Nutritional Therapy at the Crossroads
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Nutritional therapy is at a crossroads.
Many of us have for years recognized the value of vitamins, minerals, and other nutritional factors in the prevention and treatment of disease. For years, however, we were the heretics and the quacks in the mind of the medical establishment.

We are now witnessing a revolution in medicine. Almost overnight, nutritional research and therapy have become acceptable — or at least are on the fast track toward acceptability.

But there are still dangers facing people, like us, who want to use vitamins and other supplements.
Nutritional therapy is at a crossroads. But it's only one of many crossroads that have existed in this field.

The Early Days
Let's step back briefly in history.
You all know the story of Dr. James Lind, the British naval physician. In the 15th and 16th centuries, the crews of one ship after another were decimated by scurvy, the extreme deficiency of vitamin C. More British sailors were lost to scurvy than to war. In 1754, in A Treatise on Scurvy, Lind documented the association between sailors eating citrus fruit — high in vitamin C — and not dying of scurvy.

Of course, Lind did not know that sailors were dying because of an extreme vitamin C deficiency. But he did recognize that citrus contained something that kept them alive and healthy.

Now, let's fast forward to the 19th and early 20th centuries. Many vitamin-deficiency diseases were originally thought to be caused by bacteria, fungi, and other "mysterious" substances — outside forces and agents, rather than something internally wrong or missing. In March, in an antique store on the Oregon coast, I came across a medical textbook on diet and disease, published in 1905 in England. According to the book, beri-beri was obviously caused by a microbe, not by a lack of vitamin B1 (thiamine). Of course, no one knew what a vitamin was at that time.

Then, in 1912, Casimir Funk, a Polish biochemist working in London, theorized that foods contained "vita amines", substances vital to life.
Nutrition had reached an important crossroads.
Quickly, other vitamin discoveries were made. In 1913, researchers discovered vitamin A. In 1922, vitamin D and vitamin E. Vitamin B2 was discovered in 1933, vitamin K in 1935, B6 in 1936, pantothenic acid in 1938, biotin in 1940, folic acid in 1944, and vitamin B12 in 1948.
To understand the significance of these discoveries, in particular in the teens and 1920s, you have to understand that diseases like scurvy, pellagra, beri-beri, and pernicious anemia were as serious and commonplace as heart disease, cancer, Alzheimer's, and AIDS are today.

But the discovery of these vitamins, and the context of their discovery, also led to the creation of a "nutritional paradigm" we've had to suffer with for some 80 years. The paradigm held that vitamins cured vitamin-deficiency diseases like scurvy and pernicious anemia. But beyond that, they were of little use in the body.

The problem was that Funk, Evans, and Bishop, and the others didn't go far enough.
If they had crystal balls, they could have realized that diseases like heart disease, cancer, and Alzheimer's are, in large part, caused by nutritional deficiencies. Not entirely, of course, because subtle genetic defects and environmental toxins also contribute to the cause of disease.
Another thing happened that retarded the recognition of vitamins. Vitamins weren't medicines. They were foods. Because most doctors were male, and dieticians were predominantly female, vitamins were relegated downward to the realm of home economics.

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In the 1930s, though, nutrition almost reached another crossroads. It was then that Albert Szent-Gyorgyi, Ph.D., isolated crystalline vitamin C. This meant researchers could do experiments with it, and they found that it could do more than just cure scurvy.

In 1934, doctors realized how dependent the heart valves and muscles were on vitamin C. In 1935, they found that vitamin C could combat polio and provide resistance to diphtheria. In 1936, doctors realized that vitamin C influenced glucose tolerance. In 1937, they found that vitamin C could control tuberculosis, and that vitamin C and the amino acid glutathione could inactivate viruses. In 1938, they recognized that vitamin C could alleviate allergies and allergy-like sensitivities.

It's amazing what we knew back then.

A similar story unfolded for vitamin E. In the 1930s, based on the findings of a Danish veterinarian, Evan Shute, M.D., found it useful for preventing spontaneous abortion in his obstetrical patients. Within a few years, he realized that it could have value in treating heart disease.

Nutrition Interruptus
But then, World War II interceded.

