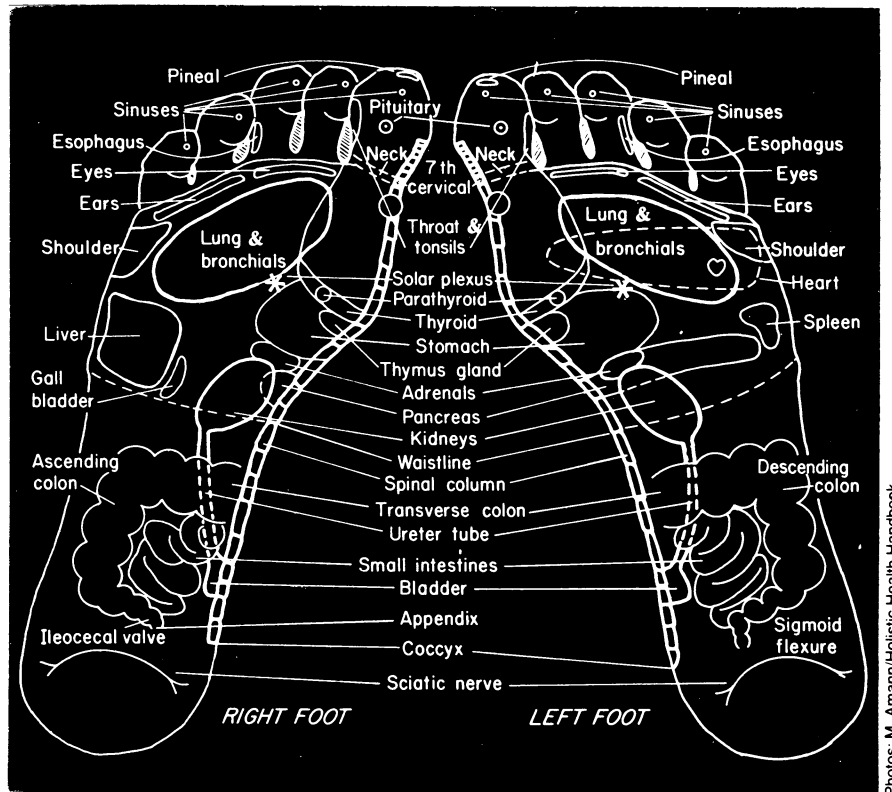


Holistic Medicine

Trying to understand it is a difficult business, since many 'holistic' therapies have nothing in common except the label

BY SUSAN WALTON



Foot reflexology chart: Do spots on the foot's sole relate to internal organs?

Holistic medicine is the new kid on the block and like any stranger, it is arousing a good deal of curiosity, interest, suspicion and, in some cases, hostility. Many have heard of it, but few know exactly what it is; thus, discussions of holistic medicine generate a lot of heat, but not much light. This is not surprising when you consider that one person thinks that the conversation is about medical fads, such as iridology and foot reflexology, while the other is talking about nothing more than a different approach to traditional medicine.

As it happens, both of them are right. Hence the confusion: Holistic medicine isn't one thing but many, loosely connected by a philosophy of treating the "whole person." At its worst, holistic medicine embraces a collection of therapies that are of questionable efficacy or else rely on psychic or occult powers. But at its best, it suggests a back-to-basics medicine, a return to treating the whole person instead of only the disease. Both sides of the holistic movement deserve scrutiny from professionals and nonprofessionals alike, but they also deserve to be evaluated separately. Anyone who judges the entire movement on the basis of its flakier

elements is in danger — metaphorically speaking — of throwing the baby out with the bathwater.

The flashier side of holistic medicine consists of nontraditional, sometimes gimmicky therapies. There is little hard data on their effectiveness, which makes it difficult to evaluate them objectively. For the medical consumer, however, there are a few things to beware of; a reliance on psychic or occult methods of healing, a dedication to a one-cause/one-cure theory of disease, or a suggestion that a large proportion of the population is suffering — unbeknownst to them — from some hideous ailment are all tip-offs that a particular holistic healing system may be slightly questionable.

Among the psychic systems, one finds things like radionics, in which only a part of the patient — urine, for example — need be present for the practitioner to diagnose and treat a problem. Systems such as this rely on mystical methods or intuition, both of which certainly can play a part in medical care, but should not be relied on as the sole method. This is the same theory on which voodoo is based, which is also effective in some circles, and for the

same reasons: Suggestion can be very powerful. But according to one holistic M.D., these are psychic tools, not holistic medicine.

