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Heart, Hope, Healing

How to Optimize Energy with Precision Nutrition Testing

BY KARYN SHANKS MD | AUGUST 16, 2019



Introduction to Precision Nutrition Testing

Precision nutrition testing is our gateway to choosing high quality food and supplements to support our needs for healing and living well.

We know that excellent nutrition is foundational to our energy, strength, and wellbeing and it begins with eating healthy food suited to our unique needs. High quality nutritional supplements can support what we do with food and solve urgent problems we can't correct with food alone.

Powerful Medicine

Food and nutritional supplements are powerful medicine, solving a multitude of problems by helping us make needed corrections in our biology.

How do we find out what our nutritional needs are?

This article is about precision nutrition testing and how to guide our food and supplement choices with precision.

There are No One-Size-Fits-All Solutions

Everyone is unique—our genetics, our environments, the demands we place on our bodies, our goals and preferences.

Our differences mean we all need our own solutions. Sure, there are reasonable generalizations we can make about how we might all [incorporate supplements](#) into our nutritional strategies to support energy and function, but we're all biological unique. Based on our individual lifestyles and challenges, we have vastly different nutritional needs for structure, function, repair, and support.

How do we discover what those are?

Precision Nutrition Testing

I'm a huge fan of nutrition testing for optimizing health and energy. I use precision nutrient testing for most of my clients to address problems such as fatigue and chronic complex illness, as well as for general wellness and prevention.

The Power of Nutrition Testing

Along with a thorough history, review of current problems and symptoms, and a physical exam, nutrition testing allows us to find nutritional problem areas that would have been hard to predict otherwise. Nutrition testing has the power to show us where we are internally vulnerable and what needs to be addressed before problems (or disasters) arise. Nutrition testing allows us to do this with precision.

Is Nutrition Testing Necessary?

But is nutrition testing absolutely necessary? Many people lack the financial means or health insurance that covers the cost of the best nutritional tests. This is the reality I have to face with my clients every day. We do the best we can. While nutrition lab testing is ideal, we can also put together a powerful individualized nutrition strategy without them.

Eleven Useful Nutrition Tests Available from Commercial Labs

These are tests that can be routinely done with a simple written order from your physician, taken to your local commercial lab and are covered by most insurances. While they're not as comprehensive as I'd like them to be, they provide lots of useful information and I work with these often.

1. CBC (complete blood count):

This is a good general assessment of bone marrow function that indicates adequacy of nutrients involved in the creation of blood cells—like iron, folate, and B12.

2. CMP (comprehensive metabolic profile):

Provides a nice overview of electrolyte levels, kidney and liver function, glucose, protein, and albumen (a specialized protein).

3. Homocysteine:

Homocysteine levels are excellent markers for functional folate, B12, and B6 vitamin status. And elevated homocysteine indicates a functional deficiency in folate, vitamin B12 or vitamin B6, warranting further investigation and treatment.

4. Hemoglobin A1C:

This is also called *glycosylated hemoglobin*—this measures the amount of glucose that has glommed onto the hemoglobin protein inside red blood cells. This is a very useful test by indicating your average blood sugar over the previous three months (the average life span of red blood cells).

5. Iron and Ferritin:

Measures of available iron and iron storage.

6. MMA (methyl malonic acid):

A functional indicator of B12 status and differentiates between B12 and folate deficiencies

when the homocysteine is elevated.

7. Cystathionine level:

A functional indicator of B6 status.

8. 25-hydroxy vitamin D:

A good marker of vitamin D status.

9. Blood levels for vitamins, minerals, antioxidants:

These are only helpful when levels are very low or high. They tell us nothing about nutrient *function* within the body, which is driven by an individual's unique needs and genetics. A "normal" level of any given nutrient is based on statistical averages and may well be completely inadequate for your unique body and its needs.

10. Complete urine analysis:

This provides information about hydration level, ketosis, and several indicators of urinary tract health.

11. MTHFR genetic testing:

MTHFR testing allows us to assess for a common genetic problem with folic acid metabolism. If you possess particular versions of this gene, you may have trouble converting folate and folic acid from your food and supplements into their activated (methylated) forms.

