

A Reprint From the *Textbook of Functional Medicine*

WEB-LIKE INTERCONNECTIONS OF PHYSIOLOGICAL FACTORS

Alex Vasquez, DC, ND

Editor's Note: This article is reprinted with permission from The Textbook of Functional Medicine (copyright © 2005 Institute for Functional Medicine; all rights reserved). The following is the second portion of the textbook's Chapter 10, "Web-like Interconnections: The Complex Human Organism." The first half of Chapter 10 ran in IMCJ's last issue of February-March 2006, p. 40-42. For more information or to purchase the textbook, contact The Institute for Functional Medicine, PO Box 1697, Gig Harbor, WA 98335; 1-800-228-0622; or visit its website, www.functionalmedicine.org.

Introduction

Understanding the scientific basis and clinical applications of functional medicine and a "whole patient" approach to health care requires that clinicians fully appreciate the interconnectedness of organ system func-

tion with biochemical and physiological processes. Simplistic models of health and disease developed decades ago may no longer be accurate or clinically useful insofar as they fail to reflect the more recently discovered complex and multifaceted interrelationships. (Figure 10.2 uses the functional medicine matrix to depict some of this complexity.) Numerous mechanisms mediate these interrelationships, including, but not limited to, those that can be described as biochemical, hormonal, neurological, immunological, piezoelectric, and physical or mechanical. Ultimately, we are forced to dissolve the artificial intellectual boundaries we have created between organ systems and expand our appreciation of individual molecules, cellular messengers, and the physiologic mechanisms that mediate intercellular communication and coordinate interorgan function.

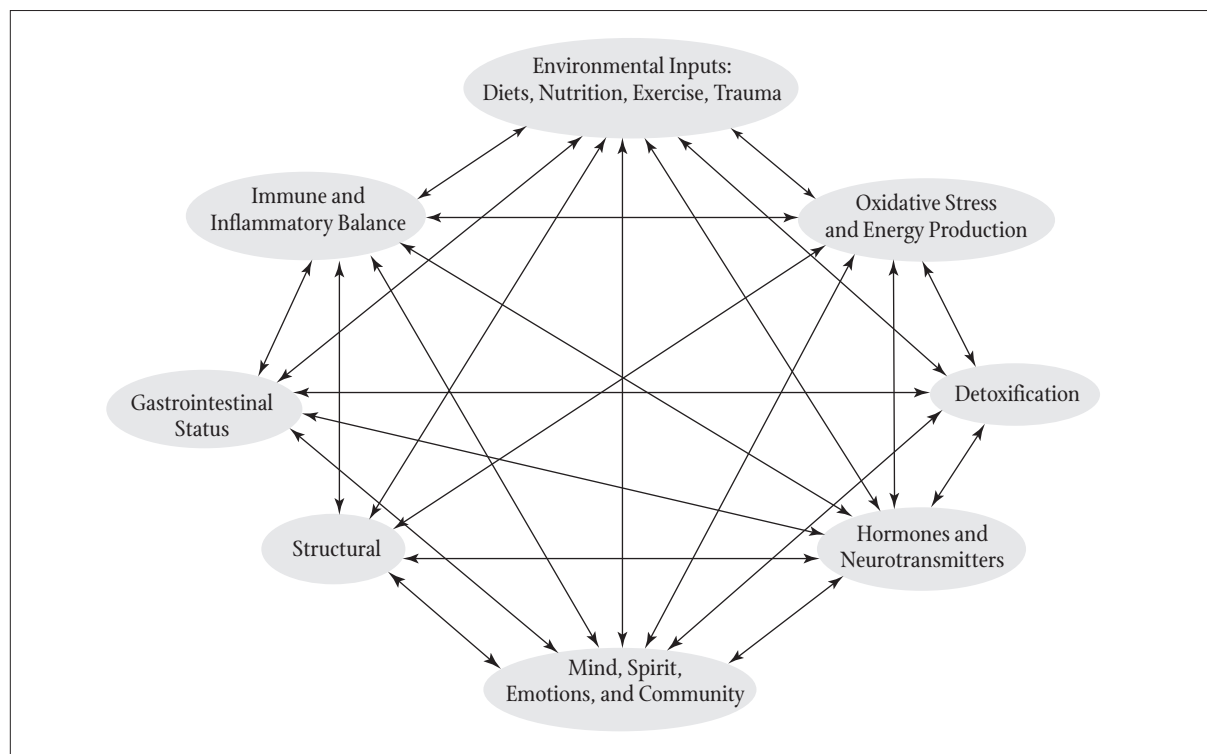


FIGURE 10.2
FUNCTIONAL MEDICINE MATRIX

Web-like Interconnections of the Functional Medicine Matrix

The following discussion provides some specific examples of this profound interconnectedness that is a foundational principle of functional medicine. We will survey current research literature documenting the interconnected nature of some key organ systems and disease processes. With these examples, clinicians will better appreciate how the gastrointestinal, immune, cardiac, neurologic, and other systems interact with and depend upon each other for optimal physiologic function. Likewise, clinicians will understand more completely how essentially any dysfunction or lesion in the body can have clinically significant implications and distant adverse effects. From this perspective, individualized clinical interventions can be designed and employed to deliver better health outcomes.

Gastrointestinal Tract and Liver

While the liver and the gastrointestinal tract share an obvious anatomic connection via the portal circulation, the functional clinical implications of this connection are often not fully appreciated. Not only is the gastrointestinal tract the recipient of massive amounts of “external information” in the form of nutrients, toxicants, and allergens that weigh in at more than 1,538 pounds (700 kilograms) per year, but the gastrointestinal tract is also a reservoir for the several hundred species and subspecies of yeast, bacteria, and other microbes with the potential to modify hepatic function (e.g., detoxification) and overall health (e.g., immune response) by numerous mechanisms and with positive effects or negative consequences.

The various organs and tissues of the gastrointestinal tract perform the complex functions of digestion, absorption, exclusion, excretion, immunologic defense, antigen sampling, and temporary storage of food residues and other substances that have been ingested. The mucosa is selectively permeable and allows the absorption of nutrients and other molecules via transcellular and paracellular routes. Compromise of mucosal integrity due to injury from antigens, infection, systemic inflammation, or toxicants such as ethanol or nonsteroidal anti-inflammatory drugs, increases absorption of potentially harmful substances that are normally excluded when mucosal integrity has not been breached. Materials that are harmless when rejected by the selectivity of the intestinal mucosa can, when inappropriately absorbed, serve as a source of inflammatory and immunogenic stimuli for the embedded macrophages in the liver (Kupffer cells) and also for the systemic immune system and the brain’s embedded astrocytes and microglia. This phenomenon is clearly demonstrated by the neurological complications and focal white-matter lesions seen in the brains of patients sensitized to the dietary antigen gluten; in this scenario, it

appears that dietary antigens cross a damaged mucosal lining and escape filtration by the liver to produce a systemic inflammatory response that manifests clinically as neurologic disease.^{23,24} It seems likely that other antigens are also capable of inducing a systemic inflammatory response in susceptible individuals.

The two most voluminous substances in the gastrointestinal tract are food antigens and microbial metabolites and debris, notably lipopolysaccharides (LPS, endotoxin) from gram-negative bacteria. These foreign substances normally excluded by an intact mucosa can serve as mediators of physiologic disruption (hence the importance of their exclusion), and indeed this is what has been observed in experimental and clinical data. For example, in patients with autism, increases in inflammatory mediator production are seen following exposure of monocytes to dietary allergens and LPS.²⁵ We also note that LPS is a potent inhibitor of numerous cytochrome P450 biotransformation pathways, thus leading to impaired drug metabolism as demonstrated in recent clinical trials.^{26,27} The implications of these data are profound and correlate closely with phenomena observed in clinical practice, namely that patients with irritable bowel syndrome—a condition causatively associated with both food intolerance and bacterial overgrowth of the small bowel—commonly report environmental sensitivity and medication intolerance. One plausible answer to the conundrum of the chronically unwell patient—typified by the patient with chronic fatigue or environmental illness—now becomes clear: overgrowth of the small bowel with LPS-producing bacteria leads directly to the gastrointestinal symptoms of gas and bloating, with immune system activation,²⁸ and also reduces hepatic clearance of metabolites, toxicants, and xenobiotics to which the patient eventually becomes sensitized (immunologically and/or non-immunologically). This explains, at least in part, the rationale for and impressive clinical efficacy associated with the implementation of clinical therapeutics that simultaneously improve intestinal microecology, improve mucosal integrity, and provide biochemical/nutritional support for the processes of detoxification.^{29,30}

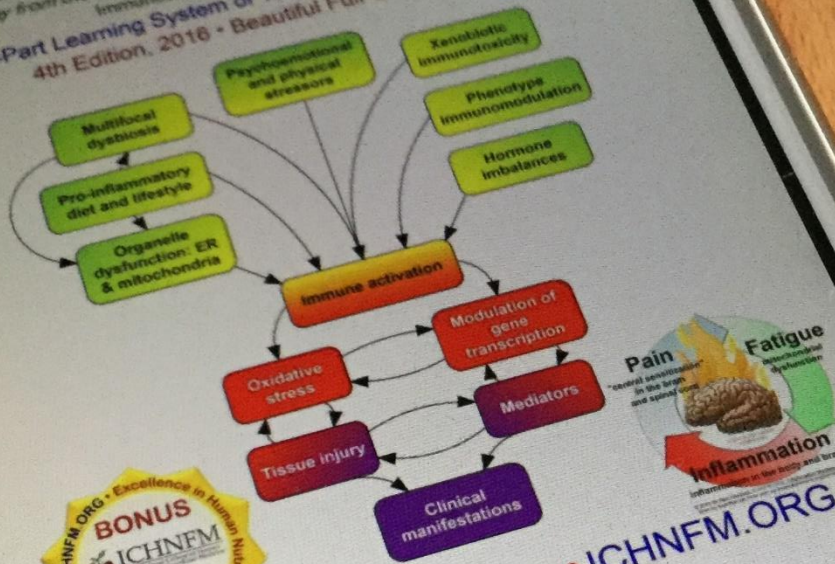
Gastrointestinal Tract and Immune System

Any discussion of the role of the gastrointestinal tract in relation to the immune system must include a view of the gut that is inclusive of its contents of food antigens, intraluminal microbes, and their debris and metabolic products. When the gut is simply pictured as a passive semi-sterile tube with food entering one end and feces exiting the other, then it would appear an unlikely locus of immunogenic stimulation and neurogenic inflammation that can have systemic health consequences.³⁰⁻³⁵ Conversely, appreciation of the manifold quantitative and qualitative variables that can exist hidden from both the clinician’s external view and the endoscopist’s internal

TEXTBOOK OF CLINICAL NUTRITION AND FUNCTIONAL MEDICINE, VOL. 2

INFLAMMATION MASTERY & FUNCTIONAL INFLAMMOLOGY, VOLUME 2
Clinical Applications from the Colorful and Definitive Guide toward Health and Vitality
and away from the Boredom, Risk, Costs, and Inefficacy of Endless Analgesia,
Immunosuppression, and Polypharmacy

3-Part Learning System of Text, Illustrations, and Video
4th Edition, 2016 • Beautiful Full-Color Printing



DR. ALEX VASQUEZ • ICHNFM.ORG



camera enables practitioners to have a more realistic perspective on the influence that gastrointestinal function, dietary antigens, and microflora can have on extra-gastrointestinal processes and overall health.^{36,37}

The combination of a hypersensitive/dysregulated immune system and exposure to dietary antigens sets the stage for the clinical phenomenon commonly described as “food allergy.” Diverse in frequency, duration, severity, and quality, these immune-mediated adverse reactions to foods can precipitate or exacerbate a wide range of clinical manifestations including rhinoconjunctivitis, chronic sinusitis, dermatitis, epilepsy, migraine, hypertension, joint inflammation, and mental depression.^{38,39} The immunopathogenesis generally includes multiple mechanisms and is not limited to mediation via IgE antibodies and histamine. Indeed, the pathophysiology of “food allergy” is commonly seen with numerous (not singular) aberrations in physiologic function, including responses mediated by or resultant from antibodies (including IgE, IgG, and/or possibly IgA classes of antibodies), cytokine-mediated responses (e.g., TNF- α), increased intestinal permeability, occult gastrointestinal inflammation, and alterations in gastrointestinal microflora.⁴⁰ To be more complete, our conceptualization of “food allergy” must also include awareness of enterometabolic disorders (i.e., the inter-connections between food, intestinal flora, and systemic health⁴¹) as well as contributions from neurogenic inflammation (i.e., the translation of immunogenic inflammation to a neurologic signal with systemic proinflammatory effects⁴²).

Aberrations in gastrointestinal microflora can provoke a cascade of physiologic responses that may lead to widespread physiologic imbalances and result in a variety of clinical manifestations that may or may not conform to a recognized pattern or named disease even though the patient is highly symptomatic.⁴³ Furthermore, we can conclude from recent literature that the concept of molecular mimicry is now well established and that it provides us a model with which to apprehend the induction of immune dysfunction (especially autoimmunity) by microorganisms with immunogenic epitopes that are structurally similar to those in human tissues.⁴⁴ Thus, the link between “dysbiotic” gastrointestinal flora such as *Klebsiella pneumoniae* and systemic immune-mediated inflammatory disorders such as ankylosing spondylitis and chronic uveitis has a biological and scientific basis. Individualized assessment and treatment of such dysbiotic loci, whether in the gut, genitourinary tract, or nasopharynx, are likewise supported by current research and offer the hope of cure rather than an endless and additive cycle of anti-inflammatory and anti-rheumatic drugs. For example, evidence now shows that the systemic autoimmune disease Wegener’s granulomatosis may be triggered and perpetuated by molecular mimicry with occult respiratory infections

caused by *Staphylococcus aureus*, and that eradication of the infection can result in clinical improvement and reduced need for ongoing anti-rheumatic medication.⁴⁵⁻⁴⁷ In addition to molecular mimicry, microbes (i.e., occult infections and environmental exposures) can also alter immune regulation by serving as a source of superantigens, which cause widespread and multifaceted immune dysfunction with resultant proinflammatory effects contributing to the exacerbation of allergy and autoimmune disease.⁴⁸

Immune System and Cardiovascular System

The role of subclinical inflammation in the etio-pathogenesis of atherosclerosis is no longer an issue of conjecture, as it has become a well-established aspect of the disease process. Even slight elevations in high-sensitivity C-reactive protein are associated with a significantly increased risk for cardiovascular morbidity and mortality in otherwise “apparently healthy” individuals.⁴⁹ With the increasing irrefutability of these data, pharmaceutical companies have scrambled to develop and sell drugs that can reduce this low-level inflammation, while physicians with a broader perspective have directed their energies toward intensifying their patient-centered search for the source(s) of inflammation in each individual patient. For example, subclinical inflammation can result from dietary indiscretion,⁵⁰ disturbed sleep,⁵¹ and vitamin D deficiency;⁵² in any of these situations, addressing the underlying causes of the inflammation with multicomponent nutritional/lifestyle interventions may deliver more effective health improvement than can the long-term use of inflammation-suppressing medications.⁵³⁻⁵⁵

Gastrointestinal Tract, Liver, and Neurologic Systems

The last several years have witnessed an increased appreciation for the influence that the gut and liver have on the brain, and advancements in functional assessments are now documenting analytically what was at one point known only clinically—that the status of the gut and liver have profound effects on the functioning of the brain. Evidence supporting the existence of a clinically important gut-brain interconnection has been published consistently over many decades and in major journals. Today, among the most poignant examples are Parkinson’s disease and the autistic spectrum disorders. Indeed, the strength of evidence supporting the hepatogastrointestinal link with these “neurologic” conditions is so strong that it could be logically argued that any treatment of these conditions that does not address the hepatic and enteric aspects of these diseases is therapeutically incomplete.

