A few years ago, a sociological study of chiropractic in Canada was undertaken, which lead to the book, *Chiropractors, Do They Help?* This book looked at the practice methods of chiropractors vs. medical physicians. In the medical field, diagnosis is the name of the game. Extensive testing is performed to arrive at a definitive diagnosis. While the physician may start treatment with a tentative diagnosis, the goal is always to continue testing until the diagnosis is achieved. Usually everyone with a particular ‘disease’ will get the same standardized treatment. In most cases, the patient is a passive recipient of a drug or surgical procedure. If the treatment is successful, the diagnosis is assumed to have been correct. If treatment is unsuccessful, further testing is required to arrive at the ‘correct’ diagnosis, or perhaps the final diagnosis will be discovered at autopsy.

By comparison, the practice methods of natural physicians are more vague. While we also wish to learn as much as possible about the specific anatomical structures which are ‘diseased’, we are interested in other nebulous areas, such as allergic tendencies, intestinal dysbiosis, poor nutritional status, inadequate aerobic conditioning, etc. In this realm, the diagnosis may be less precise. A structural problem may produce the diagnosis of ‘myofascial pain syndrome’, or a metabolic problem may be classified as ‘chronic fatigue syndrome’. While there will be common elements in the therapies applied by various practitioners to these conditions, the differences in approach to treatment may be more pronounced than their similarities. Some may view this imprecision as a weakness in our profession, however when viewed in another light it may demonstrate one of our strengths - customizing the treatment to the unique needs of the individual.

When conducting medical research, it may be essential to focus on a small group of variables. This allows us to know precisely which factors result in the observed differences between the experimental and control groups. However, if you continue this method of reasoning when considering the health of a single individual, serious errors in logic can occur.

A few soldiers returning from the Desert Storm campaign have experienced illnesses of uncertain origin. When the government investigates and is unable to find the cause, they rule that these are not service related illnesses. Searching for a single cause can obscure reality. Suppose a soldier was vaccinated against a possible nerve agent attack. In a healthy individual, this immunization will not result in serious health impairment. Perhaps another soldier was exposed to kerosene contaminated water when using portable field showers. Again, with a healthy individual, this should not result in serious injury. And perhaps a third soldier inhaled petrochemical particles released when the Kuwait oil fields were set on fire by retreating Iraqi forces. Likewise, if this individual is healthy, their body should be able to handle this toxic exposure without serious consequences. However, what if a single individual was exposed to all three? It is the additive effect of all these toxic exposures that is the probable ‘cause’ of the Desert Storm illnesses. In your career, you will treat patients who are suffering from multifactorial illnesses. Your success with these patients will depend in great measure upon your ability to recognize the uniqueness of your patient and your ability to address the many items that have contributed to their illness.

In statistical medicine, populations of individuals are categorized into two groups:

- a large majority (usually set at 95% of the population) that are within ‘normal’ range for the attribute being studied, and
- a small minority that possess attributes far enough out of limits sufficient to be called ‘abnormal’.

While statistical concepts of normality are useful when considering the health of populations, they are less valuable when considering the health of *individuals*. Should we label people with red hair *abnormal* merely because they are in the minority. Of course not. In fact, this unique variation may have implications for the
physiological strengths and weaknesses of this individual.

Dr. Roger Williams is a pioneer in nutritional research. He is the discoverer of pantothenic acid and gave folic acid its name. More vitamins have been discovered at the Clayton Foundation Biochemical Institute which he founded than any other laboratory in the world. In 1956, Dr. Williams coined the term, 'Biochemical Individuality'. We each have a unique physical appearance. Our hair, eye, and skin color, body size and weight, and the contour of our facial features all contribute to the unique appearance we present to the world. In his studies, Dr. Williams found that we also have a similar range of variability in the structure and function of our internal organs, such as our ability to secrete digestive enzymes, resistance to pathogenic organisms, or allergic and autoimmune tendencies.