The good news: there's nothing like a war to advance surgical techniques and to develop new medicines. The bad news: vitamins and nutritional therapies moved to the back burner. After the war, vitamin research never regained the momentum it had in the 1930s — at least not for another 50 years.

Still, there were glimmers of hope, hints of crossroads that might have been.

The June 10, 1946, issue of Time magazine reported "Out of Canada last week came news of a startling discovery: a treatment for heart disease (the nation's No. 1 killer) which so far has succeeded against all common forms of the ailment...Large concentrated doses of vitamin E ... benefited four types of heart ailment (95% of the total): arteriosclerotic, hypertensive, rheumatic, old and new coronary heart disease. The vitamin helps a failing heart. It eliminates anginal pain."

And then the attacks came. For decades, vitamin E was mocked as a "sex vitamin" because its deficiency resulted in sterility in rats. It was eschewed by the medical establishment as a "cure in search of a disease." Evan Shute and his brother Wilfrid, a cardiologist, continued to treat patients with vitamin E. They documented their clinical findings, but finding no journal willing to publish them, Evan Shute began publishing his own medical journal, The Summary.

In the 1950s, Abram Hoffer, M.D., Ph.D., and Humphry Osmond, M.D., demonstrated that niacin — vitamin B₃ — and vitamin C could control some types of schizophrenia. They conducted the first double-blind study in psychiatry, which was published in the Menninger Bulletin, to demonstrate the effectiveness of niacin and vitamin C.

They have been largely ignored by the psychological and psychiatric establishment, which seems to prefer theories of psychogenesis — what I call the psychological religions of Freud and Jung and Rogers and hundreds of others. These theories of psychogenesis are about as effective as treating people with Judaism or Christianity, and none of them has ever been submitted to double-blind trials.

Still, niacin has been recognized for its ability to lower cholesterol — another discovery by Hoffer — although most conventional physicians still prefer to prescribe cholesterol-lowering drugs, such as lovastatin.

Orthomolecular Medicine
It's time to fast-forward to 1968 — a major crossroads for nutrition.

In the April 19, 1968, issue of Science, Linus Pauling described his concept of Orthomolecular psychiatry — a concept that has become the underpinning for all of Orthomolecular, or nutritional, medicine.

We sometimes take the greatness of Linus Pauling for granted. But let me remind you that he was award two Nobel prizes — and would probably have gotten a third, had the political terrorism of Joseph McCarthy, in the 1950s, not delayed Pauling from traveling to England. He had figured out the double-helix before Watson and Crick. But this time, political politics, not medical politics, stepped in the way.

Anyway, in the Science article, Pauling said essentially this: to achieve optimal health, a person must obtain optimal concentrations of the beneficial nutrients normally present in the body's cells. In a sense, these nutrients
help prime the cell to its maximum efficiency — and maximum lifespan.

Pauling formalized a new nutrition paradigm, one based not on deficiency states but one based on optimal intakes. In defining Orthomolecular medicine, Pauling was at least 25 years ahead of the medical community.

And it's my prediction that advances in genetic research will soon recognize that Pauling has been right all along, because researchers will realize that nutritional deficiencies are one of the factors that express the genes that cause cancer, Alzheimer's and other diseases.

But I'm getting a little ahead of myself.

Of course, we all know that the medical establishment did not respond by saying, "Gee thanks, Linus." Instead, it attacked — even more so when Pauling published his book on vitamin C and the common cold two years later.

In the 1970s, medical journals were replete with articles attacking vitamin C and vitamin E. For example, in the fourth edition of Human Nutrition and Dietetics, published in 1970, Davidson and Passmore wrote, "Vitamin E is one of those embarrassing vitamins that have been identified, isolated and synthesized by physiologists and biochemists and then handed to the medical profession with the suggestion that a use should be found for it, without any satisfactory evidence to show that human beings are ever deficient of it or even that it is a necessary nutrient for man."

But Pauling had gotten people thinking about nutrition as something more than what people shovel into their stomachs. Research on vitamins and minerals began to quietly accumulate in the 1970s.