Although Parkinson’s disease was once considered idiopathic, we now recognize it as being a multifaceted

disorder associated with defective mitochondrial function, impaired xenobiotic detoxification, and occupational and/or recreational exposure to toxicants, particularly pesticides. These associations align to create a new model for the illness based on exposure to neuro-toxicants such as pesticides,⁵⁶ which are ineffectively detoxified⁵⁷ and then accumulate in the brain,⁵⁸ inducing mitochondrial dysfunction⁵⁹ and oxidative stress,⁶⁰ and leading to the death of dopaminergic neurons. Therefore, from the perspective of both prevention and treatment, the clinical approach to Parkinson's disease must include pesticide avoidance and optimization of detoxification to prevent the neuronal accumulation of neurotoxic mitochondrial poisons. The plan must also include optimization of nutritional status, antioxidant capacity, and mitochondrial function.⁶¹

The view that autism is a behavioral problem unfortunately continues to permeate present-day medical treatment of this condition, and many pediatricians and psychiatrists still advise only behavioral therapy and medicalization with psychoactive pharmaceuticals, particularly selective serotonin reuptake inhibitors (SSRIs).^{62,63} While these interventions produce modest improvements over those seen in control groups, neither intervention remotely addresses the complex underlying physiology nor offers the possibility of cure, and SSRI use in children is highly controversial due to the association with increased incidence of suicide.⁶⁴ We now know that autism is a multifaceted disorder associated with gastrointestinal inflammation, nutritional deficiencies,⁶⁵ multiple food allergies and intolerances,⁶⁶ impairments in liver detoxification and resultant accumulation of xenobiotics, the majority of which have neurotoxic and/or immunotoxic effects.⁶⁷ Thus, autism is not a behavioral disorder *per se*; rather, it is a gastrointestinal-allergic-immunological-toxicant-nutritional-environmental disorder, and the behavioral/cognitive abnormalities are symptoms of the underlying complex and interconnected pathophysiology.

Musculoskeletal System, Neurologic System, Immune System

The adverse effects of a dysregulated immune system upon the musculoskeletal system are well known for their contributions to autoimmune diseases such as rheumatoid arthritis. In this classic scenario, the immune system is the effector, and periarticular structures, synovium, and joint surfaces are the targets of inflammatory and destructive processes that result in joint destruction and pain that affect the musculoskeletal and neurologic systems, respectively. This model holds that the direction of events flows from the immune system (autoimmunity) to the musculoskeletal system (target site) to the nervous system (perception of pain). This popular model must be updated in light of current research.

The phenomena of neurogenic inflammation and neuronal plasticity demonstrate the active, effector functions of the sensory nervous system and exemplify the extent to which the Cartesian model of the sensory nervous system (i.e., as exclusively afferent and passively receptive) is no longer valid.^{68,69} Much of the musculoskeletal inflammation seen in clinical practice appears due, in large part, to inflammation that originates from and is mediated by the sensory nervous system through the release of proinflammatory mediators from sensory nerves in periarticular tissues.^{70,71} Furthermore, evidence is accumulating that neurogenic inflammation can result from a heterogeneous group of diverse stimuli, including allergens, environmental chemicals, and pain distant from the site of arthritis.^{72,73} Likewise, evidence that intentional relaxation⁷⁴ as well as acupuncture⁷⁵ can modulate inflammatory pathophysiology indicates that psychosocial variables and nonbiochemical therapeutics are important clinical considerations for patients with inflammatory diseases.

Evidence also suggests that musculoskeletal therapeutics such as spinal manipulation may influence immune responsiveness. Brennan et al.^{76,77} showed that chiropractic spinal manipulation resulted in an acute increase in phagocytic capacity of polymorphonuclear neutrophils, and that this result was seen only following authentic (versus sham) manipulation, and that the effect was proportional to the increase in serum levels of substance P, a multifunctional molecule that acts as a neurotransmitter as well as a proinflammatory messenger. While the clinical implications of these data are yet to be clarified, they clearly demonstrate that the immune system is sensitive to mechanical stimuli.

Beyond Biochemistry and Neurophysiology: Piezoelectricity as a Mechanism for Intersystem Connectedness

Piezoelectricity, the continuum between mechanical stress and bioelectric conduction, is a well-established aspect of organic matter, affecting all vertebrates and, therefore, humans. Notably, the nervous system in general and the spinal cord in particular demonstrate an intrinsic dipole moment that is demonstrable across species of vertebrates.^{78,79} In 1977, Lipinski from Tufts University School of Medicine⁸⁰ summarized the current research of the day and speculated on the effects of spinal manipulation, yoga, and acupuncture as mediated via the body's inherent pyroelectric and piezoelectric properties. Lipinski's literature review (particularly including the work of Bassett⁸¹) suggests that "piezo-electricity present in many biological systems may theoretically control cell nutrition, local pH, enzyme activation and inhibition, orientation of intra- and extra-cellular macromolecules, migratory and proliferative activity of cells, contractility of permeability of cell mem-

numerical clinical applications

- 1) Food & Basic Nutrition
- 2) Infections: Dysbiosis / Viral
- 3) Nutritional Immunomodulation
- 4) Dysmetabolism, Mitochondrial Dysfunction, ERS/UPR, mTOR
- 5) Special Considerations: Sleep, Sociopsychology, Stress, Surgery
- 6) Endocrine Imbalances
- 7) Xenobiotic Immunotoxicity

Volume 2: Chapter 5—Clinical Applications of the Functional Inflammation Protocol

- 1) Hypertension
- 2) Diabetes Mellitus
- 3) Migraine & Headaches
- 4) Fibromyalgia
- 5) Allergic Inflammation
- 6) Rheumatoid Arthritis
- 7) Psoriasis and Psoriatic Arthritis
- 8) Systemic Lupus Erythematosus
- 9) Scleroderma & Systemic Sclerosis
- 10) Vasculitic Diseases
- 11) Spondyloarthropathies & Reactive Arthritis
- 12) Sjögren Syndrome/Disease
- 13) Raynaud's Syndrome/Phenomenon/Disorder



branes, and energy transfer.” With these concepts and possibilities considered, we can construct a conceptual bridge linking mechanical stimuli such as massage, manipulation, exercise, and yoga, and (neuro)electrical stimuli such as acupuncture, meditation, prayer and intentionality, to plausible biochemical/physiological effects that translate into observed clinical benefits. This integrated model helps to explain the effects of “energetic” therapeutics such as moxibustion, acupuncture, and yoga that may be mediated by nonbiochemical physiologic mechanisms. Furthermore, this model also helps us to understand hitherto unexplainable phenomena such as the well-reported sensitivity that some people display to changes in the weather and the positioning of their bodies in relation to electromagnetic fields of the planet, electrical equipment, and power lines. Piezoelectricity may also be the physiologic conduit that transmits the effects of “distance healing,” prayer, and intentionality.⁸²⁻⁸⁴

Summary

Human physiology is complex and treatment plans must be multifaceted to reflect this complexity. Cells, tissues, and organ systems work in concert—not in isolation—and therefore effective intervention generally requires improvement in numerous organ systems. As the artificial boundaries between organ systems dissolve, a unifying theme emerges, namely that the attainment, preservation, and re-establishment of health must be all-encompassing. Programs and paradigms related to the treatment of disease and the attainment of optimal health must reflect appreciation of environmental, physical, mental/emotional, nutritional, biochemical, hormonal, immunologic, neurologic, and gastrointestinal components of our existence that coalesce without boundaries to make the human body and our experience of life itself. Thus, new frontiers in health care will be reached not solely when new discoveries occur, but also when the integration of these discoveries into a cohesive, multifaceted, unified healthcare model prepares the way for more accurate understanding and more effective interventions. Healthcare providers of diverse backgrounds (e.g., ND, DC, MD, DO, RD, RN, LAc, and others) can and must work together to offer scientifically-based, multifactorial interventions that are adapted to the specific needs of individual patients.

REFERENCES

23. Kieslich M, Errazuriz G, Posselt HG, et al. Brain white-matter lesions in celiac disease: a prospective study of 75 diet-treated patients. *Pediatrics*. 2001 Aug;108(2):E21.
24. Burk K, Bosch S, Muller CA, et al. Sporadic cerebellar ataxia associated with gluten sensitivity. *Brain*. 2001;124(Pt 5):1013-19.
25. Jyonouchi H, Sun S, Itokazu N. Innate immunity associated with inflammatory responses and cytokine production against common dietary proteins in patients with autism spectrum disorder. *Neuropsychobiology*. 2002;46:76-84.
26. Shedlofsky SI, Israel BC, Tosheva R, Blouin RA. Endotoxin depresses hepatic cytochrome P450-mediated drug metabolism in women. *Br J Clin Pharmacol*. 1997;43(6):627-32.
27. Shedlofsky SI, Israel BC, McClain CJ, et al. Endotoxin administration to humans inhibits hepatic cytochrome P450-mediated drug metabolism. *J Clin Invest*. 1994;94:2209-14.
28. Lin HC. Small intestinal bacterial overgrowth: a framework for understanding irritable bowel syndrome. *JAMA*. 2004;292(7):852-58.
29. Bland JS, Bralley JA. Nutritional upregulation of hepatic detoxification enzymes. *J Appl Nutr* 1992;44:2-15.
30. Bland JS, Barrager E, Reedy RG, Bland K. A Medical Food-Supplemented Detoxification Program in the Management of Chronic Health Problems. *Altern Ther Health Med*. 1995;1:62-71.
31. Meggs WJ. Neurogenic switching: a hypothesis for a mechanism for shifting the site of inflammation in allergy and chemical sensitivity. *Environ Health Perspect*. 1995;103(1):54-56.
32. Richardson JD, Vasko MR. Cellular mechanisms of neurogenic inflammation. *J Pharmacol Exp Ther*. 2002;302(3):839-45.
33. Kirkwood KS, Bunnett NW, Maa J, et al. Deletion of neutral endopeptidase exacerbates intestinal inflammation induced by Clostridium difficile toxin A. *Am J Physiol Gastrointest Liver Physiol*. 2001;281(2):G544-51.
34. Bascom R, Meggs WJ, Frampton M, et al. Neurogenic inflammation: with additional discussion of central and perceptual integration of nonneurogenic inflammation. *Environ Health Perspect*. 1997;Mar;105 Suppl 2:531-37.
35. Gouze-Decaris E, Philippe L, Minn A, et al. Neurophysiological basis for neurogenic-mediated articular cartilage anabolism alteration. *Am J Physiol Regul Integr Comp Physiol*. 2001;280(1):R115-22.
36. Inman RD. Antigens, the gastrointestinal tract, and arthritis. *Rheum Dis Clin North Am*. 1991;17(2):309-21.
37. Galland L. Intestinal protozoan infection is a common unsuspected cause of chronic illness. *J Advancement Med*. 1989;2: 539-552.
38. Vasquez A. *Integrative Orthopedics: Concepts, Algorithms, and Therapeutics. The art of creating wellness while effectively managing acute and chronic musculoskeletal disorders*. Updated Edition (August 2004). Houston; Natural Health Consulting Corp. Well-BodyBook.com Pages 404-418.
39. Gaby AR. The role of hidden food allergy/intolerance in chronic disease. *Altern Med Rev*. 1998;3(2):90-100.
40. Vasquez A. *Integrative Orthopedics: Concepts, Algorithms, and Therapeutics. The art of creating wellness while effectively managing acute and chronic musculoskeletal disorders*. Updated Edition (August 2004). Houston; Natural Health Consulting Corp. Well-BodyBook.com Pages 404-418.
41. Hunter JO. Food allergy—or enterometabolic disorder? *Lancet*. 1991;338(8765):495-96.
42. Meggs WJ. Neurogenic switching: a hypothesis for a mechanism for shifting the site of inflammation in allergy and chemical sensitivity. *Environ Health Perspect*. 1995;103(1):54-56.
43. Galland L. Intestinal protozoan infection is a common unsuspected cause of chronic illness. *J Advancement Med*. 1989;2:539-552.
44. Albert LJ, Inman RD. Molecular mimicry and autoimmunity. *N Engl J Med*. 1999;341(27):2068-74.
45. Popa ER, Stegeman CA, Kallenberg CG, Tervaert JW. Staphylococcus aureus and Wegener's granulomatosis. *Arthritis Res*. 2002;4(2):77-79.
46. George J, Levy Y, Kallenberg CG, Shoenfeld Y. Infections and Wegener's granulomatosis—a cause and effect relationship? *QM*. 1997;90(5):367-73.
47. Van Putten JW, van Haren EH, Lammers JW. Association between Wegener's granulomatosis and Staphylococcus aureus infection? *Eur Respir J*. 1996;9(9):1955-57.
48. Hemalatha V, Srikanth P, Mallika M. Superantigens—Concepts, clinical disease and therapy. *Indian J Med Microbiol* 2004;22:204-211.
49. Koenig W, Pepys MB. C-reactive protein risk prediction: low specificity, high sensitivity. *Ann Intern Med*. 2002;136(7):550-52.
50. Liu S, Manson JE, Buring JE, et al. Relation between a diet with a high glycemic load and plasma concentrations of high-sensitivity C-reactive protein in middle-aged women. *Am J Clin Nutr*. 2002;75(3):492-98.
51. Yokoe T, Minoguchi K, Matsuo H, et al. Elevated levels of C-reactive protein and interleukin-6 in patients with obstructive sleep apnea syndrome are decreased by nasal continuous positive airway pressure. *Circulation*. 2003;107:1129-34.
52. Vasquez A, Manso G, Cannell J. The Clinical Importance of Vitamin D (Cholecalciferol): A Paradigm Shift with Implications for All Healthcare Providers. *Altern Ther Health Med*. 2004; 10: 28-37.
53. Knuops KT, de Groot LC, Kromhout D, et al. Mediterranean diet, lifestyle factors, and 10-year mortality in elderly European men and women: the HALE project. *JAMA*. 2004;292(12):1433-39.
54. Topol EJ. Failing the public health—rofecoxib, Merck, and the FDA. *N Engl J Med*. 2004;351:1707-9.

