When Evidence is a Choice

A few years ago, Dr. Abram Hoffer said to me, "Perhaps you should write a paper with tongue in cheek in which you announce, 'Antibiotics Do Not Cure Infection.' Then, somewhere hidden in the paper, report that you only gave 200 units or even 20,000 units of a drug that requires doses of one million or more." As always, Dr. Hoffer set my mind in motion, and this editorial is the product.

It is a cornerstone of medical science that dose affects treatment outcome. This premise is accepted with pharmaceutical drug therapy but not with nutrient therapy. In nutritional therapy, dose is very important. That hardly seems a provocative statement. Investigators using nutrients in high doses have consistently reported success. Dr. Frederick Robert Klenner wrote, "If you want results, use adequate ascorbic acid."[1] Drs. Evan and Wilfrid Shute said the same of vitamin E, and Dr. Hoffer spoke similarly about niacin. The medical literature has ignored such "anecdotal" physician reports and nearly 80 years of controlled but not double-blind-placebo-controlled clinical studies on high-dose nutrient therapy.

Evidence-based anything is only as good as the evidence collected. You can set up any experiment to fail. One way to ensure failure is to make a meaningless test. A meaningless test is guaranteed if you make the choice to use insufficient quantities of the substance to be investigated. Randomized controlled trials (RCTs) of high vitamin doses are very rare. RCTs with low doses of nutrients are plentiful. Low doses don't work. Performing meta-analyses of many low-dose studies teaches nothing worth knowing. The first rule of building a brick wall is that you have got to have enough bricks.

Some twenty years ago, Robert F. Cathcart, MD, wrote: "As evidence of the value of nutrients, especially vitamin C... becomes more and more evident to the public, researchers produce a mass of articles on minute aspects of vitamin C. I have been consulted by many researchers who proposed bold studies of the effects of massive doses of ascorbate. Every time the university center, the ethics committee, the pharmacy committee, etc. deny permission for the use of massive doses of ascorbate and render the study almost useless. Seasoned researchers depending upon government grants do not even try to study adequate doses. All of this results in a massive accumulation of knowledge about very little which gives the impression that there is no more of real importance to be learned. This accumulation of minutia hides the great effects of ascorbate already known by some... As you read these learned papers, you will realize that they seem to be completely unaware of the uses of massive doses of ascorbate. One of the most amusing aspects of this research are the speculations and research into the toxicity and other adverse reactions of tiny doses of ascorbate when many have used for years 20 to 100 times the amounts being discussed."[2]

Dosage is set by the researcher. In terms of experimental design, it is not much harder to use 2,000 IU of vitamin E than to use 200 IU. Investigators may choose to test only low nutrient doses because of arbitrary "Safe Upper Limits." Such limits, largely theoretical, effectively keep Institutional Review Boards (IRBs) from allowing mega-dose research. I have colleagues who serve on IRBs. None of them knew that, in the entire USA, there was not even one death caused by a dietary supplement in 2008.[3] Zero reported deaths from vitamins, minerals, herbs and amino acids does not mean that they are unconditionally safe. It does, however, strongly suggest that nutrients in large doses are safer than pharmaceuticals at any dose. A good case could be made that nutrient Safe Upper Limits are themselves not evidence-based.

Investigators may choose to employ low nutrient doses because they are unaware, or choose to be unaware, of established high-dose benefits. Or, investigators may claim that they are in fact using high doses and editorialize as such in their conclusions. Li-

nus Pauling specifically warned against this in his first orthomolecular book, *Vitamin C and the Common Cold*. Forty years later, we still see new nutritional research presenting 500 mg or 1,000 mg of ascorbate as if it were a lot. With a Safe Upper Limit set at 2,000 mg, where is the surprise?

What constitutes evidence? The majority of medical interventions have never been rigorously tested. A mere 11% have been shown to be beneficial and another 23% are "likely to be beneficial."[4] Conventional chemotherapy for cancer contributes only 2.3% to five-year cancer survival in Australia and 2.1% in the USA.[5] It would be difficult to make a case that such treatment is evidence-based. Indeed, some oncologists will recommend chemotherapy for patients with a cancer against which chemotherapy is known to be ineffective.

If you think medical research may allow for some flexible truth, you should consider nutrition. For example, the US Department of Agriculture states that "the Guinea pig's vitamin C requirement is 10-15 mg per day under normal conditions and 15-25 mg per day if pregnant, lactating, or growing."[6] An adult Guinea pig weighs about one kilogram, so Guinea pigs need between 10 and 25 milligrams of vitamin C per kilogram. An average American adult human weighs (at least) 82 kg (180 lbs). That means the USDA's standards, if fairly applied to us, would set our vitamin C requirement somewhere between 820 mg and 2,000 mg vitamin C per day. The US RDA for vitamin C is 90 mg for men; 75 mg for women. For smokers, they allow an additional 35 mg/day.

Shooting beans at a charging rhinoceros is not likely to influence the outcome. If you were to give every homeless person you met on the street 25 cents, you could easily prove that money will not help poverty. The public and their doctors look to scientific researchers to test and confirm the efficacy of any nutritional therapy. As long as such research continues to use small doses of vitamins, doses that are too small to work, orthomolecular medicine will be touted as "unproven."

Things are looking up with more and more published high-dose vitamin D research. Now for the rest of the alphabet.

Andrew W. Saul, PhD
141 Main Street
Brockport, New York 14420 USA
drsaul@doctoryourself.com

References

1. Saul AW: Hidden in plain sight: the pioneering work of Frederick Robert Klenner, M.D. *J Orthomol Med,* 2007; 22: 31-38.
2. Cathcart RF: Delay by intellectualization. Retrieved from: [*http://www.orthomed.com/index2.htm*].
3. Bronstein AC, Spyker DA, Cantilena LR Jr, et al: 2008 Annual Report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 26th Annual Report. *Clin Toxicol,* 2009;47:911-1084.
4. BMJ Clinical Evidence. Retrieved from: [*http://clinicalevidence.bmj.com/ceweb/about/knowledge.jsp*].
5. Morgan G, Ward R, Barton M: The contribution of cytotoxic chemotherapy to 5-year survival in adult malignancies. *Clinical Oncol,* 2004;16:549-560.
6. US Department of Agriculture Animal Care Resource Guide, Animal Care, 12.4.2. Retrieved from: [*http://www.aphis.usda.gov/animal_welfare/downloads/manuals/dealer/feeding.pdf*].