The one-cause/one-cure holistic systems focus on a particular habit — and blame all health problems on that. Although many way-of-life factors do influence health, there are few diseases for which all the blame can be laid on one thing. Sometimes diet is the culprit, and extravagant claims are made about its potential effects. "Generally speaking, leukemia results from proliferation of the yin white blood cells as the yang red blood cells decrease. This condition is simply the result of an overconsumption of yin food such as sugar, dairy products, e.g., ice cream, soft drinks, fruit juices and chemicals. To relieve this condition, one should stop ingesting the excessively yin foods just mentioned," writes Michio Kuchi in "Macrobiotics and Oriental Medicine" in Leslie Kaslof's *Wholistic Dimensions in Healing*.

Or instead of a habit, other systems may choose a particular part of the body and claim that anatomically distant complaints can be diagnosed or treated

through it. Iridology, for example, is based on the premise that each organ of the body is represented by an area in the iris, and all disease can be diagnosed by looking at the iris. Chiropractic, which some physicians believe is useful in some circumstances, focuses on the spine and considers many symptoms to be caused by the impingement of the vertebrae on the spinal cord, which interferes with the flow of nerve impulses, a situation called a "subluxation" by chiropractors. Subluxations are treated with spinal manipulation. Along the same lines, foot reflexology claims that each part of the body corresponds to an area on the sole of the foot, and says that disease can be treated by manipulating the correct square inch of sole.

In many cases, these systems sound so flagrantly weird that no sober-minded researcher has taken the time and trouble to test them scientifically. They may suspect that these systems are ineffective, but do not think it worthwhile to spend time finding out. As C. Norman Shealy, president of the American Holistic Medical Association (an organization of M.D.s and medical students) says, "I think that homeopathy, for example, probably doesn't work, but it would take a lot of time and money to test it out for certain."

But as the holistic movement grows, researchers are beginning to examine the effectiveness of the systems. In the Sept. 28 JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, three California researchers published a study called "An Evaluation of Iridology." They tested the diagnostic abilities of three trained iridologists and three ophthalmologists in detecting the presence of kidney disease in 143 subjects, 95 of whom had normal kidney function. Iridology, they found, "was neither selective nor specific, and the likelihood of correct detection was statistically no better than chance." The ophthalmologists did no better.

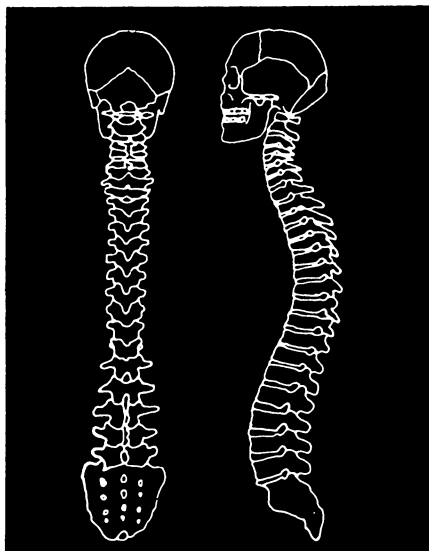
Chiropractic has also been the subject of investigation; researchers and consumer groups have examined chiropractic theory and treatment methods. In one study done at Yale in 1973, researchers applied tremendous pressure to cadaver spinal columns in an effort to create what chiropractic calls subluxations. They found that "subluxation of a vertebra as defined by chiropractic... does not occur," which makes it difficult to implicate subluxations as causative factors in disease symptoms.

Macrobiotics and other extreme diets have also come under fire. If practiced in their most drastic forms, they can result in malnutrition. And anyone who tries to treat leukemia by cutting sugar or dairy products, etc., out of his or her diet is likely to be severely disappointed.

In many cases, the danger of therapies like these is not so much that someone will be directly injured by them, but that treatable problems will be misdiagnosed or neglected until they are no longer treatable.

Delay in diagnosing many medical problems — cancer being one example — can mean a significantly different prognosis for the patient.

Holistic practitioners of all therapeutic persuasions are concerned that the flakier systems will so dominate the public view of holistic medicine that the entire movement will be discredited. Although many practitioners use a fairly broad range of therapies, most are at least somewhat selective. The East/West Center for Holistic Health in New York City, for example, shuns occult and psychic healers since, as Director Marie Valenta says, "so many of them are quacks." This center and others also require that their staff be licensed. Licensing requirements, however, vary considerably from state to state. In New



Chiropractic focuses on the spine.

York, any "touch" therapist must be licensed as a physiotherapist or a massage therapist. In California, no such requirements are in effect, which may account in part for the plethora of "holistic" practitioners there. Persons seeking holistic care from someone other than a physician would do well to check the licensing laws in their state.