Mitochondrial Medicine Arrives to Prime Time in Clinical Care: Nutritional Biochemistry and Mitochondrial Hyperpermeability (“Leaky Mitochondria”) Meet Disease Pathogenesis and Clinical Interventions

Alex Vasquez, DC, ND, DO, FACN

Alex Vasquez, DC, ND, DO, FACN, is director of programs at the International College of Human Nutrition and Functional Medicine in Barcelona, Spain and online at ICHNFM.org. (*Altern Ther Health Med.* 2014;20(suppl 1):26-30.)

Corresponding author: Alex Vasquez, DC, ND, DO, FACN
E-mail address: avasquez@ichnfm.org

MITOCHONDRIAL MEDICINE ARRIVES TO GENERAL PRACTICE AND ROUTINE PATIENT CARE

Mitochondrial disorders were once relegated to “orphan” status as topics for small paragraphs in pathology textbooks and the hospital-based practices of subspecialists. With the increasing appreciation of the high frequency and ease of treatment of mitochondrial dysfunction, this common cause and consequence of many conditions seen in both primary and specialty care deserves the attention of all practicing clinicians.

We all know that mitochondria are the intracellular organelles responsible for the production of the currency of cellular energy in the form of the molecule adenosine triphosphate (ATP); by this time, contemporary clinicians should be developing an awareness of the other roles that mitochondria play in (patho)physiology and clinical practice. Beyond being simple organelles that make ATP, mitochondria

play clinical inflammatory disease such disorders stated during Nutrition at September mitochondria

mitochondrial dysfunction to clinical diseases must be

considered on a routine basis in clinical practice. *Mitochondrial medicine* is no longer an orphan topic, nor is it a superfluous consideration relegated to boutique practices. Mitochondrial medicine is ready for prime time—now—both in the general practice of primary care as well as in specialty and subspecialty medicine. What I describe here as the “new” mitochondrial medicine is the application of assessments and treatments to routine clinical practice primarily for the treatment of secondary/acquired forms of mitochondrial impairment that contribute to common conditions such as fatigue, depression, fibromyalgia, diabetes mellitus, hypertension, neuropsychiatric and neurodegenerative conditions, and other inflammatory and dysmetabolic conditions such as allergy and autoimmunity.

BEYOND BIOCHEMISTRY

Structure and function are of course intimately related and must be appreciated before clinical implications can be understood and interventions thereafter applied with practical precision. The 4 main structures and spaces of the mitochondria are (1) intramitochondrial matrix—the innermost/interior aspect of the mitochondria containing various proteins, enzymes of the Krebs cycle, and mitochondrial DNA; (2) inner membrane—the largely impermeable lipid-rich convoluted/invaginated membrane that envelopes and defines the matrix and which is the structural home of many enzymes, transport systems, and important structures such as cardiolipin and the electron

ce—contains kinase and comparatively (n) and—like h active and that need to to appreciate the highest importance; just as we have come to appreciate the

PDF articles: Full-text archives of the author’s articles are available:

- <https://ichnfm.academia.edu/AlexVasquez>
- <https://www.inflammationmastery.com/reprints>
- <https://www.ichnfm.org/public>

Orthomolecular Medicine, Catalytic Creativity, and the Psychosocial Ecosystem

Transitioning From One Year to the Next

Various cultures since time immemorial have marked and celebrated the winter solstice with celebrations, meals with friends and family, and time away from work; transitioning from one calendar year to the next has given people pause and a moment to reflect on the events that happened in the past year and what might be anticipated in the next. Reflection with anticipation along with the realization that the future is somewhat malleable inclines people to imagine how the future might be shaped by the exertion of some modicum of creativity and effort. Any realistic conception of how we might improve the near future must segue from our recent past; we must have an awareness of what is going on around us as we look toward the future to visualize ourselves living within it and also acting upon it. What is going on in the world and how might I act upon that trend and flow in order to improve both its transition and its destination? What should each of us do on a personal level to (in the words of Mahatma Gandhi) be, embody, and materialize the change(s) that we want to see in the world?

Salutation and Introduction From the Journal's New Editor

Over the past few years I have reflected on several occasions how much I enjoy editing, and so I was correspondingly surprised and pleased when I was offered the opportunity to be the next Editor for the *Journal of Orthomolecular Medicine*. I began studying nutrition and orthomolecular concepts in my teen years and more diligently as I entered graduate school in the early 1990s. I read the "nutrition" book that I read in high school, *Your Nerves* (1975) by Dr. Jeffrey Bland, which this was followed immediately by the book *The Brain of Jonathan V. Wurtman* of whom would later be at the University of Massachusetts Lowell. By the mid-1990s, Jeffrey Bland PhD had introduced me to orthomolecular medicine, which I pursued for personal and professional reasons. By this time my own personal library contained several hundred books, mostly dedicated to nutrition and health with another large section on philosophy and psychology. In 1994, I joined the Review Staff of the *Journal*

of Naturopathic Medicine, and I started publishing nutrition articles, perhaps most of which might be seen as practice in preparation of an important letter published in 1996 by the American College of Rheumatology in their journal *Arthritis and Rheumatism*. Since those early years and during the course of three doctorate degrees and teaching thousands of students/attendees internationally, I have reviewed for⁴ and published in⁵ a wide range of refereed journals in addition to publishing commissioned books, chapters, and independent publications and videos. Being an author and reviewer for many different publications—along with my experiences teaching internationally, treating patients in various settings, designing and directing academic programs, and producing educational videos—has given me a wide range of experiences and insights that I hope to bring to the benefit of the *Journal of Orthomolecular Medicine*.

We Must Work Together if We Are Going to Succeed

I have to start this conversation with a few hopes, assumptions, and beliefs, namely that you (the reader) and I (the author and new Editor) have a few things in common. On a professional level, by virtue of the fact that you are reading this essay, I will assume that you are interested or actively engaged in healthcare, medicine, nutrition, research and/or public health. I might also imagine that some smaller percentage of our new and established readers are perhaps less inclined toward the mechanisms and more drawn to the *Journal of Orthomolecular Medicine* for its potential humanistic insights and social contributions; we can reasonably expect that competent healthcare providers (and those who practice late nutrition) are basic to the health of our society. If you admit a counterargument to my assertions, they are more to the point, my goal is to share with you, regardless of personal position, the common ground we share some common ground. The following:

PDF articles: Full-text archives of the author's articles are available per the following:

- <https://ichnfm.academia.edu/AlexVasquez>
- <https://www.inflammationmastery.com/reprints>
- <https://www.ichnfm.org/public>

• We each want to receive and deliver the best healthcare possible: If we have a problem, then we each want the best possible solution. Efficiency of time or money is not the top priority when we are seeking solutions



6801 Biotics Research Drive
Rosenberg, TX 77471
Toll Free: 1-800-231-5777
www.bioticsresearch.com

CME

CONTINUING MEDICAL EDUCATION

THE CLINICAL IMPORTANCE OF VITAMIN D (CHOLECALCIFEROL): A PARADIGM SHIFT WITH IMPLICATIONS FOR ALL HEALTHCARE PROVIDERS

Alex Vasquez, DC, ND, Gilbert Manso, MD, John Cannell, MD

Alex Vasquez, DC, ND is a licensed naturopathic physician in Washington and Oregon, and licensed chiropractic doctor in Texas, where he maintains a private practice and is a member of the Research Team at Biotics Research Corporation. He is a former Adjunct Professor of Orthopedics and Rheumatology for the Naturopathic Medicine Program at Bastyr University. **Gilbert Manso, MD**, is a medical doctor practicing integrative medicine in Houston, Texas. In prac-

...tice for more than 35 years, he is Board Certified in Family Practice and is Associate Professor of Family Medicine at University of Texas Medical School in Houston. **John Cannell, MD**, is a medical physician practicing in Atascadero, California, and is president of the Vitamin D Council (Cholecalciferol-Council.com), a non-profit, tax-exempt organization working to promote awareness of the manifold adverse effects of vitamin D deficiency.

InnoVision Communications is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians. The learner should study the article and its figures or tables, if any, then complete the self-evaluation at the end of the activity. The activity and self-evaluation are expected to take a maximum of 2 hours.

OBJECTIVES

Upon completion of this article, participants should be able to do the following:

1. Appreciate and identify the manifold clinical presentations and consequences of vitamin D deficiency
2. Identify patient groups that are predisposed to vitamin D hypersensitivity
3. Know how to implement proper doses and with

While we are all familiar with the important role of vitamin D in calcium absorption and bone metabolism, many doctors and patients are not aware of the recent research on vitamin D and the widening range of therapeutic applications available for cholecalciferol, which can be classified as both a vitamin and a pro-hormone. Additionally, we also now realize that the Food and Nutrition Board's previously defined Upper Limit (UL) for safe intake at 2,000 IU/day was set far too low and that the physiologic requirement for vitamin D in adults may be as high as 5,000 IU/day, which is less than half of the >10,000 IU that can be produced endogenously with full-body sun exposure.^{1,2} With the discovery of vitamin D receptors in tissues other than the gut and bone—especially the brain, breast, prostate, and lymphocytes—and the recent research suggesting

PDF articles: Full-text archives of the author's articles are available:

- <https://ichnfm.academia.edu/AlexVasquez>
- <https://www.inflammationmastery.com/reprints>
- <https://www.ichnfm.org/public>
- See new article posted here <https://www.ichnfm.org/d>

Reprint requests: InnoVision Communications, (760) 633-3910 or (866) 828-2966, [innerdoorway.com](http://www.innerdoorway.com). Or visit our online CME store at www.ichnfm.org and selecting the Continuing Education section.

55. Orme-Johnson DW, Herron RE. An innovative approach to reducing medical care utilization and expenditures. *Am J Manag Care*. 1997;3(1):135-44.
56. Ritz B, Yu F. Parkinson's disease mortality and pesticide exposure in California 1984-1994. *Int J Epidemiol*. 2000;29(2):323-9.
57. Menegon A, Board PG, Blackburn AC, et al. Parkinson's disease, pesticides, and glutathione transferase polymorphisms. *Lancet*. 1998;352(9137):1344-46.
58. Kamel F, Hoppin JA. Related Articles, Association of pesticide exposure with neurologic dysfunction and disease. *Environ Health Perspect*. 2004;112(9):950-58.
59. Parker WD Jr, Swerdlow RH. Mitochondrial dysfunction in idiopathic Parkinson disease. *Am J Hum Genet*. 1998;62(4):758-62.
60. Davey GP, Peuchen S, Clark JB. Energy thresholds in brain mitochondria. Potential involvement in neurodegeneration. *J Biol Chem*. 1998;273(21):12753-57.
61. Kidd PM. Parkinson's disease as multifactorial oxidative neurodegeneration: implications for integrative management. *Altern Med Rev*. 2000;5(6):502-29.
62. Bryson SE, Rogers SJ, Fombonne E. Autism spectrum disorders: early detection, intervention, education, and psychopharmacological management. *Can J Psychiatry*. 2003;48(8):506-16.
63. Couper JJ, Sampson AJ. Children with autism deserve evidence-based intervention. *Med J Aust*. 2003;178(9):424-25.
64. Kondro W. UK bans, Health Canada warns about antidepressants. *CMAJ*. 2004;171:23.
65. Wakefield AJ, Murch SH, Anthony A, et al. Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children. *Lancet*. 1998;351(9103):637-41.
66. White JF. Intestinal pathophysiology in autism. *Exp Biol Med* (Maywood). 2003;228(6):639-49.
67. Edelson SB, Cantor DS. Autism: xenobiotic influences. *Toxicol Ind Health*. 1998;14:553-63.
68. Richardson JD, Vasko MR. Cellular mechanisms of neurogenic inflammation. *J Pharmacol Exp Ther*. 2002;302(3):839-45.
69. Boal RW, Gillette RG. Central neuronal plasticity, low back pain and spinal manipulative therapy. *J Manipulative Physiol Ther*. 2004;27(5):314-26.
70. Gouze-Decaris E, Philippe L, Minn A, et al. Neurophysiological basis for neurogenic-mediated articular cartilage anabolism alteration. *Am J Physiol Regul Integr Comp Physiol*. 2001;280(1):R115-22.
71. Lee JC, Salonen DC, Inman RD. Unilateral hemochromatosis arthropathy on a neurogenic basis. *J Rheumatol*. 1997;24(12):2476-78.
72. Bascom R, Meggs WJ, Frampton M, et al. Neurogenic inflammation: with additional discussion of central and perceptual integration of nonneurogenic inflammation. *Environ Health Perspect*. 1997;105 Suppl 2:531-37.
73. Meggs WJ. Neurogenic switching: a hypothesis for a mechanism for shifting the site of inflammation in allergy and chemical sensitivity. *Environ Health Perspect*. 1995;103(1):54-56.
74. Lutgendorf S, Logan H, Kirchner HL, et al. Effects of relaxation and stress on the capsaicin-induced local inflammatory response. *Psychosom Med*. 2000;62(4):524-34.
75. Joos S, Brinkhaus B, Maluche C, et al. Acupuncture and moxibustion in the treatment of active Crohn's disease: a randomized controlled study. *Digestion*. 2004;69(3):131-39.
76. Brennan PC, Kokjohn K, Kaltinger CJ, et al. Enhanced phagocytic cell respiratory burst induced by spinal manipulation: potential role of substance P. *J Manipulative Physiol Ther*. 1991;14(7):399-408.
77. Brennan PC, Triano JJ, McGregor M, et al. Enhanced neutrophil respiratory burst as a biological marker for manipulation forces: duration of the effect and association with substance P and tumor necrosis factor. *J Manipulative Physiol Ther*. 1992;15(2):83-89.
78. Athenstaedt H. Pyroelectric and piezoelectric properties of vertebrates. *Ann NY Acad Sci*. 1974;238:68-94.
79. Athenstaedt H. "Functional polarity" of the spinal cord caused by its longitudinal electric dipole moment. *Am J Physiol*. 1984;247(3 Pt 2):R482-87.
80. Lipinski B. Biological significance of piezoelectricity in relation to acupuncture, Hatha Yoga, osteopathic medicine and action of air ions. *Med Hypotheses*. 1977;3(1):9-12.
81. Bassett CA. Biologic significance of piezoelectricity. *Calcif Tissue Res*. 1968;1(4):252-72.
82. Byrd RC. Positive therapeutic effects of intercessory prayer in a coronary care unit population. *South Med J*. 1988;81(7):826-29.
83. Matthews DA, Marlowe SM, MacNutt FS. Effects of intercessory prayer on patients with rheumatoid arthritis. *South Med J*. 2000;93(12):1177-86.
84. Astin JA, Harkness E, Ernst E. The efficacy of "distant healing": a systematic review of randomized trials. *Ann Intern Med*. 2000;132(11):903-10.



