September 1998 Issue | Neal Barnard, M.D.

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Welcome to *Functional Medicine Update*™ for September, 1998. For more than 15 years, in *Preventive Medicine Update*™ and more recently in *Functional Medicine Update*™, we have discussed the emergence of a new paradigm in medicine. We have discussed modifiable disease risk factors over which an individual can exercise significant control by modifying lifestyle, environment, or patterns of behavior. This model is based on the concept of genetic uniqueness, biochemical individuality, genetic polymorphism, and human genomic diversity. Fifteen years ago, the common belief was that the range of biochemical differences in a healthy population was very narrow. Two standard deviations from the mean of a normal, healthy population, most scientists believed, would determine the needs for nutrients or other parameters that give rise to health.

In those days, in fact, health was defined as the absence of disease. That was a nice, circular syllogism, because in the absence of an ICD9 encoded pathology, a person was assumed to be healthy. When the individual's symptoms progressed and an ICD9 diagnosis could be made, services could be rendered. The system worked just fine with that basic assumption.

Since the early 1980s, however, much has changed in our understanding of the role of the human genome in determining the outcome of our health as we grow older. Human genomic diversity plays a far greater role than we formerly believed. We are far more different from one another, in fact, than we appear from our observable phenotype of 10 fingers, 10 toes, 2 eyes, etc. Even with the range of skin colors, hair textures, eye shapes, and so forth, we are fairly narrowly defined as animals within certain ranges of biochemical differences.

At the physiological level, however, as we probe deeper into enzymatic variations and other functional differences from one healthy individual to another, we find far greater differences than we previously understood. We can no longer accept the foundation upon which medicine as we have known it was built – the commonality of physiological function and biochemistry.

We are witnessing the emergence of pharmacogenetics, an area that looks at the genetic implications of drug metabolism. As individuals we differ widely from one another in the metabolic detoxification of medications. This difference is based on genetically determined hepatic detoxification abilities, as determined by various isoforms – cytochrome P450 or phase II conjugation enzymes. The activity of these detoxification abilities may vary from one individual to another by 50-fold or more.

Knowledge of pharmacogenetics helps us understand that what we previously called adverse side effects or atypical reactions were, in fact, not atypical at all. We did not know how to determine who was likely

to experience an adverse reaction to a specific substance as a consequence of his or her unique metabolic patterns and responses.

A recent article in *Nature Genetics,* titled "Human Genome Diversity – a Project?"[1] discussed the implications of the human genome diversity project (HGDP) and how it may improve our understanding of the uniqueness individuals have locked in their genes, which gives rise to increasing risks or susceptibilities to specific types of diseases, environmental sensitivities, and drug toxicity susceptibilities. According to the authors, Harding and Sajantila, molecular/genetic research has made the problem of identifying high-risk haplotypes even more complex than we previously thought, because extensive haplotype diversity exists both between as well as within populations. These authors wrote:

> "Even though it is becoming apparent that most common polymorphisms are shared by all populations globally, many populations will be found to have entirely different sets of haplotypes. This population diversity will make an understanding of the relatively recent demographic, migration and selective history of modern humans over the last 100,000 years as important to genetic epidemiologists as it is to anthropologists. Within the next decade, population-genetic methods and an understanding of the geographical and historical framework of disease variation will be required by the wider community of human geneticists."

This understanding will filter into medicine and into medical decision-making. It will affect how to conduct a physical and take a patient's history, what questions to ask, how to look at families, and what type of molecular/genetic probes to use in the laboratory to assess these characteristics.

INTERVIEW TRANSCRIPT

Clinician of the Month:
Neal Barnard, M.D.

JB: This month's *Functional Medicine Update*™ Clinician of the Month is Neal Barnard, MD, whom I have known for more than 10 years. Neal completed his training at George Washington University School of Medicine and Health Sciences. He has been a resident, chief resident, and instructor in the Department of Psychiatry at GWUSM. For the past 10 years, he has been a leader in the field of nutrition and health, focusing on understanding the role of the vegetable component of the diet in improving health and stabilizing physiological parameters. He is the author of a number of books, including *The Power of the Plate*. We will talk about his most recent book, *Foods That Fight Pain*, later in this interview.

