

KUMC DN Clinical Nutrition Seminar 2011

Glossary of Integrative & Functional Nutrition Terms

Ayurvedic: a system of traditional medicine from India that aims for the knowledge for a long life. Ayurveda promotes a balance of the three bodily humors or doshas called vata, pita and kapha. It is generally practiced as complementary to conventional medicine. Ayurveda emphasizes good health and prevention and treatment of illness through lifestyle practices (such as massage, meditation, yoga, and dietary changes) and the use of herbal remedies.

Biomarkers: a biological marker, usually a substance or behavioral or phenotypic indicator of a person's biological or metabolic state. (1)

Biotransformation: chemical alteration of a compound (e.g., drug, food or toxin) occurring within the body, as by catalytic action of enzyme activity. Often referring to the conversion of toxic substances into non-toxic metabolites (and subsequent excretion), which primarily takes place in the liver and intestinal mucosal wall. (1)

Core Clinical Imbalances: imbalances that arise from malfunctions within the body as a result of multiple influencing factors including genetics, diet, toxicants, pathogens, allergens, stress, trauma. They include:

- Cellular Integrity
- Digestion
- Detoxification
- Energy Metabolism
- Inflammation/Oxidative Stress
- Neuro-Endocrine-Immune
- Nutritional Status (1,2,3)

Detoxification: a practice to help increase excretion of toxins, and can include saunas, exercise, targeted supplements, massages, and dietary inclusions and restrictions. Limited research has evaluated specific protocols. (4) A complete detoxification program focuses on three targets: restore gut functioning; reduce toxins like heavy metals and organic chemicals stored in fat tissue, and assisting the body's natural detoxification systems. (5)

Dietary supplements: nutritional and botanical products that supplement the diet, containing either alone, or in combination, one of the following components: vitamins, minerals, herbs, amino acids, or any concentrates or extracts of these substances. Additional substances can include herbs or other botanicals, enzymes, probiotics, glandulars, fatty acids, etc. They can be extracts or concentrates, and may be found in many forms such as tablets, capsules, softgels, gelcaps, liquids, powders and topical creams. (6) When working with licensed practitioners, prescription intramuscular and/or intravenous solutions can also be used.(e.g., Intramuscular B12 injections, Intravenous vitamin C). (7)

Evidence-based/practice guidelines: determined by scientific evidence. Practice guidelines are systematically developed statements to assist practitioner and patient decisions about appropriate health care. (8,9,10)

Eicosanoid series: signaling molecules derived from either omega-3 (ω -3) or omega-6 (ω -6) essential fatty acids (EFAs). They act in inflammation, immunity, or as messengers in the central nervous system. (11,12,13)

Fasting: a detoxification practice that is based on food elimination for a designated period of time and may include the use of dietary supplements and/or medical foods. Supervised fasting programs may have benefits on liver, cognitive function, and immune function.(5)

Functional laboratory testing: tests that are used to evaluate impaired physiological processes or functions. These tests may include but are not limited to : organic acids, RBC minerals, amino acids, oxidative stress and antioxidant status (8-hydroxy-2deoxyguanosine, lipid peroxides), stool analysis (intestinal bacteria, parasites, elastase 1), genomic biomarkers (SNPs), inflammatory markers (hsCRP, lactoferrin), urine toxic elements, etc. (1,14)

Functional food: The American Dietetic Association defines functional foods as those that "move beyond necessity to provide additional health benefits that may reduce disease risk and/or promote optimal health. Functional foods include conventional foods, modified foods (fortified, enriched or enhanced), medical foods and foods for special dietary uses."(15)

Functional medicine: is a science-based field of health care that seeks to uncover the root causes of disease that is grounded in the following principles:

- **Biochemical individuality** describes the importance of individual variations in metabolic function that derive from genetic and environmental differences among individuals.
- **Patient-centered** medicine emphasizes "patient care" rather than "disease care," following Sir William Osler's admonition that *"It is more important to know what patient has the disease than to know what disease the patient has."*
- **Dynamic balance** of internal and external factors.
- **Web-like interconnections** of physiological factors – an abundance of research now supports the view that the human body functions as an orchestrated network of interconnected systems, rather than individual systems functioning autonomously and without affect on each other. For example, immunological dysfunctions impacting cardiovascular disease, dietary imbalances affecting hormonal disturbances, and environmental exposures precipitating neurologic conditions such as Parkinson's disease.
- **Health as a positive vitality** – not merely the absence of disease.
- **Promotion of organ reserve** as the means to enhance health span." (1, 3)

Genomics: Genomics refers to the study of the entire genome of an organism whereas genetics refers to the study of a particular gene. (16,17) **Note:** gene-environment interactions are only a part of genomics.