Integrative Medicine: A Clinician's Journal is for the busy clinician who is looking for accurate, evidence-based information on how to merge the best of conventional and integrative medical practices for the optimum treatment of their patients. Featuring advanced, integrative protocols for the treatment of many chronic conditions. This bimonthly journal is published 6 times per year.

Joseph Pizzorno, ND
Editor
www.imjournal.com

INNOVISION

COMMUNICATIONS

Innovision Communications thanks these companies for supporting our 2005 ACCME-accredited continuing medical education through generous unrestricted educational grants.

Spectrum RAINBOW
THE TASTE OF GOODNESS™ LIGHT™

INTEGRATIVE THERAPEUTICS INC.
NF Formulas • PhytoPharmics • Tyler Encapsulations • Vitamine Formulas • Integrative Genomics

PhysioLogics®



The most respected research journal in the field, *Alternative Therapies in Health and Medicine* is now in its 11th year of publication. This bimonthly journal (6 times per year) publishes the latest in peer-reviewed research reports, research reviews and summaries, and CME articles, plus thought-provoking editorials and essays from recognized leaders in the field of integrative medicine.

Mark Hyman, MD
Editor in Chief
www.alternative-therapies.com

To view these CME activities, please visit cecmeonline.com

To subscribe to our journals, please visit www.innovisioncom.com

InnoVision Communications • 2995 Wilderness Place, Suite 205 • Boulder, CO, 80301 • Ph: 303.440.7402

Additional articles and book excerpts have been amended to the previous publication in order to provide context and orientation to the author's main works.

BOOK EXCERPTS, CHAPTERS:

- <https://www.amazon.com/Dr-Alex-Vasquez/e/B00AT5764Y>
- <https://www.ichnfm.org/im4>
- <https://www.ichnfm.org/volume-1-essential-knowledge>
- <https://www.ichnfm.org/volume-2-inflammatory-disorders>

PDF articles: Full-text archives of the author's articles are available per the following:

- <https://ichnfm.academia.edu/AlexVasquez> (main archive/repository)
- https://www.researchgate.net/profile/Alex_Vasquez2 (archive/repository)
- <https://www.inflammationmastery.com/reprints> (cloud-based PDF folder)
- <https://www.ichnfm.org/public>

VIDEOS: Access to public videos is available per the following:

- Main archive: <https://vimeo.com/drvasquez>
- See also: <https://www.ichnfm.org/public>
- And to a lesser extent: <https://www.youtube.com/channel/UCPR2pgwFw9L2GUnBgupQ5Aw>

WEBSITES:

- Main: <https://www.inflammationmastery.com/>
 - Antiviral: <https://www.inflammationmastery.com/antiviral>
 - Fibromyalgia: <https://www.inflammationmastery.com/fibromyalgia>
 - Migraine: <https://www.inflammationmastery.com/migraine>
 - Complete protocol: <https://www.inflammationmastery.com/book-nutrition-functional-medicine>
- Main: <https://www.ichnfm.org/> This is actually a very rich website with many blogs and videos
 - <https://www.ichnfm.org/antiviral2019> and the long series starting with <https://www.ichnfm.org/antiviral>, <https://www.ichnfm.org/antiviral2>, <https://www.ichnfm.org/antiviral3>, <https://www.ichnfm.org/antiviral4>, and continuing...
 - <https://www.ichnfm.org/braininflammation>

SOCIAL MEDIA UPDATES: Note that updates are made on a regular basis to the following social medial pages, with some overlap but also some topic-specific specialization, which is self-explanatory by the titles of these pages:

- Dr Alex Vasquez 's Inflammation Mastery <https://www.facebook.com/InflammationMastery>
- Migraine Headaches, Hypothyroidism, and Fibromyalgia <https://www.facebook.com/MigraineHypothyroidismFibromyalgia>
- International Journal of Human Nutrition and Functional Medicine <https://www.facebook.com/IJHNFMM>
- International College of Human Nutrition and Functional Medicine (higher quality and academic news) <https://www.facebook.com/IntCollHumNutrFunctMed>
- Revista Latinoamericana de Nutrición Humana y Medicina Funcional <https://www.facebook.com/RevLatinoNutrHumMedFunc>
- Antiviral Nutrition <https://www.facebook.com/AntiviralNutrition>
- NaturopathicRheumatology <https://www.facebook.com/NaturopathicRheumatology>

As of 2019 and for the foreseeable future, the most current versions of all major patient management and clinical treatment protocols are published in *Inflammation Mastery, 4th Edition* as a single volume of 1,182 pages available in full-color print at discounted pricing directly from ICHNFM from <https://www.ichnfm.org/im4>, while the digital formats are available via several different platforms, including Amazon's Kindle (free) software, Barnes and Noble's Nook, Apple iBook, etc as hyperlinked below. Per popular request by students who were studying (as a required textbook) only one section at a time, "IM4" was also published in two easier-to-carry separate volumes under the name *Textbook of Clinical Nutrition and Functional Medicine*, which contain chapters 1-4 (pages 1-712+index) and 5 (713-1154+index), respectively. **Video access is included with IM4 and TCNFM,1+2.**

Availability in print and digital formats (examples):

- <https://www.ichnfm.org/im4>
- <https://www.amazon.com/Inflammation-Mastery-4th-Immunosuppression-Polypharmacy-ebook/dp/B01KMZZLAQ>
- <https://books.apple.com/us/author/alex-vasquez/id1139497284>
- <https://www.barnesandnoble.com/w/inflammation-mastery-4th-edition-alex-vasquez/1123259586?ean=9780990620464>

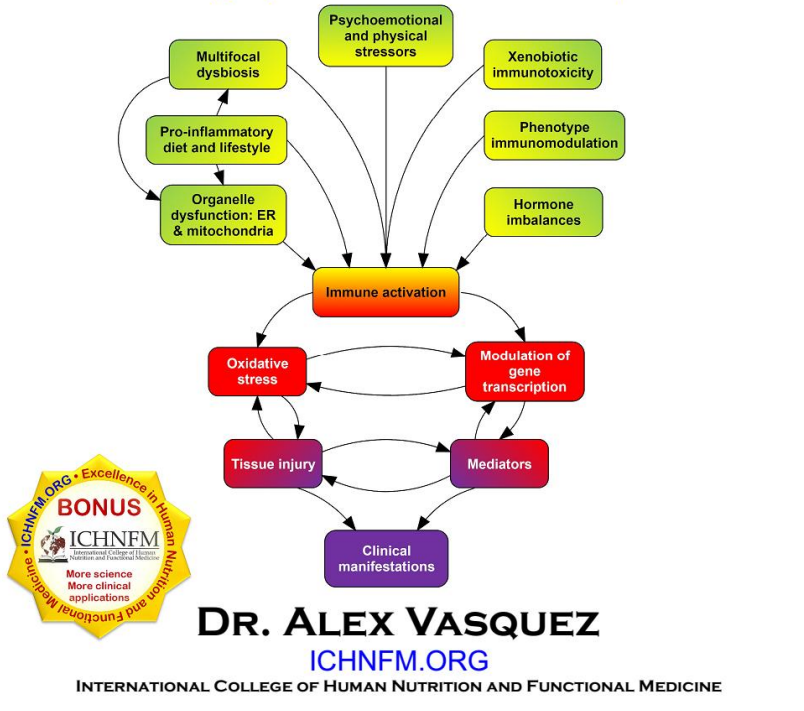
INFLAMMATION MASTERY

4TH EDITION

CLINICAL NUTRITION, FUNCTIONAL MEDICINE, MITOCHONDRIAL DYSFUNCTION, MICROBIOME & DYSBIOSIS, FUNCTIONAL INFLAMMOLOGY, PAIN MANAGEMENT, INTEGRATIVE RHEUMATOLOGY, NUTRITIONAL IMMUNOMODULATION, IMMUNONUTRITION & ANTIVIRAL STRATEGIES

The Colorful and Definitive Guide Toward Health and Vitality *and away from the Boredom, Risks, Costs, and Inefficacy of Endless Analgesia, Immunosuppression, and Polypharmacy*

3-Part Learning System of Text, Illustrations, and Video



TEXTBOOK OF CLINICAL NUTRITION AND FUNCTIONAL MEDICINE, VOL. 1

ESSENTIAL KNOWLEDGE FOR SAFE ACTION AND EFFECTIVE TREATMENT
INFLAMMATION MASTERY & FUNCTIONAL INFLAMMOLOGY, VOLUME 1

The Colorful and Definitive Guide *toward* Health and Vitality *and away from the Boredom, Risks, Costs, and Inefficacy of Endless Analgesia, Immunosuppression, and Polypharmacy*

3-Part Learning System of Text, Illustrations, and Video

4th Edition, 2016 • Beautiful Full-Color Printing



TEXTBOOK OF CLINICAL NUTRITION AND FUNCTIONAL MEDICINE, VOL. 2

PROTOCOLS FOR COMMON INFLAMMATORY DISORDERS
INFLAMMATION MASTERY & FUNCTIONAL INFLAMMOLOGY, VOLUME 2

Clinical Applications from the Colorful and Definitive Guide *toward* Health and Vitality *and away from the Boredom, Risks, Costs, and Inefficacy of Endless Analgesia, Immunosuppression, and Polypharmacy*

3-Part Learning System of Text, Illustrations, and Video

4th Edition, 2016 • Beautiful Full-Color Printing



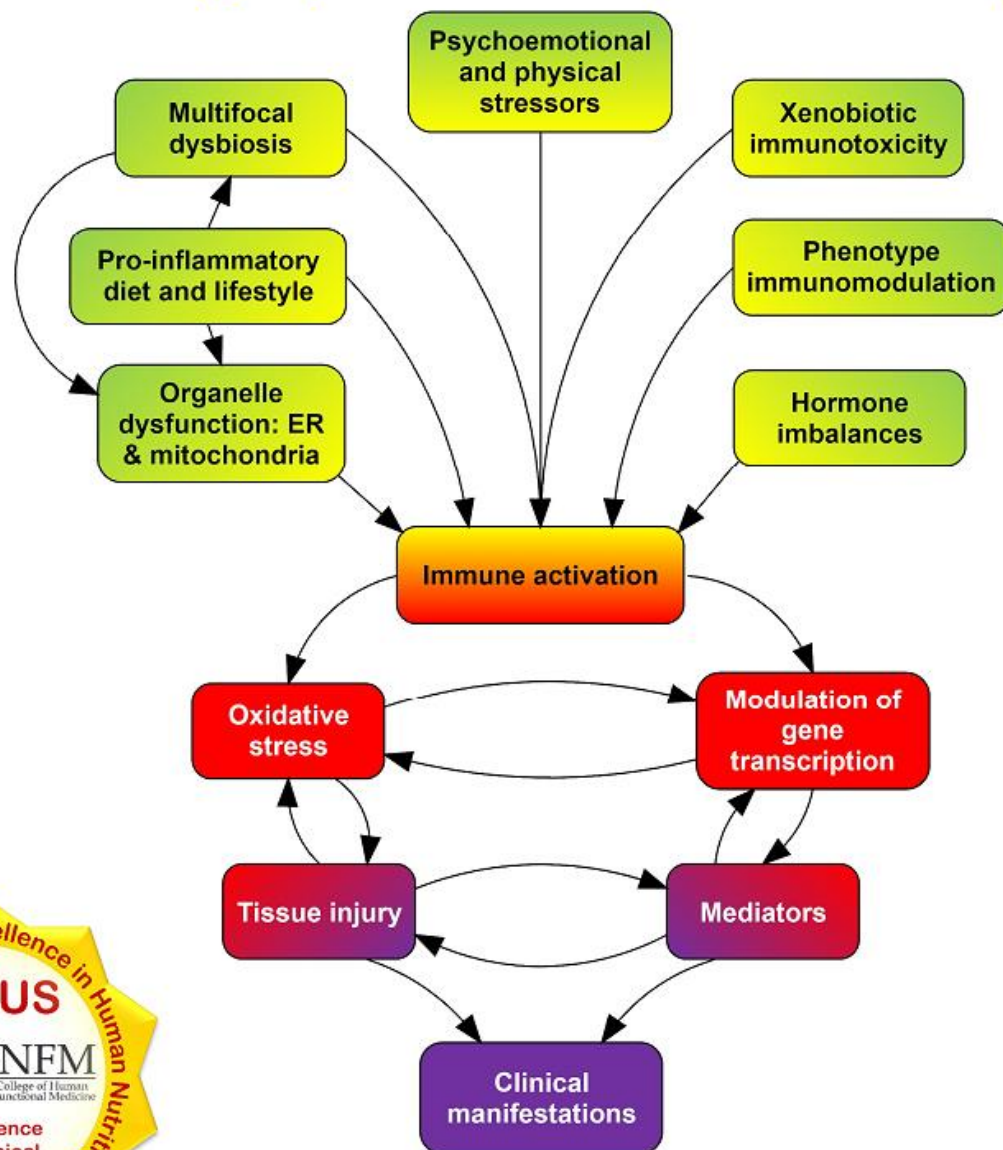
INFLAMMATION MASTERY

4TH EDITION

CLINICAL NUTRITION, FUNCTIONAL MEDICINE, MITOCHONDRIAL DYSFUNCTION, MICROBIOME & DYSBIOSIS, FUNCTIONAL INFLAMMOLOGY, PAIN MANAGEMENT, INTEGRATIVE RHEUMATOLOGY, NUTRITIONAL IMMUNOMODULATION, IMMUNONUTRITION & ANTIVIRAL STRATEGIES

The Colorful and Definitive Guide Toward Health and Vitality
*and away from the Boredom, Risks, Costs, and Inefficacy of
Endless Analgesia, Immunosuppression, and Polypharmacy*