The M.D.'s and D.O.'s who favor holism fall at the opposite end of the spectrum. Usually, they advocate a back-to-basics, almost conservative philosophy of care that includes all of traditional medicine and is in no way a substitute for it, particularly in treating acute illness. AMHA President Shealy defines holistic medicine as "a system of health care which assists individuals in harmonizing mind, body and spirit." Shealy has sorted out the confused situation by making a distinction between holistic *health* and holistic *medicine*. He places many of the stranger therapies in the holistic health category.

Holistic *medicine*, Shealy says, uses seven basic therapies to guide practice. The first three — good nutrition, physical exercise and "self-regulation" techniques like biofeedback and relaxation — Shealy

says are the "holy trinity of health, more important than anything else." The remaining four therapies — acupuncture, neuro-muscular integration, environmental medicine and spiritual awareness — are also important, but either are used very specifically or involve factors less under our control. Spiritual awareness, he says, does not require any particular beliefs but rather asks if a person is living in accordance with his or her ideals. "If they're not," Shealy says, "it's hard to be completely well."

The astute observer may note that the basic three principles of holistic medicine sound like common sense. Indeed they are, Shealy replies, but points out that many physicians do not use them enough, and many Americans are not willing to exert the discipline necessary to follow them. "Wellness" as a way of life is for many people (as G. K. Chesterton remarked of Christianity) not something that has been tried and found wanting, but that has been found difficult and left untried.

Many physicians also acknowledge that they are guilty of slighting basics like diet and exercise in their practices. In an otherwise doubting editorial on holistic medicine in the NEW ENGLAND JOURNAL OF MEDICINE, editor Arnold S. Relman says, "If these are the lessons of holistic medicine, they should be welcomed as old friends. They may need fresh introduction to some of our more technologic and narrowly focused colleagues, but they nevertheless are part of the tradition of medicine." Physicians realize, too, that "whole person" medicine has been splintered into a confusing array of specialties and subspecialties, and that many physicians do not consider way-of-life factors enough when treating illness. In the April 8, 1977 SCIENCE, George L. Engel wrote about "The Need for a New Medical Model: A Challenge for Biomedicine." He said, "Medicine's crisis stems from the logical inference that since 'disease' is defined in terms of somatic parameters, physicians need not be concerned with the psychosocial issues which lie outside medicine's responsibility and authority."

In answer to the complaints that medical care is fragmented and too narrowly focused on physical factors, physicians and others are creating holistic clinics, in which an M.D. works with a support staff of nurses, counselors and physiotherapists. Private holistic clinics are springing up around the country, and the trend has spread to institutions as well.

In Illinois, the Wholistic Health Centers, Inc., founded by Rev. Granger Westberg, began as an outpatient clinic in a church, and now include several centers. They work on the principle that life situations and physical and mental symptoms are often inseparable, and they give the patients a chance to work out the problems that may be related to their symptoms. All kinds of care are provided, but there is a

strong emphasis on prevention. Westberg and others from the centers are helping to set up similar clinics with other groups around the country.

At the University of Wisconsin at Stevens Point, University Health Service director Bill Hettler started a similar "Wellness" program in 1976. Students fill out a questionnaire about their past medical history, their strengths and the things about themselves that they'd like to change. Their answers are analyzed by a computer that provides information about health risks, both short and long term. It also tells students where to get information to help them solve their problems. The University of Colorado also has a "whole person" health care program, this one based on three principles: individual responsibility for health, prevention through education and a person-centered approach to health care delivery. These programs are popular with students, and one study carried out by Hettler suggests higher rates of compliance and change than with traditional methods.

It is relatively easy to sort out those holistic therapies that have little value from those that have the potential to be of great use. Between them, however, there is a large grey area and many holistic therapies dwell here; there may be some evidence that they work, but not enough to be certain or to use them in clinical practice. Herbal medicine, for example, has yielded many valuable drugs and will undoubtedly produce more, but it is difficult to control dosages when a medication is in the form of a plant. Such therapies need to be refined and better documented. Negative ion therapy, another example, sounds strange, but researchers — Felix Sulman of Hebrew University in Jerusalem and Albert P. Krueger of the University of California at Berkeley, among others — have documented that increases of positive air ions lead to an increase in production of the powerful neurohormone serotonin. This leads to a "serotonin irritation syndrome," common in areas of the world where certain weather fronts bring on abnormally high concentrations of positive air ions. The sharav in the Near East, the foehn, the sirocco, the santa ana — all of these ill winds do cause physiological changes, and negative ion therapy may have a place in treating them.