It is important to stress that genetic inheritance is not an all or none phenomenon. Because of what is known as ‘multifactorial inheritance’ each gene adds or subtracts a small amount to the inherited trait. This results in an infinite continuum of variability to our genetic strengths and weaknesses. The interaction of these genetic factors with environmental factors, such as a poor diet or lack of exercise determines our health status.

Dr. Williams documented many instances of genetic variability. A 1926 study at the Rockefeller Institute looked at the range of organ weights in 645 adult male rabbits. For the heart and brain there was a two fold difference between the high and low organ weights. For the adrenal gland it was a seven fold difference. For the thyroid gland there was a 25 fold difference. And for some rabbits the spleen was 80 times heavier than for other rabbits. The liver is an organ that profoundly influences nutritional biochemistry. Anatomically, there is a five fold difference in the weight of this organ in rabbits, and a four fold difference in this organ weight in humans.

In looking at the heart contour of 71 normal boys and 57 normal girls as seen on routine chest films, researchers concluded that the range of variation of heart shape is so large that it is difficult to think of any one shape as "normal." Other researchers found that the pumping capacity of the hearts of normal young men vary from 3.16 to 10.81 liters of blood per minute.

Anatomists have documented a wide variability of the branching and diameter of blood vessels. Obviously, if this results in diminished blood circulation to an organ, this impacts its ability to carry out its biochemical functions. This difference in function will magnify with age. If two blood vessels with internal diameters of 4 mm and 3 mm are each 'corroded' with a 1 mm deposit of cholesterol, the smaller vessel will experience much greater impairment of function. We can speculate that individuals with smaller cerebral arteries may be at greater risk for senile dementia as we age.

Genetic factors influence the marked variation in gastrointestinal function we manifest. Investigation of human stomach size shows that some stomachs can hold six to eight times as much as others. And in healthy adults there is a 100-200 fold variation in the hydrochloric acid and pepsin content of gastric secretions.

Biochemical individuality may also affect our susceptibility to pain. While there are cultural influences upon our perception and reaction to pain, there are undoubtedly genetic factors at work here. Every doctor has had patients who suffer similar severity of injury, and yet one individual will be mildly impaired and the other will be incapacitated with pain.

Biochemical individuality is part of the reason individuals may need very large amounts of certain nutrients. One of the early applications of orthomolecular nutrition was in the field of psychiatry. Since they knew they were dealing with substances that were safe and nontoxic, a few maverick psychiatrists experimented with very large doses of B vitamins. Doctors Hoffer and Osmond found that 3,000 mg per day of vitamin B3 produced dramatic improvement in schizophrenia. After a 10 year follow up they concluded, "No statistical finesse is required to see that the nicotinic acid patients fared much better than the others." This is not surprising when one remembers that the signs of pellagra, caused by a deficiency of vitamin B3 are weakness, diarrhea, dermatitis, and nervous-mental disorders. Apparently some individuals, due to their unique biochemical individuality, have a greatly increased need for this particular nutrient, and when they receive less than these large amounts, they manifest symptoms of a vitamin B3 deficiency.
Many physicians find that vitamin B6 helps female patients with premenstrual symptoms. Years ago, when I was working in the hospital, I suggested to a nurse that she take 100 mg of vitamin B6 three times a day to see if it might help her symptoms. Another nurse who overheard our conversation chimed in, “Yes, it has helped me, but I found that I must take 500 mg a day in order for it to be effective.” Since this was more than I had ever recommended, I was initially taken aback. However, after a moments thought, it made perfect sense. Due to her unique biochemical individuality, she had a need for that level of supplementation.

While laboratory testing and symptom questionnaires are very helpful in determining the optimum level of nutrients for individuals, you may have to resort to a therapeutic trial in order to determine the optimum level for your patient. However, since the substances you are dealing with are so safe, this does not place your patient’s health in jeopardy. Your patient’s response will be the final arbiter of the correct dose. As Sir William Osler said, “It is more important to know what sort of patient has a disease, than to know what sort of disease a patient has.”

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