3-Part Learning System of Text, Illustrations, and Video



DR. ALEX VASQUEZ
ICHNFM.ORG



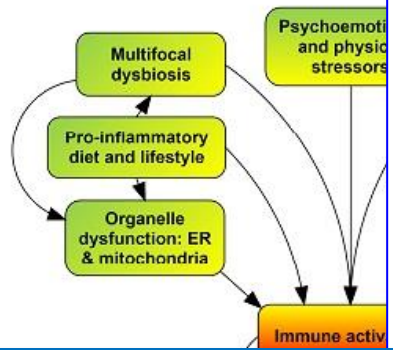
Preamble: download free ebook sample https://www.amazon.com/dp/B01KMZZLAQ	i
1. Patient Assessments, Laboratory Interpretation, Clinical Concepts, Patient Management, Practice Management and Risk Reduction: <i>This chapter introduces/reviews/updates patient assessments, laboratory interpretation, musculoskeletal emergencies, healthcare paradigms; the common and important conditions hemochromatosis and hypothyroidism are also included in this chapter since these need to be considered on a frequent basis in clinical practice</i>	1
2. Wellness Promotion & Re-Establishing the Foundation for Health: <i>Reviewed here are diet, lifestyle, psychosocial health, and—given the pervasiveness of persistent organic pollutants and their increasingly recognized clinical importance—an introduction to environmental medicine</i>	187
3. Basic Concepts and Therapeutics in (Nondrug) Musculoskeletal Care and Integrative Pain Management: <i>Nonpharmacologic management of musculoskeletal problems is preferred over pharmacologic (e.g., NSAID, Coxib, steroid, opioid) management because of the collateral benefits, safety, and cost-effectiveness associated with manual, dietary, botanical, and nutritional treatments. A brief discussion of the current crisis in musculoskeletal medicine is provided for contextualization and emphasis of the importance of expanding clinicians' knowledge of effective nondrug treatments</i>	243
4. The Major Modifiable Factors in Sustained Inflammation: <i>Major components of the "Functional Inflammology Protocol" are reviewed here, from concepts and molecular biology to an emphasis on practical clinical applications</i>	303
1) Food & Basic Nutrition	307
2) Infections: Dysbiosis* / Viral**	396 /
*This section specific to bacterial dysbiosis was also published separately as a clinical monograph titled Human Microbiome and Dysbiosis in Clinical Disease (Discounted Black and White Printing, amazon.com/dp/1512360295) and full-color printing amazon.com/dp/0990620417	540
** This section specific to viral infections is also published separately in full-color paper printing as Antiviral Strategies and Immune Nutrition: Against Colds, Flu, Herpes, AIDS, Hepatitis, Ebola, and Autoimmunity amazon.com/dp/1502894890 and digital ebook Antiviral Nutrition amazon.com/dp/B000PDQG4W	
3) Nutritional Immunomodulation	609
4) Dysmetabolism, Mitochondrial Dysfunction, ERS/UPR, mTOR	622
5) Special Considerations: Sleep, Sociopsychology, Stress, Surgery	674
6) Endocrine Imbalances	688
7) Xenobiotic Immunotoxicity	699
5. Clinical Applications	713
1) Hypertension	727
2) Diabetes Mellitus	819
3) Migraine & Headaches*	863
4) Fibromyalgia*	901
*These two sections specific to migraine and fibromyalgia were also published separately as Pain Revolution (full-color printing; amazon.com/dp/B01AR3NX0S) and Brain Inflammation in Chronic Pain, Migraine and Fibromyalgia (black-and-white printing; amazon.com/dp/B01EQ9KMH6/); both versions are available in digital ebook formats for reading on phone, computer, iPad via free Kindle software	
5) Allergic Inflammation	984
6) Rheumatoid Arthritis	1019
7) Psoriasis and Psoriatic Arthritis	1038
8) Systemic Lupus Erythematosus	1053
9) Scleroderma & Systemic Sclerosis	1074
10) Vasculitic Diseases	1094
11) Spondyloarthropathies & Reactive Arthritis	1108
12) Sjögren Syndrome/Disease	1119
13) Raynaud's Syndrome/Phenomenon/Disorder	1127
14) Clinical Notes on Additional Conditions: Behçet's Disease, Sarcoidosis, Dermatomyositis and Polymyositis	1131

As of 2019 and for the foreseeable future, the most current versions of all major patient management and clinical treatment protocols is published in **Inflammation Mastery, 4th Edition** as a single volume of 1,182 pages available in full-color print at discounted pricing directly from ICHNFM from <https://www.ichnfm.org/im4>, while the digital formats are available via several different platforms, including Amazon's Kindle (free) software, Barnes and Noble's Nook, Apple iBook, etc as hyperlinked below. Per popular request by students who were studying (as a required textbook) only one section at a time, "IM4" was also published in two easier-to-carry separate volumes under the name **Textbook of Clinical Nutrition and Functional Medicine**, which contain chapters 1-4 (pages 1-712+index) and 5 (713-1154+index), respectively. **Video access is included with IM4 and TCNFM,1+2.** Availability in print and digital formats (examples): <https://www.ichnfm.org/im4>, <https://books.apple.com/us/author/alex-vasquez/id1139497284> <https://www.amazon.com/Inflammation-Mastery-4th-Immunosuppression-Polypharmacy-ebook/dp/B01KMZZLQ> <https://www.barnesandnoble.com/w/inflammation-mastery-4th-edition-alex-vasquez/1123259586?ean=9780990620464>

TEXTBOOK OF CLINICAL NUTRITION AND FUNCTIONAL MEDICINE, VOL. 1

ESSENTIAL KNOWLEDGE FOR SAFE ACTION AND EFFECTIVE TREATMENT

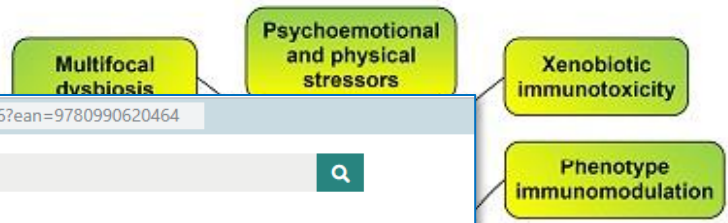
INFLAMMATION MASTERY & FUNCTIONAL INFLAMMOLOGY, VOLUME 1
 The Colorful and Definitive Guide toward Health and Vitality and away from the Boredom, Risks, Costs, Inefficiency of Endless Analgesia, Immunosuppression, and Polypharmacy
 3-Part Learning System of Text, Illustrations, and Video
 4th Edition, 2016 • Beautiful Full-Color Printing



TEXTBOOK OF CLINICAL NUTRITION AND FUNCTIONAL MEDICINE, VOL. 2

PROTOCOLS FOR COMMON INFLAMMATORY DISORDERS

INFLAMMATION MASTERY & FUNCTIONAL INFLAMMOLOGY, VOLUME 2
 Clinical Applications from the Colorful and Definitive Guide toward Health and Vitality and away from the Boredom, Risks, Costs, and Inefficacy of Endless Analgesia, Immunosuppression, and Polypharmacy
 3-Part Learning System of Text, Illustrations, and Video
 4th Edition, 2016 • Beautiful Full-Color Printing



[barnesandnoble.com/w/inflammation-mastery-4th-edition-alex-vasquez/1123259586?ean=9780990620464](https://www.barnesandnoble.com/w/inflammation-mastery-4th-edition-alex-vasquez/1123259586?ean=9780990620464)

BARNES & NOBLE All ▾ Inflammation Mastery 🔍

INFLAMMATION MASTERY 4TH EDITION
 CLINICAL NUTRITION, FUNCTIONAL MEDICINE, MITOCHONDRIAL DYSFUNCTION, MICROBIOME & DYSBIOSIS, FUNCTIONAL INFLAMMOLOGY, PAIN MANAGEMENT, INTEGRATIVE RHEUMATOLOGY, NUTRITIONAL IMMUNOMODULATION, IMMUNONUTRITION & ANTIVIRAL STRATEGIES
 The Colorful and Definitive Guide Toward Health and Vitality and away from the Boredom, Risks, Costs, and Inefficacy of Endless Analgesia, Immunosuppression, and Polypharmacy
 3-Part Learning System of Text, Illustrations, and Video

DR. ALEX VASQUEZ
 ICHNFM.ORG
 INTERNATIONAL COLLEGE OF HUMAN NUTRITION AND FUNCTIONAL MEDICINE

Read an excerpt of this book! [View All Available Formats & Editions](#)

Inflammation Mastery 4th Edition: The Colorful and Definitive Guide Toward Health and Vitality and away from the Boredom, Risks, Costs, and Inefficacy of Endless Analgesia, Immunosuppression, and Polypharmacy
 by Alex Vasquez

NOOK Book (eBook)
\$116.49 ~~\$200.00~~ | Save 42%

Paperback \$188.56	NOOK Book \$116.49
-----------------------	-----------------------

[ADD TO CART](#) [Sign in to Purchase Instantly](#)

Available on Compatible NOOK Devices and the free NOOK Apps. ⓘ

📱 WANT A NOOK? Explore Now

⬇️ Get Free NOOK Book Sample

Inflammation
 manage in the body and brain

ICHNFM.ORG

INFLAMMATION MASTERY

**4TH EDITION: THE COLORFUL AND DEFINITIVE GUIDE
TOWARD HEALTH AND VITALITY AND AWAY FROM THE
BOREDOM, RISKS, COSTS, AND INEFFICACY OF ENDLESS
ANALGESIA, IMMUNOSUPPRESSION, AND POLYPHARMACY**

A Three-Part Learning System of Text, Images, and Video

ALEX VASQUEZ D.C. N.D. D.O. F.A.C.N.

- Doctor of Osteopathic Medicine, graduate of University of North Texas Health Science Center, Texas College of Osteopathic Medicine (2010)
- Doctor of Naturopathic Medicine, graduate of Bastyr University (1999)
- Doctor of Chiropractic, graduate of University of Western States (1996)
- Fellow of the American College of Nutrition (2013-present)
- Former Overseas Fellow of the Royal Society of Medicine
- Editor, *International Journal of Human Nutrition and Functional Medicine* IntJHumNutrFunctMed.org. Former Editor, *Naturopathy Digest*; Former/Recent Reviewer for *Journal of Naturopathic Medicine*, *Alternative Therapies in Health and Medicine*, *Autoimmune Diseases*, *International Journal of Clinical Medicine*, and *PLOS One*
- Private practice of integrative and functional medicine in Seattle, Washington (2000-2001), Houston, Texas (2001-2006), Portland, Oregon (2011-2013), consulting practice (present)
- Consultant Researcher and Lecturer (2004-present), Biotics Research Corporation
- Teaching and Academics:
 - Director of Programs, International College/Conference on Human Nutrition and Functional Medicine ICHNFM.org
 - Founder and Former Program Director of the world's first accredited university-affiliated graduate-level program in Functional Medicine
 - Adjunct Professor, Integrative and Functional Nutrition in Immune Health, Doctor of Clinical Nutrition program at Maryland University of Integrative Health
 - Former Adjunct Professor (2009-2013) of Laboratory Medicine, Master of Science in Advanced Clinical Practice
 - Former Faculty (2004-2005, 2010-2013) and Forum Consultant (2003-2007), The Institute for Functional Medicine
 - Former Adjunct Professor (2011-2013) of Pharmacology, Evidence-Based Nutrition, Immune and Inflammatory Imbalances, Principles of Functional Medicine, Psychology of Wellness
 - Former Adjunct Professor of Orthopedics (2000), Radiographic Interpretation (2000), and Rheumatology (2001), Naturopathic Medicine Program, Bastyr University
- Author of more than 100 articles and letters published in *JAMA—Journal of the American Medical Association*, *BMJ—British Medical Journal*, TheLancet.com, *JAOA—Journal of the American Osteopathic Association*, *Annals of Pharmacotherapy*, *Journal of Clinical Endocrinology and Metabolism*, *Alternative Therapies in Health and Medicine*, *Nutritional Perspectives*, *Journal of Manipulative and Physiological Therapeutics*, *Integrative Medicine*, *Current Allergy and Asthma Reports*, *Nutritional Wellness*, *Evidence-based Complementary and Alternative Medicine*, and *Arthritis & Rheumatism: Official Journal of the American College of Rheumatology*

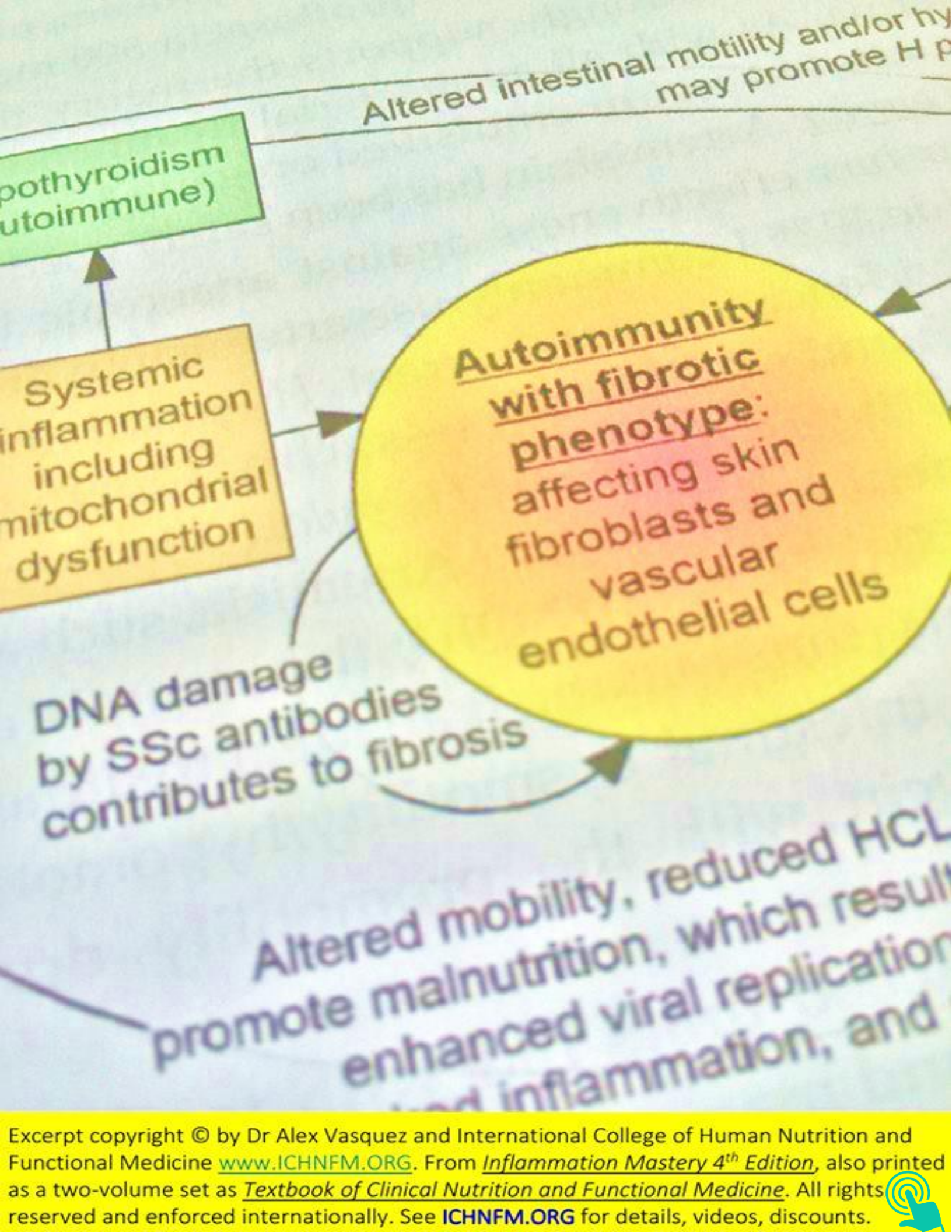
INTERNATIONAL COLLEGE OF HUMAN NUTRITION & FUNCTIONAL MEDICINE

ICHNFM.ORG



Download

Free sample



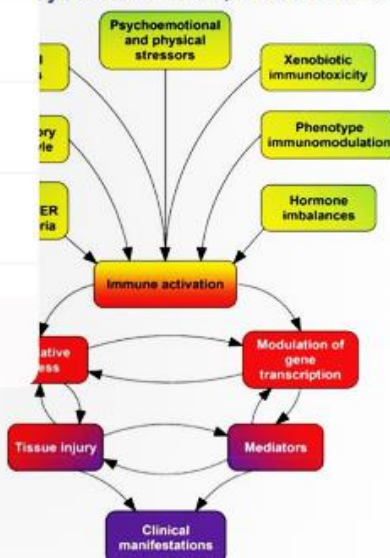
use the search feature



Download
Free sample

INFLAMMATION MASTERY 4TH EDITION

ON, FUNCTIONAL MEDICINE, MITOCHONDRIAL BIOME & DYSBIOSIS, FUNCTIONAL INFLAMMOLOGY, INTEGRATIVE RHEUMATOLOGY, NUTRITIONAL IMMUNONUTRITION & ANTIVIRAL STRATEGIES
Definitive Guide Toward Health and Vitality
The Boredom, Risks, Costs, and Inefficacy of
The System of Text, Illustrations, and Video