Genetic testing: the use of genetic information to identify genes associated with various diseases and metabolic impairments. Genetic tests can be done to confirm a suspected

diagnosis, to predict the possibility of future illness, to detect the presence of a carrier state in unaffected individuals (whose children may be at risk), and to predict response to therapy. (17)
Note: Genomic testing is to test the whole genome; the testing currently used looks only at specific genes.

Holistic: practices that focuses on interventions encompassing the “whole” individual with consideration of the person’s, emotions, beliefs, values, diet, environment, relationships, and lifestyle as well as his/her physical symptoms. (18,19)

Integrative medicine: patient centered, healing oriented medicine that embraces conventional and complementary therapies. Integrative medicine reaffirms the importance of the therapeutic relationship, a focus on the whole person and lifestyle, a renewed attention to healing and a willingness to use all appropriate therapeutic approaches whether they originate in conventional or alternative medicine. (20,21)

Integrative and functional medicine: Sharing a systems biology (22,23) approach to health care, both types of medicine encompass patient centered, healing oriented medicine that embraces conventional and complementary therapies. They represent a broader paradigm of medicine than the current dominant biomedical model. They were driven initially by consumer demand and are now increasingly accepted by health care providers and institutions. There are other terms describing this paradigm: personalized medicine, anti-aging, nutritional medicine, biological medicine, and a growing list of others. (24)

Lifestyle: a person's way of life encompassing diet, physical activity, beliefs, relationships, food security, lifetime toxic exposure, environment, and social attitudes. There is increasing evidence in public health statistics that lifestyle is strongly associated with the risk of chronic diseases. (24)

Long latency nutritional insufficiencies: a theory that postulates long-term nutrient inadequacies or micronutrient deficiencies can accelerate molecular aging, including DNA damage, and mitochondrial decay, which may contribute to the development of major chronic diseases. (25,26)

Medical Symptom Questionnaire (MSQ): a non-validated questionnaire used to assess and monitor a patient’s level of symptoms. (27)

Methylation: denotes the addition of a methyl group (CH₃). In biological systems, methylation is a critical process of metabolism. It is also involved in gene expression, as well as modification of heavy metals, and RNA metabolism. (14, 22)

Metabolic pathways and networks: each cell of any living organism involves biochemical metabolic pathways that are a series of chemical reactions. Essential and non-essential nutrients are indispensable for the function of these pathways and networks. The study of these pathways can produce focused and effective intervention strategies in restoring optimum cellular function. (28,14)

Nutritional genomics: The study of how foods affect the expression of genetic information in an individual and how an individual's genetic makeup metabolizes and responds to nutrients and bioactives. (29) Accessed January 28, 2011.

Nutritional Systems Biology: the concept of describing the complete molecular physiological processes linking genetics, environment and nutrition. Nutritional systems biology aims to exploit complete datasets on transcriptome, proteome and metabolome levels, targeting a new concept of biomarker in disease prevention. (17, 30,31)

Organic Acids: products of metabolism that can sensitively identify nutrient deficiencies and core clinical imbalances that lead to metabolic roadblocks. Traditionally they were used for detection of neonatal inborn errors of metabolism, including mitochondrial disorders (e.g., a deficiency of vitamin B12 produces high levels of a urinary organic acid called methylmalonic acid). Other organic acids can show deficiencies of vitamin B1, vitamin B6, folic acid, and many other metabolic networks. (14,31,33)

Phthalates: industrial chemicals that are added to plastics to impart flexibility and resilience. Health effects from phthalates at low environmental doses or at biomonitored levels from low environmental exposures are unknown. Dietary sources have been considered as the major exposure route. (34)

Psychoneuroendocrinology (PNI): psychological, neurological, endocrine and immunological relationships and networks in the pathophysiology of health and disease. (35)

Resilience: able to 'spring back' into shape after being deformed. To be emotionally resilient means to be able to spring back emotionally and physically after suffering through difficult and stressful times in one's life. (24)

Science-based: based on peer-reviewed science and evidence based research. (see Evidence-based/practice guidelines) (8,9,10,21,24)

Single Nucleotide Polymorphism (SNPs): Single nucleotide polymorphisms, or SNPs (pronounced "snips"), are DNA sequence variations that occur when a single nucleotide (A,T,C,or G) in the genome sequence is altered. SNPs are actively being investigated to find ways to personalize drug and dietary recommendations. (36)

Systems: complex biological metabolic systems of the body continually are invoked to establish and maintain homeostasis and function. (23) The process of healing is defined as the process of recovery, repair, and reintegration resulting from all the systems of the whole body progressing toward wellness and maintenance of well-being. (21,37) Systems approach is the basis of the paradigms of systems biology medicine used in clinical practice without "claiming specific or direct casual links to disease, because they target inherent adaptogenic responses and assume that redundancy and multiple pathways are an inherent characteristic of every system." (24)

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