Nineteen eighty-two was another crossroads. It was in that year that the U.S. National Academy of Sciences published Diet, Nutrition and Cancer, a report that conceded that diets high in beta-carotene and low in fat could protect against cancer, heart disease, and other degenerative diseases. Suddenly, nutrients could prevent something besides a deficiency disease.

The 1980s were a time of change, one small crossroad after another. More and more researchers focused on vitamins, minerals, and other food factors. More and more research on vitamins and minerals was funded by government agencies.

In the 1980s, momentum also grew for the free-radical theory of aging and disease, a theory originally proposed back in 1955. Free radicals are missing an electron, and nature abhors a vacuum. So as free radicals try to replace the missing electron, they steal one from healthy molecules. The effect is like a nuclear chain reaction, with free radicals spreading out like neutrons, damaging and aging cells.

But here's the catch. When you buy into the free-radical theory, you have to then buy into the "antioxidant vitamin" theory, because vitamins A, and C, and E, and selenium donate electrons to quench the free-radical cascade. So the growing evidence supporting the free-radical theory directly supports Orthomolecular medicine.

The Impact of the Personal Computer

Something else happened in the 1980s. The personal computer changed the way people used computers, and this changed the way people disseminated and learned about medical research.

The vast Medline database, developed by the National Library of Medicine, which is part of the U.S. National Institutes of Health, became directly accessible by end-users in the late 1980s.

Let me tell you what this means. Medical libraries have traditionally been oppressive places — really, obstacles to knowledge. In the "old days" thousands of medical journals crowded the shelves, discouraging a lot of people from using them by their sheer volume.

With Medline, I can access abstracts from more than 3,000 medical journals over the last 20 or so years. By typing a few keystrokes, I can discover in seconds that almost 700 articles on vitamin E were published in 1992. By cross-referencing vitamin E with Parkinson's disease, I can quickly see all the abstracts for articles on this subject. At the same time, I find out who the author was, the journal, the date of publication ... and then all I have to do is walk over, pick up the specific journal, and read it to find out the details.

The Medline computer database has made information about nutritional medicine much easier to access than ever before. Medline has made my job as a medical reporter easier, and it has made library research easier for physi-
cians. You still have to ask the computer to search for something specific, but it has turned a discouraging, laborious process into something that's about at the level of a computer game.

These days, if someone pooh-poohs vitamin E, or vitamin C, or coenzyme Q₁₀, you'll probably hear me say, "Why don't you read the literature." With Medline so easy to use, the only thing that keeps conventional doctors from learning about nutritional therapy is overbooking their patients — or laziness.

Let me tell you just a little bit about what has been in the medical journals over the past year.

- In light of the Shute's experiences, at the top of the list are the well-designed epidemiological studies on vitamin E by Meir Stampfer, M.D., and Eric Rimm, Sc.D. They were published in the May 20, 1993, New England Journal of Medicine. Stampfer set out to disprove an association between vitamin E and heart disease. As it turned out, he confirmed that supplements — not ordinary dietary levels — of vitamin E dramatically reduced the incidence of heart disease. While Stampfer stopped short of recommending that the average person take vitamin E supplements, he did acknowledge to a New York Times reporter that he takes the vitamin himself.

- If you read the medical literature, you'll find that vitamin E also increases the success rate of both balloon angioplasty and bypass surgery. The latest article on vitamin E and bypass surgery was by Coghlan in the Journal of Thoracic and Cardiovascular Surgery (Aug. 1993;106:268-74).

- We all know about the wonders of beta-carotene. The American Journal of Clinical Nutrition (Feb. 1994;59:409-12) reported a experiment in which beta-carotene protected against genetic damage caused by radiation. Other research is showing that less well-known Carotenoids, such as alpha-carotene and lycopene, may be even more potent.

- The flavonoids, or bioflavonoids, once considered part of the vitamin C complex, are also emerging as nutrients in their own right. A study of 805 Dutch men found that diets high in the flavonoids protect against heart disease and heart attacks, according to an article in Lancet (Oct. 23, 1993; 342:1007-11).

- The flavonoids, which function as antioxidants, are high in vegetables, soybeans, and tofu. Finnish and Japanese researchers reported in Lancet (Nov. 13, 1993;342:1209-10) that a high intake of flavonoids found in soy products probably reduces the risk of death from prostate cancer.