Google / Wikipedia



DOWNLOAD FREE SAMPLE: <https://www.amazon.com/Dr-Alex-Vasquez/e/B00AT5764Y>

The obvious advantages to the digital ebook version are

- 1) **easy transportation** in your phone or iPad,
- 2) **easy searching** in the entire book of nearly 1200 pages and 1.5 million words,
- 3) **synchronization of notes and highlights** across phone, iPad, and your computer

Chapter and Introduction

Preamble

Volume 1

1. [Patient Assessments, Laboratory Interpretation, Clinical Concepts, Patient Management, Practice Management and Risk Reduction: This chapter introduces/reviews/updates patient assessments, laboratory interpretation, musculoskeletal emergencies, healthcare paradigms; the common and important conditions hemochromatosis and hypothyroidism are also included in this chapter since these need to be considered on a frequent basis in clinical practice](#)
2. [Wellness Promotion & Re-Establishing the Foundation for Health: Reviewed here are diet, lifestyle, psychosocial health, and—given the pervasiveness of persistent organic pollutants and their increasingly recognized clinical importance—an introduction to environmental medicine](#)
3. [Basic Concepts and Therapeutics in \(Nondrug\) Musculoskeletal Care and Integrative Pain Management: Nonpharmacologic management of musculoskeletal problems is preferred over pharmacologic \(e.g., NSAID, Coxib, steroid, opioid\) management because of the collateral benefits, safety, and cost-effectiveness associated with manual, dietary, botanical, and nutritional treatments. A brief discussion of the current crisis in musculoskeletal medicine is provided for contextualization and emphasis of the importance of expanding clinicians' knowledge of effective nondrug treatments](#)
4. [The Major Modifiable Factors in Sustained Inflammation: Major components of the “Functional Inflammation Protocol” are reviewed here, from concepts and molecular biology to an emphasis on practical clinical applications](#)
 - 1) [Food & Basic Nutrition](#)
 - 2) [Infections: Dysbiosis / Viral](#)
 - 3) [Nutritional Immunomodulation](#)
 - 4) [Dysmetabolism, Mitochondrial Dysfunction, ERS/UPR, mTOR](#)
 - 5) [Special Considerations: Sleep, Sociopsychology, Stress, Surgery](#)
 - 6) [Endocrine Imbalances](#)
 - 7) [Xenobiotic Immunotoxicity](#)

Download



Free sample

[Volume 2: Chapter 5—Clinical Applications of the Functional Inflammation Protocol](#)

[1\) Hypertension](#)

[2\) Diabetes Mellitus](#)

[3\) Migraine & Headaches](#)

[4\) Fibromyalgia](#)

[5\) Allergic Inflammation](#)

[6\) Rheumatoid Arthritis](#)

[7\) Psoriasis and Psoriatic Arthritis](#)

[8\) Systemic Lupus Erythematosus](#)

[9\) Scleroderma & Systemic Sclerosis](#)

[10\) Vasculitic Diseases](#)

[11\) Spondyloarthropathies & Reactive Arthritis](#)

[12\) Sjögren Syndrome/Disease](#)

[13\) Raynaud's Syndrome/Phenomenon/Disorder](#)

[14\) Clinical Notes on Additional Conditions: Behçet's Disease, Sarcoidosis, Dermatomyositis and Polymyositis](#)

[Index & Appendix](#)



DOWNLOAD FREE SAMPLE: <https://www.amazon.com/Dr-Alex-Vasquez/e/B00AT5764Y>

The obvious advantages to the digital ebook version are

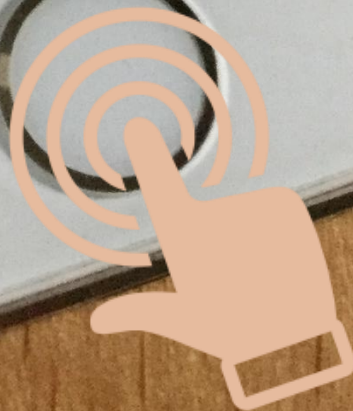
- 1) **easy transportation** in your phone or iPad,
- 2) **easy searching** in the entire book of nearly 1200 pages and 1.5 million words,
- 3) **synchronization of notes and highlights** across phone, iPad, and your computer

**TEXTBOOK OF CLINICAL
NUTRITION AND
FUNCTIONAL
MEDICINE, VOLUME 2
PROTOCOLS FOR COMMON
INFLAMMATORY
DISORDERS**

**FUNCTIONAL INFLAMMOLOGY &
INFLAMMATION MASTERY, VOL 2**

The Colorful and Definitive Guide toward
Health and Vitality and away from the
Boredom, Risks, Costs, and Inefficacy of Endless
Analgesia, Immunosuppression, and
Polypharmacy: A Three-Part Learning System of
Text, Images, and Video

**ALEX VASQUEZ D.C. N.D. D.O.
F.A.C.N.**



THE PATH AHEAD

Concerns About The Integrity of The Scientific Research Process—Focus On Recent Negative Publications Regarding Nutrition, Multivitamins, Fish Oil And Cardiovascular Disease



Alex Vasquez, DC, ND, DO; Joseph Pizzorno, ND, Editor in Chief

Abstract

The next step in reestablishing credibility seems to us honesty and recognizing we all share a common goal of the health and wellness of the human community and the planet. Everyone agrees that the current healthcare system, despite its many incredible successes, is also

showing its limitations and is no longer sustainable. We believe the solution starts with us the researchers and editors. A good first step might be formally recognizing the errors and showing how we can and *intend* to get better.

Evidence-based medicine—by definition—requires objective, reliable and accurate research and reviews from which to make the best decisions in patient care and public policy. The causes of inaccurate information, ranging from presumably innocent mistakes all the way to apparently intentional fraud, affect all scientific and biomedical disciplines.¹ While these accidental and intentional errors can derail our understanding of diseases and impact tens of thousands of affected patients, such inaccuracies in the

field of nutrition is worldwide.² While a specific disease human population nutrition research particularly content nutrition research healthcare profession nutrition. Clinical vast majority of medical training are obviously in gastroenterology⁷ training in clinical proclaims itself at

including the entire territory of clinical nutrition.¹⁰ A major and serious problem arises when unskilled and invalid research is published by authors (including nonphysician journalists¹¹) in major journals which mischaracterizes the validity of nutrition interventions (e.g., essentially always concluding that nutritional interventions are inefficacious

or potentially hazardous) and then such research is used politically and in the media to disparage, restrict and regulate practitioners and nutrition supplement industry¹² to the detriment of human health.

Several factors disrupting the integrity of nutrition research are commonly found in studies published by “elite” universities in “top-tier” journals, which are then republished and distributed as “headline news” in newspapers, magazines, and television, via which they

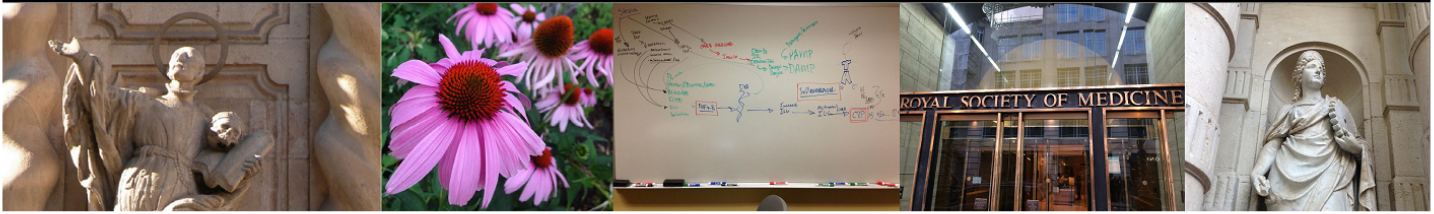
ent policy and ons of people. examples of ublications, lists sed solutions. dependent upon stitative and ts of clinical rovements are gnorance in

PDF articles: Full-text archives of the author’s articles are available per the following:

- <https://ichnfm.academia.edu/AlexVasquez>
- <https://www.ichnfm.org/public>
- VIDEO: BRIEF Critique of “Effects of n–3 Fatty Acid Supplements in Diabetes Mellitus: ASCEND Study” <https://vimeo.com/287650812>
- VIDEO: Bad Science in Medical Nutrition: Politics of Fish Oil <https://vimeo.com/314997927>

tion

review recent examples of questionable or inaccurate publications related to nutrition. Perceived shortcomings are documented with both citations here and links to more detailed and authoritative reviews and video presentations. In some instances, speculations regarding the cause and consequences of identified errors are provided.



Perspective, Opinion, Editorial • Education • Academia • Wage Theft • Corruption

Ending the Exploitation of Experts Begins with Educating Them about Employment, Curbing Enthusiasm to Preserve Enthusiasm

Alex Vasquez DC ND DO FACN

My own paths toward and perspectives on Education

My passion for teaching and education began "formally" when I was about 9 years of age, sitting on the floor of Ms Hall's 4th grade classroom; from that vantage as I sat somewhat near my best friend Robert, I saw the destructive power of bad teaching and discrimination, and from that day I started analyzing teachers, teaching methods, educational and social structures, and ways to convey knowledge and inspire students. Additionally inspired by my teacher of English and Literature in my final years at Riverside Military Academy, I began college with the plan of eventually teaching "something—most likely English and Literature" because I appreciated and valued teaching, proper grammatical structure, and nuanced use of language; I later developed and interconnected my interests in teaching, writing, language, physiology, medicine, and nutrition to complete three doctorate degrees in the health sciences and publish more than 120 articles, letters, rebuttals, monographs, and books on a wide range of topics, with those publications ranging from dense 1-page Letters and Responses to published research up to single-author textbooks of more than 1,180 pages. I have taught at various colleges and universities at the undergraduate, graduate/Masters, and Doctorate levels and have lectured internationally for post-graduate medical education. I see teaching not simply as effective transferal of information, but also as a means to interconnect and inspire generations of people, notably in a reciprocal manner. At its best, teaching and learning are activities that reflect and support love for life itself.

Oh, the stories I could tell you about the innards of Academia, "nonprofits", and "accredited" schools

I would be happiest to tell you that Academics and Administrators are vanguards support for fellow Professors, and commitment is to truth and reality setting ablaze the passions of the they teach, lead, and supervise; I in flower fields like a professoria

singing a rhythmical rendition of "The Hills are Alive...with the...Passions of Education and Intellectual Integrity." But a Pollyannaic representation of my observations would be a misrepresentation of the realities I have seen and experienced. I have seen university presidents lie to their students, expel experts for the sake of maintaining their own petty powers and preferences, and I have seen entire academic administrations lie (misrepresent) in unison to their boards of trustees and their accreditation commissions. I have seen stand-alone academic programs make millions of dollars in profit, while its administrators refuse to pay a living wage to doctorate-level infrastructure and while allowing themselves 6-week European vacations during major institutional initiatives. I have seen administrators lie to accreditors and allow students to cheat their way through graduate programs (by bypassing faulty examination software in online programs), and I have seen accreditors turn a blind eye to obvious university corruption, made worse when the accreditation commission is infiltrated by university administrators—thus did "accreditation" come to lose its value. I have seen "nonprofit educational institutions" underpay their faculty, plagiarize from their faculty, resell the work of other professionals without notice or compensation, and then pay their upper administrators in excess of US\$160,000 for less than part-time work—thus did "nonprofit organization" come to lose its value. I have seen schools blackmail excellent professors and leaders in education with gag orders, legal threats, and financial bribery (range US\$25,000 up to \$250,000) to buy their silence about institutional corruption. I have corresponded with employment attorneys, State Attorneys General, and US Department of Education, most of whom shrugged their shoulders and said, "That's the way it is in academia." Sorry

PDF articles: Full-text archives of the author's articles are available:

- <https://ichnfm.academia.edu/AlexVasquez>
- <https://www.inflammationmastery.com/reprints>
- <https://www.ichnfm.org/public>

Updates: The most complete version of *Functional Medicine* © ISSN 2378-4881

Copyrights: Copyright © by author(s) and International College of Human Nutrition and Functional Medicine - www.ICHNFM.org

Free access: Freely available; distributable with appropriate citation to author, publication (*International Journal of Human Nutrition and Functional Medicine*), and publisher's website: ICHNFM.ORG. All content, text, and image rights reserved by author(s) and ICHNFM.

Citation: Vasquez A. Ending the Exploitation of Experts Begins with Educating Them about Employment, Curbing Enthusiasm to Preserve Enthusiasm. *Int J Hum Nutr Funct Med* 2016; epub in press



Barceloneta sunset © 2019 by Dr Vasquez

Tutorial & Editorial • Scientific Writing • Journal Editing • Professional Experience • Video

How to Improve Scientific Writing and Journal Editing: A Short Narrative-Video Guide, Part I

Alex Vasquez DO ND DC FACN

Introduction

“Hello everyone, Dr. Alex Vasquez here, and today I'm going to start a different series of videos, and this time the conversation is going to focus around journal editing and writing. I'm calling this “*Editing and Writing Tips #1*”, and I'm going to start with a few of my own perspectives and experiences, then I'll talk about a few basics, and a few influential ideas. In later videos, I will talk about some more specific examples, and then perhaps at some point we will have a review and conclusion.

Early Experiences and Influences

Very briefly I'll talk about some of my own experiences, and the reason for my doing this is to share with you and segue into some examples that I think are very important. Basic though they might be, a lot of our success in various fields of life actually comes from respecting and appreciating and utilizing those basic concepts.