Functional Nutrition Testing

These are available from labs that specialize in functional nutrition testing. My favorite functional lab is *Genova Diagnostics Laboratory* located in Asheville, North Carolina. They provide test kits that are easy to use and can be taken to your local lab for blood draw, processing, and shipping.

There are a growing number of functional labs throughout the country, a testament to the rising need and interest in this incredibly useful form of testing.

1. Organic Acid Testing:

Provides comprehensive information about micronutrient need, the microbiome, digestion and absorption, energy metabolism, neurotransmitters, and detoxification.

2. Amino Acid Panel:

This gives us information about dietary protein adequacy, digestion and absorption, and micronutrient adequacy.

3. Fatty Acids Analysis:

This allows us to see the fatty acid distribution present in the red blood cell membrane—an excellent functional analysis of how fats are utilized within our tissues, and what our fatty acid needs are.

4. Oxidative Stress Markers:

These are key indicators for the potentially destructive process of unprotected oxidation and need for antioxidants.

5. RBC Minerals and Heavy Metals:

A reliable way to assess recent exposures (past 120 days) to minerals and heavy metals like mercury and lead.

6. Gut Microbiota Testing:

The relationship between the gut microbiome profile and health is substantial—both richness, diversity, and presence of potential pathogens. This assessment can help guide nutritional interventions to optimize the gut microbiome.

Comprehensive Functional Nutrition Assessment

I use a test panel from Genova Diagnostics called **NutrEval**, which combines all of the above functional nutrition assessments (except for microbiota testing) into one convenient test kit, using a simple urine and blood collection after an overnight fast.

NutrEval is one of the most comprehensive assessments of micronutrients, macronutrients, antioxidants (including glutathione), and physiological processes (energy metabolism, detoxification, microbiome, digestion, absorption, neurotransmitters) that demonstrate nutrient need available on the market today. This is an ideal test for evaluating the multitude of problems associated with fatigue and energy deficit.

How to Optimize Energy Using the Results of Nutrient Testing

Having test results allows us to fine tune how we strategize food plans and nutritional supplementation to the unique and ever-changing needs of each individual. Here are some examples of common test findings in my medical practice and their supplement solutions.

Of course, the specific strategies used to make corrections will depend on the unique situation of you or your clients.

Elevated homocysteine level:

This indicates a functional deficiency of folic acid, vitamins B12 or B6. I decide which one(s) are the problem by also looking at the MMA and cysathionine levels (see above). Along with food recommendations, I also advise supplementation with biologically available forms of the nutrients—methyl folate, methyl-B12, or 5-pyridoxal phosphate (B6).

Low B12 and/or elevated MMA:

This indicates vitamin B12 deficiency. B12 is easily replaced with a sublingual form of methyl-B12. I generally use 5 mg once daily, completely dissolved under the tongue (for absorption across the lining of the mouth due to uncertain gut absorption).

Low hemoglobin (from CBC) and/or low iron or ferritin:

This indicated iron deficiency. I recommend high iron-containing foods, but because iron tends to be poorly absorbed this way, supplemental iron is often needed: iron chelated to gluconate or glycinate. A typical dose is ferrous gluconate or glycinate 15-35 mg taken with food, along with vitamin C 1000 mg to improve absorption. The specific dose should be determined by degree of need. It is also critical to discover the underlying cause of the iron loss, typically caused by blood loss.

High fasting or post-meal glucose or elevated hemoglobin A1C:

This indicates a problem with insulin sensitivity, glucose utilization, or inflammation. The strategy depends highly on a food plan that reduces carbohydrates (especially the simple or refined varieties), and optimizes protein and healthy fats. We may also opt to use supplements to improve insulin-glucose regulation in the body such as berberines, chromium, glucomannan, fish oil, probiotics, and vitamin D.

Low 25-hydroxy vitamin D level:

Note that the typical reference range used by most labs goes much lower than what we know to be optimal vitamin D levels. While more research is needed in this area, a level of 50 to 70 ng/ml is probably optimal. Your dose will be the amount that helps you achieve that range. In my practice this is typically 2000-10,000 IU taken daily.

