, the drug companies, and the chemical industry are against you

State that the medical profession is afraid of your competition or trying to protect its turf

If challenged to prove your claims, say that you lack the money for research, that you are too busy getting sick people well, and that your clinical results speak for themselves

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such ingredients. Although many such products (particularly herbs) are marketed for their alleged preventive or therapeutic effects, the 1994 law has made it difficult or impossible for the FDA to regulate them as drugs. Since its passage, even hormones such as dehydroepiandrosterone (DHEA, a steroid hormone intermediate) and melatonin are being hawked as supplements.

DSHEA also weakened the FDA's ability to regulate product safety by permitting it to restrict only substances that pose "significant and unreasonable risk" under ordinary conditions of use. However, the agency does not have sufficient resources to evaluate the safety of thousands of individual products. Because manufacturers are not required to submit safety information before marketing dietary supplements, the FDA must rely on adverse event reports, product sampling, information in the scientific literature, and other sources of evidence of danger. In addition, there is no practical way to ensure that the ingredients listed on product labels are actually in the products. Thus, the public is virtually unprotected against unsafe supplement and herbal products.

Consumer protection laws face further erosion. Within the past few years, several states have passed "Medical Freedom of Choice" bills that make it difficult for licensing boards to discipline alternative practitioners who mistreat their patients. The federal *Access to Medical Treatment Act* has been introduced to prevent the FDA from protecting the public against the sale and distribution of questionable drugs and devices. These measures reflect the "law of the jungle," under which the strong are free to feed upon the weak.

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