Let us start here with some of my initial experiences. I started becoming aware of language and the fact that I had some facility for it, first, when I was about 12 years old. I remember writing a poem in class, and again this is somewhat peripheral to the main topic of today, but I do remember that

kind of my entryway, I think, in that our assignment was to write on and on, and—compared with what I just realized that writing for me

Then again, when I was in military school, I remember in our

being asked questions, and I remember just how the answers to understanding grammar and language just came very easy to me, and I do remember feeling like I had some facility for the structure of language.

Another influential experience I had when I was about 11 years old, totally unrelated to language, is that we took, in the late 1970s or early '80s, a Computer Science class in our elementary school, and I remember that class also specifically having some influence on me, in terms of structuring logic. We basically had to write our own computer programs and this was back when computers were very

new. Obviously today everybody has computers; back in the late '70s, computers were a novelty. I

consider myself lucky to have taken this Computer Science class; it was obviously extremely basic, but we did have to write some code and what I remember from that is just the sequential manner in which communication has to take place in order to be successful. In this case, we were writing programs for computers and doing basic

“Writing comes from the entirety of one's experience.”

Dr Alex Vasquez

PDF articles: Full-text archives of the author's articles are available:

- <https://ichnfm.academia.edu/AlexVasquez>
- <https://www.inflammationmastery.com/reprints>
- <https://www.ichnfm.org/public>
- **See original video here:** <https://vimeo.com/318326979>

Misrepresentations of Clinical Nutrition in Mainstream Medical Media: Growing Importance of Legitimate Expertise in Independent Peer-Reviewed Publications - Part 1

2018 As a Milestone in the Post-Truth Era

Among the various topics that have either interested or fascinated me throughout my youth and well into my adult years, Nutrition has certainly reigned supreme. My personal routine has been to read as much as reasonably and practically possible on the topic, while not doing so to the exclusion of other topics in biomedicine, psychosociology and philosophy. Thus, with roughly 30 years of experience in reading books and primary research in the field of Nutrition, I could not help but notice the radical departures that occurred in 2018 from the previous norms to which I had grown accustomed.

Of course, 2018 was not the first year during which “bad research” was published in mainstream medical journals and then replicated throughout the echo chamber of mass media; one could observe this periodically occurring throughout the past 50 years, starting not at least with the demonization of dietary cholesterol and the glorification of processed foods, especially refined grains and so-called vegetable oils. But in 2018 what many of us observed was not simply poorly performed research but, in several cases, radical departures from any attempt to provide descriptions that could be considered “reasonable” by previous standard.¹ Especially related to the field of nutrition, mainstream medical journals and the media which parrots their conclusions have begun to make overt misrepresentations of Nutrition with regard for science, logic, biomedical history and

One has to be aware of a few key ironies that characterize mainstream medical discussions of nutrition: that 1) medical physicians receive essentially no education in clinical nutrition in their graduate school education and in their post-graduate residency training², 2) medical physicians and organizations publish “research” and commentaries (both of which commonly conclude that nutritional interventions are inefficacious or unsafe), despite their lack of formal education on the topic, and then 3) main-

stream medical voices consistently call for “regulating the nutrition supplement industry” despite their lack of training on the topic and because of negative conclusions based on their own poorly conducted research and self-serving conclusions. As such, not only are the map-makers blind, but they mislead their blind followers, and then both groups promote themselves as expert cartographers and guides when advising the public on an area that none of them have studied or understood. We should have no surprise whatsoever when the “medical community” publishes poorly conducted and self-serving “research” on the topic of nutrition, to reach their desired conclusion that nutrition is unsafe and inefficacious, and that the profitable market needs to be managed of course by the selfsame “medical community” that is never received a decent 15 minutes on the topic of therapeutic nutrition. Pervasive and persistent ignorance on the topic of nutrition among medical physicians must be understood as intentional and strategic, because otherwise this problem would have been solved 30 years ago when it was first discussed during what was called at the time the “golden age of nutrition.”³ The easiest way to manipulate people and to keep them in a perpetual state of confusion, ineffectiveness, and dependency is to

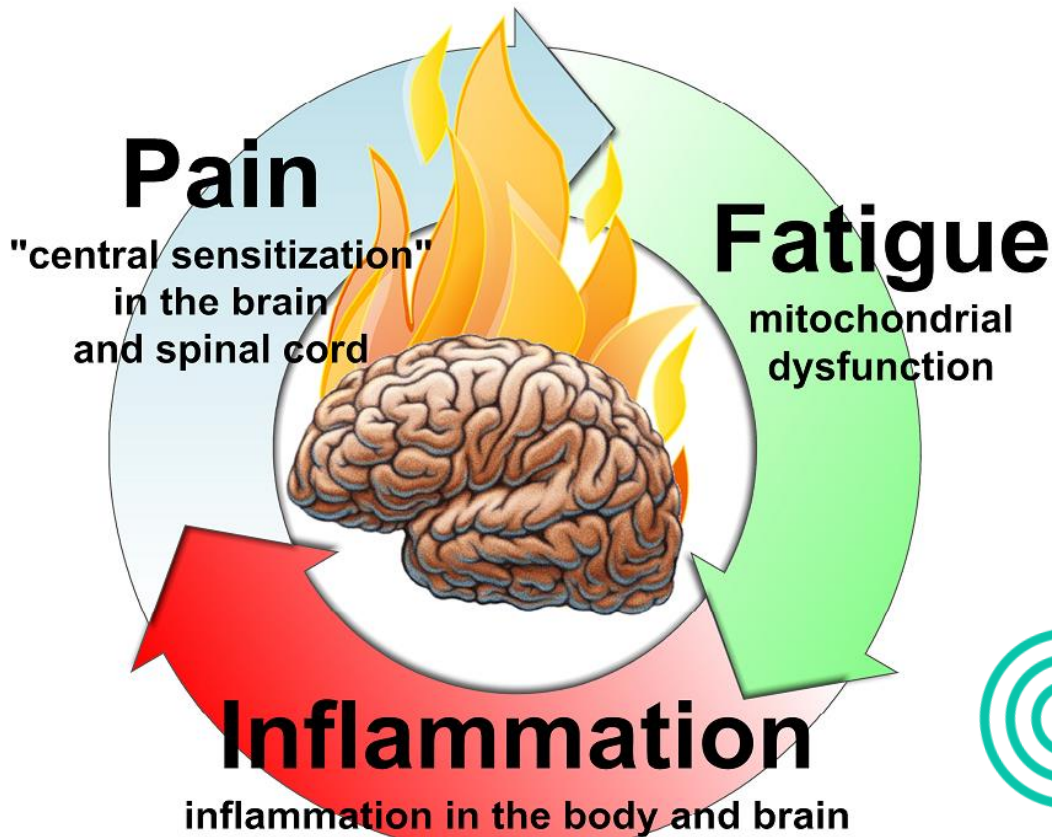
PDF articles: Full-text archives of the author’s articles are available per the following:

- <https://ichnfm.academia.edu/AlexVasquez>
- <https://www.ichnfm.org/public>
- **VIDEO:** BRIEF Critique of “Effects of n-3 Fatty Acid Supplements in Diabetes Mellitus: ASCEND Study” <https://vimeo.com/287650812>
- **VIDEO:** Bad Science in Medical Nutrition: Politics of Fish Oil <https://vimeo.com/314997927>

when pondering the probable future of intellectual integrity and the products of education.

BRAIN INFLAMMATION IN CHRONIC PAIN, MIGRAINE AND FIBROMYALGIA

THE PARADIGM-SHIFTING GUIDE FOR DOCTORS AND
PATIENTS DEALING WITH CHRONIC PAIN



© 2016 Dr Alex Vasquez, ICHNFM.ORG, *Inflammation Mastery, 4th Ed.*
Brain by IsaacMao per Flickr.com via creativecommons.org/licenses/by/2.0

Alex Vasquez, D.C., N.D., D.O., F.A.C.N.
ICHNFM.ORG • InflammationMastery.com/pain

DOWNLOAD FREE SAMPLE: <https://www.amazon.com/Dr-Alex-Vasquez/e/B00AT5764Y>

- VARIOUS VIDEOS AND BLOGS: <https://www.ichnfm.org/braininflammation>
- INFO: <https://www.inflammationmastery.com/fibromyalgia>
- INFO: <https://www.inflammationmastery.com/migraine>
- From *Inflammation Mastery, chapter 5*, the two sections specific to migraine and fibromyalgia were also published separately as *Pain Revolution* (full-color printing; <https://www.amazon.com/dp/B01AR3NX0S>) and *Brain Inflammation in Chronic Pain, Migraine and Fibromyalgia: The Paradigm-Shifting Guide for Doctors and Patients Dealing with Chronic Pain* (black-and-white printing; <https://www.amazon.com/dp/B01EQ9KMH6/>); both versions are also available in digital ebook format for phone, computer, iPad via the free Kindle software

Biological plausibility of the gut–brain axis in autism

Alex Vasquez 

Organic abnormalities with neuroinfl
purine metabolism, neurotransmitter
noted in autism, and many of these ab
metabolites, and heightened serum le

Keywords: gut–brain axis; autism; me

In their recent review, Sherwin
among many other issues, the re
gut microbiome–brain axis with
section subtitled “Microbiota-bas
the treatment of autism: hype or
*et al.*¹ largely discuss preclinical
the 2017 open-label study by K
used a sequence of oral vancomy
polyethylene glycol laxative, an
human fecal microbiota transpl
clinical benefit in subjects with au

Readers will likely benefit from
tional relevant clinical studies, in
lication by Sandler *et al.*³ showin
of autistic manifestations followin
oral vancomycin, as well as cas
ing positive impact of various an
apies (metronidazole, ketoconaz
cillin) in patients with autism.^{4,5}
have been shown to have gut dys
as well as *Clostridia* species,⁶ th
group of bacteria noted for their pr
rotoxic substances. International
consistently demonstrated that
have heightened production of 3-(3-
3-hydroxypropionic acid (HPHPA
phenylalanine metabolite of *Closi*
trointestinal tract.^{7,8} HPHPA rep
with the conversion of dopamine to

Autism, Dysbiosis, and the Gut-Brain Axis



An Excerpt from "Deciphering
the Gut-Brain Axis in Clinical
Practice"

Alex Vasquez

Vitamins Against Viruses: Implausible Pro-Vaccine Publications Contrasted Against Ignored Public Health Campaigns and Double-Blind Placebo-Controlled Clinical Trials

Introduction

As an author, presenter, editor, and careful reader of research and public policy, I have been concerned for several years about potentially false attribution of efficacy to vaccines during public health campaigns and major infrastructure investments that concurrently provided access to education, improved sanitation, improved diet (alongside immune-enhancing nutritional supplementation, most commonly with vitamins A and D, zinc, and iron), relocations of millions of people along with changes in their living and working circumstances (which would be expected to change infectious disease patterns, e.g., relocating people away from farms obviously reduces their exposure to *Clostridium tetani* [the anaerobic bacillus of tetanus] which is found primarily in soil contaminated by fecal material from [especially ruminant] animals such as cattle, sheep, and goats). With the April 2019 publication of several very unusual articles stemming from the *British Medical Journal* (BMJ), the time arrived to explore some of these concerns in a structured and public format. A legitimate concern is that science and public opinion are being inappropriately manipulated to favor a pharmaceutical/vaccination paradigm while lower cost, more widely available, safer and more efficacious nutritional interventions are being sidelined or intentionally ignored. In the current instance, overzealous endorsement and praise was given to a pharmaceutical intervention while a nationwide nutritional supplementation program supported by double-blind placebo-controlled trials was completely—and perhaps intentionally and strategically—ignored, then blocked by the journal from further discussion.

Pro-pharma echo chamber resounds: I first became aware of the two new (April 2019) BMJ publications (article by Palmer et al¹ and editorial by Brotherton²) via the derived “news” article published on 4 April in *The Guardian* titled “HPV rates tumble after routine vaccination” by Sarah Boseley, the publication’s “Health Editor.” With review of their website I found that The Guardian has published an impressive number of pro-vaccine articles devoid of critical thought or balanced analysis, including “Cervical cancer could be

eliminated in most countries by 2100 – Millions of cases could be prevented with high HPV vaccine and screening coverage” (20 Feb 2019), “Teenage boys to be vaccinated against cancer-causing HPV: Inoculation program will be expanded to cover 12- and 13-year-old boys in England” (24 Jul 2018), “Boys should get HPV jab to protect against cancer, health advisers say: Ministers urged to take swift action to extend immunization under a gender-neutral program” (18 Jul 2018), “Cervical cancer deaths in over-50s predicted to rise sharply in England – Rates of diagnoses and death set to rise in women not vaccinated against HPV, but likely to be almost eradicated in younger women” (19 Dec 2017), and “HPV vaccination should be extended to gay men” (12 Jun 2012). One could hardly envision a more pro-drug publication, regularly producing “news articles” that function as infomercials, glorifying any real or imagined benefits of drugs while making zero or minimal mention of any adverse effects, or refuting adverse effects, but without sufficient substantiation, as in “Cervical cancer vaccination ‘most unlikely’ to have caused girl’s death” (29 Sep 2009). Likewise, the BMJ article was re-reported and exalted throughout print and video media in the United States by outlets such as Fox News’ “UK’s HPV vaccination program ‘dramatically’ reduces risk of cervical cancer”³ and the physician-oriented Medscape.⁴ Such articles obviously serve to direct public and political opinion in favor of medicalization to the delight of the pharmaceutical and mainstream medical industries; the combined reach of the original articles and their echo-chamber derivatives is certainly in the tens of millions if not hundreds of millions of people. With regard to the recent article, the imbalanced praise and absence of rational concerns published in favor of the vaccine appeared quite biased; I soon accessed the original research, as discussed below.

BMJ’s landmark publications in erroneous conclusions: Anyone who has studied research design is aware of different types of clinical investigations and the limitations inherent in each. The “gold standard” of clinical research has been the randomized double-blind placebo-controlled clinical trial, preferably with a large population-representative cohort, preferably with a cross-over design if practical depending

on the logistics of the intervention. In any placebo-controlled trial, the placebo needs to be an inert substance, not—as is common with pharmaceutical and especially vaccine studies—a mislabeled “placebo” capable of causing harm and therefore reducing and obfuscating the relative risk (RR) compared to the active/test agent. Science is corrupted when unscrupulous researchers use active agents misbranded as “placebos” in order to make a given intervention look comparatively safe and effective (when compared against a harmful placebo, such as the recent studies using high-cost high-dose prescription fish oil against a false placebo of petroleum mineral oil)⁵ or comparatively dangerous or ineffective (when compared against a safe and therapeutically active placebo, such as the recent reviews comparing low-dose fish oil against low-dose olive oil, both of which are antiinflammatory and cardioprotective).⁶ Thus, the strategic use of inappropriate placebos and/or the intentional ignoring of confounding variables (such as population-wide health campaigns) serves to glorify the preselected pharmaceutical victor while providing the necessary “evidence of effectiveness” and justification for widespread implementation and multimillion \$/£/ € purchase. To the extent that such publications obfuscate the data and minimize appreciation of effective nutritional interventions, doctors and patients are inappropriately corralled into drug dependency while nutritional interventions with lower cost, wider availability, greater safety and efficacy—along with the numerous collateral benefits typically seen with nutritional supplementation—are withheld from general consideration. As detailed below, BMJ published a retrospective population-wide study that impossibly ascribed efficacy (by design, such studies cannot determine efficacy) to the HPV vaccine while ignoring the time-synchronized national public health campaign to improve vitamin D nutriture, whereas the latter has numerous lines of evidence supporting its clinically important efficacy against various types of HPV infection.