Organic acid testing abnormalities:

This is a huge topic with many considerations. These results will point us to where in our physiologies there may be problems. Food and supplement recommendations depend on the pattern of results. It is best to use a Functional Medicine-trained practitioner with experience using this type of testing to help you.

Low levels of plasma amino acids:

This often indicates inadequacies in protein intake as well as proper digestion and absorption. I frequently help clients optimize protein intake through their diets and with high quality protein supplements. We also work to improve digestion using the support of digestive enzymes and betaine hydrochloric acid.

Low levels of omega-3 fats, EPA, DHA, and Omega-6 GLA:

This deficiency pattern is common and helps to promote inflammation and problems with cell membrane function—especially within the brain and nervous system (contributing to mood disorders, cognitive dysfunction, and sleep disorders). Along with an increase in consumption of wild-caught fish and pasture-raised meat, I recommend high quality fish oils (1000-2000 mg EPA plus DHA daily) and GLA (200-400 mg daily) from borage seed.

Where to Find Help with Your Personalized Food and Energy Nutrition Supplement Plan

Most of our health problems have nutrition and lifestyle solutions.

Conventional Medicine Lost Sight of Nutrition as a Solution

As critical a role nutrition plays in our health, wellbeing, and resilience, state-of-the-art conventional healthcare practitioners know surprisingly little about it. Somewhere along the line mainstream medicine became all about treating emergencies and acute problems, focusing on technological and pharmacological ways to address these. It all but lost sight of

the powerful basics like nutrition and lifestyle.

Most of us are seeking care for chronic problems or to optimize our health and wellbeing. This requires thoughtful consideration of nutrition.

Nutrition Supports Our Systems Biology

For this reason, it is important that you choose as your healthcare partner someone who understands human systems biology, its interconnection with the environment, lifestyle, mind, and spirit. Find someone who is tuned into sustainable ways to support your biology for optimal function and disease prevention through food, nutrition, and lifestyle. They should be very well trained in nutritional biochemistry, able to help you solve the nutritional puzzles that lead to the common problems many of us struggle with.

Functional Medicine

Look for a physician, nurse practitioner, or physician's assistant who has done extensive training in Functional Medicine, ideally through the [*Institute for Functional Medicine*](#), which provide in-depth nutritional biochemistry training through its certification program.

As public support and enthusiasm for Functional Medicine has increased, there has been an influx of training programs, many of them more geared for paraprofessionals, offering protocolled approaches to health problems. Be wary of this. This is one of the major flaws in conventional medicine approaches to health problems and I see it recapitulated in alternative or integrative approaches trying to attract clients by offering simplified approaches. We are each unique and sometimes we have to get our hands dirty with the complexity and uncertainty of our bodies and our lives.

Functional Nutrition

Other excellent partners are nutritionists and dietitians trained in Functional Nutrition. Conventionally trained dietitians often do not know how to assess or recommend therapeutic nutrition plans and much of their information is sorely out dated. It is not uncommon to have mainstream nutrition professionals recommending obsolete high-carb, low fat, low cholesterol diets and often know nothing about micronutrients.

Look carefully at your healthcare practitioner's credentials and experience. Ask questions about how they treat the specific conditions you are interested in. Remember, this is *your* team—you must vet them.

Resources

[Institute for Functional Medicine](#)

[Integrative and Functional Nutrition Academy](#)

Kara Fitzgerald. [Methylation-What's All the Fuss?](#) 2016.

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Karyn Shanks, MD, is a physician who lives and practices in Iowa City. Her work is inspired by the science of Functional Medicine, body-mind principles, and wisdom gleaned from the transformational journeys of thousands of clients over her twenty-five-year career. Her work honors each individual and the power of their stories, their inner wisdom, and innate healing potential. She believes that the bones of healing are in what we do for ourselves. She is the author of Liftoff, a manual of energy recovery and healing through essential self-care practices.

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