In the end, the medical consumer can judge holistic medicine only by looking at each holistic practitioner, and therapy system individually. As research into the effectiveness of various systems continues, it may become easier to separate the useful from the useless and the benign from the harmful. Until then, however, the medical consumer can't be entirely certain of what the "holistic" label means. If seeking holistic care, it is probably more circumspect to choose a holistic clinic run by an M.D. or D.O. In medicine as elsewhere: caveat emptor. Let the buyer beware. □

... New physics

referred the findings to the W-S theory. That's the way things are usually done in such cases. The theory was why they had looked in the first place. They didn't have enough data to analyze independently of any model, and says Baltay, "The W-S model gave clear predictions and this mixing angle." Since 1978, he says, they have had enough data to do an independent analysis of the experimental results to see whether this is truly the theory they support and to better determine the value of the mixing angle.

Experimenters sort out effects identifiably dependent on one or more of the four intermediaries, W^+ , W^- , Z^0 , and gamma, but especially Z^0 and gamma, and compare the probabilities or rates at which they happen. Since the mixing angle is involved in determining how much of each is involved in the total, its trigonometric functions are involved in the analysis of those ratios, as well as the relationships between the masses of the intermediaries, and among the strengths of the different forces generated by the unified interaction. The two neutral intermediate particles are of particular interest because neutral current weak interactions are something new and because the relationship between them and the electromagnetic interactions demonstrates the unifying character of the theory.

The classic experiment for determining that there are in fact weak current neutral interactions is electron-neutrino scattering, collisions of electrons and neutrinos in which the participants come away with their identities unchanged. In the past six years a good number of such investigations have been done. Al Abashian of the National Science Foundation described an experiment just finished at the Fermi National Accelerator Laboratory, in which he is collaborating with a large number of colleagues, that is a rather rare variation on this technique, the scattering of muon neutrinos off electrons. This is an event that doesn't happen often, but they chose it, Abashian says, because "it needs W-S only." That is, no assumptions from other theories. It is therefore a very good test. After scanning 80,000 pictures they come up with 46 events attributed to scattering of muon neutrinos and electrons. Throwing away some dubious ones yields a "net signal" of 36. From this, nevertheless, they deduce that the square of the sine of Weinberg's angle is 0.25, but with a sizable uncertainty.

Baltay reviewed the more usual sorts of neutrino-electron scattering. Then he considered scattering of electrons off deuterium nuclei. This measures the interference, the ratio and competition, between forces mediated by weak neutral currents and by electromagnetic effects. The same relationship is tested by studies of certain energy transitions in bismuth and thallium atoms, except that the atomic case probes the interference be-

tween forces on an electron in an atom.

Considering experiments of various kinds from all over (Novosibirsk, Hamburg, Aachen, Geneva, Oxford, Batavia, Berkeley, Stanford), Baltay comes to the conclusion that W-S theory is well supported by all of them. This is a difference from the recent past when anomalies were suspected in some, especially the bismuth atom work. He also concludes that the value of the square of the sine of the Weinberg angle is 0.23, but 0.20 or 0.21 cannot be ruled out at the present time, "and that is what supersymmetry theorists would like to know."

Supersymmetry is one way of trying to reunite all of physics into a single framework. The Grand Unification Theories are another, sometimes different, sometimes a part of supersymmetry. They want to know the value of the Weinberg angle because it affects the balance of forces and the existence of a large class of particles. It tells you how many different kinds of fermions there are. Or putting it the other way, in the words of William J. Marciano of Rockefeller University, "If you know all the fermions that exist in the world, you know $\sin^2 \Theta_w$." Fermions are particles with half-integral amounts of spin. They include neutrons, protons, electrons — and quarks. The operative question is whether new families of fermions need to be added to theory, superquarks, ultraquarks, technicolor quarks, beyond the plain quarks that already cause so much trouble. The Weinberg angle may tell.

Another thing the Weinberg angle brings to GUTS is a measure of the proton lifetime. "Almost all GUTS predict proton decay," says Marciano. Radioactive decay of the proton is a revolution in physics. The proton was always supposed to be *the* stable particle. The attempt to connect the domain of the strong interaction, where the proton mostly lives, with the Weinberg-Salam unified interaction has changed all that. Now expensive experiments are being set up to look for proton decay (see p. 405).

The lifetime of the proton depends on the value of the Weinberg angle, and Marciano sets out to calculate whether these experiments are likely to see proton decay, given the present range of values for the square of the sine of the angle. All predictions give a very long lifetime, figures upwards of 10^{30} seconds. Very little proton decay is likely to be seen in any case. If the sine squared is less than .20, the proton lifetime is too long in comparison to that of the universe for much to be seen. Above .23, and proton decay should have been seen already.

Maybe they'll see it and maybe they won't. And then maybe somebody will change something in the theory, and maybe somebody won't. The only absolutely valid theory may be the domino theory: When anybody makes waves, they're likely to shake everything. □