- Garlic, too, is being recognized in the medical literature for its therapeutic potential. One study published in the American Journal of Medicine (June 1993;94:632-5) reported that people taking garlic capsules benefited from an 11 percent reduction in their serum low-density lipoprotein levels.

- In Biochemical and Biophysical Research Communications (April 15, 1993;192:241-5), Karl Folkers, Ph.D., M.D., of the University of Texas at Austin, reported using coenzyme Q₁₀, a nutrient that Folkers regrets not calling a vitamin, to treat 10 cancer patients. Some of the patients have lived for 3, 9, 10, and 15 years — recovering from heart failure and showing no signs of recurring cancer.

- Here's one more piece of recent research ... on propolis, the stuff bees use to seal their hives. People either swear by propolis — or swear about it. In Cancer Research (Sept. 15, 1993;53:1482-88), researchers reported that several naturally occurring caffeic acid esters found in honey and propolis significantly inhibited colon cancer in a dose-dependent manner.

I'm never going to laugh at bee pollen again.

Insurance Companies

Nutrition research reached another crossroads last year, when Blue Cross/Blue Shield Insurance decided it would pay for heart patients to enroll in Dean Ornish's heart-disease-reversal program, based on diet instead of drugs and surgery. The $3,000 program is 10 percent of the cost of coronary artery bypass surgery.

Insurance companies have traditionally been the bane of nutritional therapies. They don't like paying for "experimental" treatments. But with today's health care crisis — a crisis triggered by the greed and marketing of hospitals, drug companies, and medical instrument companies — vitamins are the inexpensive alternative. Even more important, nutri-
Nutritional therapies focus on prevention as well as treatment — instead of high-priced, high-tech, late-stage medical care.

I predict that, once they realize how much money they can save, insurance companies may become one of our strongest allies in nutritional medicine.

But even the insurance companies are up against some tough opposition.

Coenzyme Q\textsubscript{10}

This is where things get a little sinister. For years, most of us believed that the drug companies ignored vitamins because they couldn't be patented and, thus, they cannot make a lot of money off them. In most respects, they can't be patented. But, people can acquire "use-patents" for specific nutrients.

For example, Richard Wurtman, Ph.D., of MIT, who has done some excellent research on tryptophan and serotonin and brain chemistry, has use-patent \#4,377,595 for tryptophan in the treatment of depression. He also has use-patent \#4,737,489 for choline in the treatment of neurological diseases and aging. The pharmaceutical giant Sigma Tau has been marketing a prescription version of carnitine — acetyl-L-carnitine — in Italy for several years, and the company has just completed a double-blind, crossover study of 430 Alzheimer's patients at 27 U.S. medical centers.

While I'm not sure there's a grand conspiracy at work — there may be, or there may not be — there are powerful, greedy forces at work. These use-patents are virtually worthless as long as these substances are available over the counter as nutritional supplements.

I'd like to talk a little more about coenzyme Q\textsubscript{10} in this context. CoQ\textsubscript{10} is a nutrient found almost universally in food, but is exceptional-ly high in organ meats and tuna. The body makes it, also, in a 17-step enzymatic process dependently largely on the B-complex vitamins. CoQ\textsubscript{10}'s primary function is in producing adenosine triphosphate (ATP) and stimulating the mitochondria, the energy factories of our cells. Secondary to that, it functions as an antioxidant.

Much of what we know about CoQ\textsubscript{10} goes back to Karl Folkers at the University of Texas, Austin. In 20 years of reporting nutritional medicine, I don't think I've seen anything quite like it.

CoQ\textsubscript{10} is an effective treatment for cardiomyopathy and other forms of heart failure. Cardiologists typically treat cardiomyopathy with ACE (angiotensin-converting enzyme) inhibitors, digitalis, diuretics, or beta-blockers. Cardiothoracic surgeons consider a heart transplant the ideal treatment — at $150,000 for the surgery, and $2,000 a month for lifelong medication. CoQ\textsubscript{10} will cure cardiomyopathy for $30-$40 a month. It's all superbly documented in the medical literature.