Dr. Barnard, how did a practitioner in psychiatry make the transition into nutritional medicine?

NB: It was not exactly something I planned. In my first job out of residency, I was working at St. Vincent's Hospital, one of the big hospitals in downtown Manhattan in New York. I had quite an active consulting practice. I would go into the medical wards and consult with people with cancer or other serious illnesses who were depressed. I did a lot of pain medication management as well.

I became concerned that in medicine we do so much to diagnose, manage, and treat illness, but almost nothing to prevent it. Everyone is aware of that, but it seemed to me that we weren't really changing it. I wanted to get involved in advocacy, and that led me to appreciate the role of nutritional factors and food choices in the later course of disease. I am sorry to say that although we've made progress, if you look at the population as a whole, we are gradually losing ground. Kids are more out of shape than they've ever been in our history. We have a long way to go. That was what led me into forming the Physicians' Committee for Responsible Medicine in Washington, and trying to alert people to the power of foods for health.

JB: Would you tell us about the history of the Physicians' Committee for Responsible Medicine and your involvement in it?

NB: We got started in 1985. We began as an advocacy group, pushing for preventive medicine, especially good nutrition. This is exactly the opposite of my own background. I come from a long line of Midwest cattle ranchers, but we live and learn. We have advocated better understanding of the role of nutrition in general. We are now funding and conducting some nutrition studies ourselves. We've also advocated higher standards in research. We have objected to what we consider unethical research experiments that involve the use of children, and we've also promoted alternatives to the use of animals in research.

JB: In 1992 you published an excellent paper in the *Journal of Cardiopulmonary Rehabilitation* on the adherence and acceptability of a low-fat, vegetarian diet among patients with cardiac disease. You've written extensively in the *Journal of Preventive Medicine* on the medical costs attributable to meat consumption and dietary factors in breast cancer prevention among American women. Recently, you reviewed the dangers to human health of the use of animal waste as livestock feed. You also wrote a *Medical Hypothesis* article on dietary products and breast cancer, looking at IGF1 and estrogen.

You have extensively studied the impact of dietary fat, animal husbandry practices, and the use of substances to promote animal growth on the human endocrine system and ultimate function. Would you tell us a little bit about what you and the Physicians' Committee are doing in this area?

NB: For a long time, there has been good reason to promote plant-based diets. The article you cited from 1992 was predicated on the work of Dean Ornish, MD, which showed we can not only prevent heart disease; we can actually reverse it. To do that, however, you have to get away from animal products and adopt a vegetarian diet, quit smoking, engage in moderate physical activity, and reduce stress in your life, if that's possible. With that kind of regimen, Ornish's team managed to reverse heart disease.

My only addition to that was to study the process of acceptability if you give that program to heart patients. Many cardiologists feel it's impossible because it's too stringent. In interviews with the participants in the original research trial, we found it is no more stringent or difficult than following a typical American Heart Association diet. That is true probably because the typical AHA diet, which involves rather minor dietary changes – taking the skin off of chicken and so forth – doesn't lead to enough clinical change. It doesn't lower cholesterol levels enough and it doesn't reverse heart disease. In the long run that diet is much more frustrating than a stricter diet that initially requires more behavioral change, but over the long run is so much more rewarding. The patients like it a whole lot more.

Following that, I published a review of every heart diet. We found that if you want to help patients

change their diets, there are certain specific factors that you use. They are similar to those we have long used for other kinds of behavioral change, in alcoholism, tobacco cessation, or drug problems. Those factors involve the family and the realization that we need to be stricter rather than more lenient. By that I mean we push for what really helps the patient most, rather than make destructive compromises with our recommendations. We monitor them; work closely with them; and use support groups. If you put those things together, it becomes a rather simple package that results in extraordinary changes in a rather short period of time.

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