James Ryan, an investment banker now living in Bellevue, Washington, was one of the patients in Karl Folkers' first trial of CoQ\textsubscript{10} in the early 1980s. Ryan had been diagnosed with congestive heart failure and told he had 18 months to live. He's still very much alive today, 14 years later. (I talked with him on the phone in April 1994.) The only people who live that long with cardiomyopathy are people who take CoQ\textsubscript{10}, and Ryan has been taking it since that study over 10 years ago.

In 1988, Karl Folkers and the late Per Langsjoen, M.D., a cardiologist, become the "inventors" of the CoQ\textsubscript{10} treatment of AIDS. They published a paper in Biochemical and Biophysical Research Communications (June 16, 1988;153:888-96) describing the treatment of 7 AIDS patients. The results were dramatic.

The University of Texas, where they did the research, applied for a use-patent on September 21, 1987 and was granted it—#5,011,858 on April 30, 1991. In 1992, Ryan created Ryan Pharmaceuticals Inc., and bought the use-patent from the University of Texas. He, in turn, sold Ryan Pharmaceuticals and the CoQ\textsubscript{10} use-patent for the treatment of AIDS to Receptagen, a joint U.S./Canadian biotechnology company, in 1993, for about $2 million.

What's the use-patent worth? Not much, as long as CoQ\textsubscript{10} is still available as a dietary supplement. But take CoQ\textsubscript{10} off the market, and it's probably worth hundreds of millions of dollars.

Problems with Medical Journalists

Now, let me turn my attention to medical reporters. The question I've asked about CoQ\textsubscript{10} and other nutrients for years — and I'm sure the question you've asked — is why you don't read all this in the daily newspapers or news
I'll give you my opinion, an opinion based on my experience as a medical reporter and as someone who has also worked in advertising and public relations.

In most of journalism, reporters are taught to get a statement from the "other side." This ensures some semblance of balanced reporting. In politics, it may be calling a democrat when a republican makes an announcement, or getting a comment from a consumer group when a company makes some pronouncement.

If the average political reporter related what a senator or president said — without seeking a contrasting opinion — he'd be viewed as little more than a public relations hack posing as a journalist. Of course, no political reporter in his right mind would accept statements at face value from a politician.

Yet this lack of critical perspective permeates medical reporting. Most medical reporters report only what's described by "the experts" and by the public relations people who work for hospitals, pharmaceutical manufacturers, and other companies that make their profits from health care. They think medicine is a single-party system in which decisions are arrived at rationally.

Most medical reporters ignore the fact that "nonprofit" hospitals compete as fiercely for market share as profit-making businesses. They report high-tech advances as if they are miraculous benefits for humankind, rather than as new profit centers. Reporters dutifully describe the value of carpal tunnel surgery, but ignore an effective, low-cost nonsurgical treatment, like vitamin B6. And they faithfully repeat the need for more donor hearts for transplants, but remain oblivious to the medical literature on the use of CoQ10.

Medical reporting has largely been devoid of the checks and balances found in political reporting. The reason is that most medical reporters have been convinced by the establishment's experts and by their public relations people that they simply cannot understand medicine. They can, of course, understand the Byzantine politics of Washington and Ottawa. Then can understand nuclear power — or at least think they can. But reporters are convinced they're too dumb to understand medicine.

I don't believe that (although I know my limitations and absorb medicine a bite at a time). But that's what they've been told in very, very subtle ways. And when they believe it, they can be spoon fed anything. That vitamin E is a cure in search of a disease. That vitamin C has no value in heart disease or cancer. That Prozac or Zoloft are the drugs of choice in depression, instead of vitamin B6 or tryptophan. And that beta-carotene won't protect you against smoking — without asking why anything should protect you against a really disgusting, dangerous habit.

In conclusion, it's clear: nutrition is not at just one crossroads. Nutrition has crossed many roads, and it continues to. We have reached a time when the scientific evidence supporting the preventive and therapeutic use of vitamins, minerals, and other food factors is literally overwhelming. It's all in the medical literature.

In the next few years, we will finally see the acceptability of what has for years been unacceptable: nutritional therapy.