Dr Vasquez replies with two “rapid responses” posted on BMJ.com: To its credit, BMJ has a “rapid response” system that allows readers to publicly respond to articles and occasionally receive replies from the original authors; from the rapid responses posted, the journal’s Editors supposedly choose from among the responses those few deemed worthy of publication in the print and indexed version of the journal, as they did with my 2005 reply to an article that misused vitamin D in a clinical trial and then erroneously reported that vitamin D was inefficacious.⁷ For the April 2019 BMJ publications, my first rapid response received no reply; the following two rewritten responses, both of which were posted on BMJ.com in response to the editorial and the original research, are contextualized and provided below. The complete texts of these replies are included here both for the convenience of readers and to also document these posted responses in the event that—as is common these days—the editors delete any legitimate questioning of the high-profit vaccine

paradigm. At the time of this writing, my replies are posted online at “Scotland’s public health programs and trends improving nutritional status should be considered when discussing HPV trends” (<https://www.bmj.com/content/365/bmj.l1375/rr-4> and externally archived at <https://www.academia.edu/39207517>) and “Scotland’s public health campaigns to improve vitamin D nutriture occurred within the same time-frame as HPV vaccination” (13 April 2019, <https://www.bmj.com/content/365/bmj.l1161/rr-8>, externally archived at <https://www.academia.edu/39201317>).

The editorial posted by the BMJ to accompany and contextualize the original research was unusual in several aspects. First, the editorial is described as “commissioned” which implies that the journal paid the author to write the piece, presumably—as noted by former BMJ Editor Richard Smith⁸—to sell reprints to the pharmaceutical industry and/or governmental and other pro-vaccine groups as “proof” in order to convince people to accept this intervention as valid and thereby promote sales and the resulting profit and political power; as such, their editorial functions as an informational and advertisement for vaccine sales. Second, and consistent with the view that the editorial is simply a publicity piece, the journal specifically notes that the editorial was “not peer-reviewed” which is remarkable considering that most people think that all articles in the so-called “top tier” and “big five” medical journals are legitimately processed and refereed prior to publication and indexing in Medline’s Pubmed (ncbi.nlm.nih.gov/pubmed/30944088). Third, I noticed that the disclosure as posted “The BMJ has judged that there are no disqualifying financial ties to commercial companies. The authors declare the following other interests: JMLB’s employer has received partial, unrestricted support (in the form of equipment) to conduct a randomised trial of primary HPV screening from Roche Molecular Systems” makes zero mention of the author’s research supported by Merck, makers of the HPV vaccination being discussed, revealed elsewhere as “JMLB has been an investigator on HPV epidemiology studies that received partial, unrestricted funding from Seqirus/Merck for laboratory components” (*Int J Gynecol Obstet* 2017; 138 (Suppl. 1): 7–14 DOI: 10.1002/ijgo.12186) and “JMLB has been an investigator in HPV epidemiological studies that have received partial unrestricted grants to support HPV typing components (cervical cancer typing study from Seqirus Australia, recurrent respiratory papillomatosis study from Merck Sharp and Dohme) and is an investigator on the Compass trial, which has received equipment and funding from Roche Molecular Systems and Roche Tissue Diagnostics, but JMLB reports no personal financial benefits” (*The Lancet*, 2019 February thelancet.com/public-health Vol 4:e87). Fourth, Brotherton’s editorial is scientifically untenable, giving outlandish praise and stretching the boundaries of biological plausibility in support of the HPV vaccination advocated by the pro-vaccination group for which she works (Victorian Cytology Service [VCS] Foundation);⁹

she states that the results “unequivocally show high vaccine effectiveness” despite the fact that they completely ignored Scotland’s concurrent nationwide programs to improve vitamin D status, including giving free vitamin D supplements and advocating sunbathing. Fifth, everyone associated with this publication appears to have ignored the fact that retrospective population-wide studies cannot establish causality as can double-blind placebo-controlled trials but at best can establish temporal relationships, but only if all impactful factors are considered, which was obviously not done with this primary publication nor its glorifying editorial. Sixth, consistent with my model of the pharmaceutical echo chamber and the financial matrimony binding media with drug companies, international newspapers and other media trumpeted to the world the glory of this vaccine, failing to mention any risks, qualifications, other scientific interpretations and therapeutic possibilities. Seventh, the scientifically responsible action that the BMJ could have taken is to issue a public statement clarifying the appropriate interpretation of its published research and reigning in this unscientific hysteria; but the BMJ has failed to do so. The text of my rapid response to the Editorial posted on BMJ.com is as follows:

Scotland’s public health programs and trends improving nutritional status should be considered when discussing HPV trends

Julia Brotherton’s Editorial [1] accompanying the retrospective population study crediting vaccination against human papilloma virus (HPV) with reduction in HPV prevalence in Scotland [2] considers a variety of possibilities for the presumed success of the HPV vaccination program. However, her Editorial does not mention the concomitant public health programs organized by the Scottish Government and other groups to improve vitamin D nutrition throughout Scotland that occurred in the same time-frame. The Scottish Government recognized the high prevalence of vitamin D deficiency in its population and began recommending vitamin D supplementation not later than 2006. By 2009, coincident with the start of the HPV vaccination campaign in 2008, numerous vitamin D supplementation (and sun exposure) campaigns were being implemented throughout Scotland to combat the documented population-wide problem of vitamin D deficiency.

Our views of vitamin D experienced a paradigm shift in the early part of this century, with key publications starting in 1999 [3-6]. We now have increased awareness of vitamin D’s safety and roles in preventive medicine and public health, including reducing the burden of infectious diseases such as viral infections. Consistent with this evidence of safety and benefit, along with evidence that the human daily requirement is an order of magnitude greater

than previously believed [7], use of vitamin D supplementation began to increase slowly and then exponentially in the United States [8] and other countries, especially English-speaking societies, most notably the United Kingdom. Indeed, according to the Scottish Health Survey 2003 [9], use of dietary supplements such as vitamins (including vitamin D), fish oils (a source of vitamin D) and minerals (magnesium supplementation improves vitamin D status and is necessary for vitamin D activation, binding, transport, metabolism, and gene expression [10]) had already begun to increase between 1998 and 2003. Certainly not later than 2006, the Scottish Government was already recommending widespread use of vitamin D supplements (and sun exposure) to combat the high prevalence of vitamin D deficiency in Scotland [11-23].

Vitamin D supplementation has been the subject of several placebo-controlled trials documenting anti-inflammatory, antiviral, and anticancer effects. Correction of vitamin D deficiency has significant anti-inflammatory [24] and immunomodulatory [25] benefits. Vitamin D and its direct metabolites promote production of antimicrobial peptides which have antibacterial and antiviral properties, while also reducing viral replication by inhibiting the NF-kappaB pathway. Consistent with these immunomodulatory and antiviral mechanisms, data from several placebo-controlled trials shows that vitamin D provides benefit in a variety of infectious conditions including human immunodeficiency virus (HIV) [26], hepatitis C virus [27-29] and upper respiratory infections [30-31]. Vitamin D administration displays impressive clinical effectiveness against dermal HPV as shown in case reports, clinical series, and placebo-controlled trials, with remarkable safety, high efficacy, and a consistent trend toward complete resolution of lesions [32-36]. In 2014, Schulte-Uebbing et al [37] published “Chronic cervical infections and dysplasia (CIN I, CIN II): vaginal vitamin D (high dose) treatment” showing that among 200 women with cervical dysplasia, vitamin D vaginal suppositories (12,500 IU, 3 nights per week, for 6 weeks) provided “very good anti-inflammatory effects” and “good antidysplastic effects” in women with CIN 1. In 2017, Vahedpoor and colleagues [38] published “Effects of Long-Term Vitamin D Supplementation on Regression and Metabolic Status of Cervical Intraepithelial Neoplasia” in which they summarized, “In conclusion, vitamin D3 administration for 6 months among women with CIN1 resulted in its regression and had beneficial effects on markers of insulin metabolism, plasma NO, TAC, GSH and MDA levels.” In 2018, Vahedpoor and colleagues [39] published “Long-Term Vitamin D Supplementation and the Effects on Recurrence and Metabolic Status of Cervical Intraepithelial Neoplasia Grade 2 or 3” in which they noted, “The recurrence rate of CIN1/2/3 was 18.5 and 48.1% in the vitamin D and placebo groups respectively”, thereby clearly favoring treatment with vitamin D over placebo.

In Scotland, programs advocating HPV vaccination (started in 2008) and vitamin D supplementation (started not later than 2006 and again in 2009) occurred in close chronologic proximity; use of nutritional supplements that contain or potentiate vitamin D had started to increase in the population by 2003. Crediting the reduction in HPV-related disease solely to vaccination via retrospective population study is potentially misleading, especially when these authors make no account whatsoever of the national program for vitamin D supplementation which started in the same time-frame. Numerous studies have shown that vitamin D provides immunomodulatory, anti-inflammatory, microbiome-modifying, antiviral and anti-HPV benefits with high safety, good efficacy, low cost, wide availability, and clinically important collateral benefits.

Following the posting of my rapid response critiquing the editorial (11 Apr 2019), BMJ posted my resubmitted response rebutting the original research two days later (13 Apr 2019). Some but not all of the problems with the editorial are also noted in and originate from the primary research and therefore my critiques are similar, but not identical, with the second response a bit more refined and also with changes in a few citations. The major errors in the primary article are as follows: First, the study design of “retrospective population study” is incapable of determining causal relationships; at best such a study design can only determine temporal relationships, i.e., two events occurring together within the same time-period or one event following the other. As such, their reporting of any causal relationship is erroneous because this type of study cannot establish causality. Subsequently, the editorial and mass media derivatives are likewise erroneous. Second, attribution of effectiveness to the vaccine while ignoring any and all education surrounding the vaccine conflates inoculation with behavior-modifying education. Telling a young girl in essence that “the vaccination is directed toward a sexually transmitted infection in the form of a virus that could infect her vagina and cervix if she has unprotected sex with a boy” is a behavior-changing conversation likely to reduce sexual intercourse, with boys, especially without barrier protection; this primary study by Palmer and colleagues completely failed to account for any effect of education, instead giving all credit—indeed premature and inappropriate credit—to the vaccine. The age correlation that they reported—less HPV with earlier vaccination—could easily be explained or confounded with earlier education that changes sexual behavior. The authors failed to consider anything other than vaccination, so of course they found a correlation between vaccination and reduced HPV-related disorders. Third, the authors ascribe “herd immunity” to the observation that unvaccinated girls also showed a reduction in HPV-related disorders; but this could have easily and perhaps more convincingly been attributed to the nationwide vitamin D supplementation programs, which were complete-

ly ignored and never mentioned despite the fact that vitamin D has been proven effective against HPV infections via a variety of levels of evidence. Their concluding statement “The bivalent vaccine is confirmed as being highly effective vaccine and should greatly reduce the incidence of cervical cancer” is overzealous and is an epidemiologic error when they failed to consider any other interpretive options. Indeed, such considerations—controlling for other possible factors—is the defining characteristic of competent epidemiology. The authors followed their egregious overstatement (quoted previously) with a confirmatory understatement: “It is possible therefore that vaccine effectiveness was over-estimated.” Neither the accompanying editorial nor the publications for the mass media mention of the probable overestimation of vaccine effectiveness. My rapid response to the original article is as follows:

Scotland’s public health campaigns to improve vitamin D nutriture occurred within the same timeframe as HVP vaccination

In April 2019, Palmer et al [1] published a retrospective population study crediting vaccination against human papilloma virus (HPV) with reduction in HPV prevalence in Scotland, and the authors attributed a reduction in HPV prevalence among unvaccinated women with “herd protection.” However, the authors did not mention Scotland’s population-wide public health campaigns to address endemic vitamin D deficiency. The Scottish Government recognized the high prevalence of vitamin D deficiency in its population and began recommending vitamin D supplementation not later than 2006. Vitamin D deficiency results in impaired mucosal and immune defenses and correlates in a dose-dependent manner with increased cervicovaginal HPV infection [2]. By 2009, coincident with the start of the HPV vaccination campaign in 2008, numerous vitamin D supplementation (and sun exposure) campaigns were being implemented throughout Scotland to combat the documented population-wide problem of vitamin D deficiency.

Our views of vitamin D experienced a paradigm shift in the early part of this century with landmark publications such as Vieth’s authoritative documentation of safety in 1999 [3], Zittermann’s “Vitamin D in preventive medicine” in British Journal of Nutrition in 2003 [4], and Vasquez’s “Clinical importance of vitamin D (cholecalciferol): a paradigm shift with implications for all healthcare providers” in 2004 [5] followed by an important partial summary of vitamin D usage guidelines in British Medical Journal in 2005 [6]. These and similarly themed articles have contributed to increased awareness of vitamin D’s safety and roles in preventive medicine and public health, including reducing the burden of infectious diseases such as viral

infections and various types of cancer. Consistent with this evidence of safety and benefit, along with evidence that the human daily requirement is an order of magnitude greater than previously believed [7], use of vitamin D supplementation began to increase slowly and then exponentially in the United States [8] and other countries, especially English-speaking societies, most notably the United Kingdom. Indeed, according to the Scottish Health Survey 2003 [9], use of dietary supplements such as vitamins (including vitamin D), fish oils (a source of vitamin D) and minerals (magnesium supplementation improves vitamin D status and is necessary for vitamin D activation, binding, transport, metabolism, and gene expression [10]) had already begun to increase between 1998 and 2003. Certainly not later than 2006, the Scottish Government was already recommending widespread use of vitamin D supplements to combat the high prevalence of vitamin D deficiency in Scotland [11].

Widespread vitamin D deficiency in Scotland was followed by widespread recommendations for vitamin D supplementation starting in 2006 and 2009. In 2006, Burleigh and Potter published in *Scottish Medical Journal* [12] stating that, "The prevalence of vitamin D deficiency is high in older outpatients in this geographical area." In 2007, Hyppönen and Power [13] showed that among British adults "Prevalence of hypovitaminosis D in the general population was alarmingly high during the winter and spring, which warrants action at a population level rather than at a risk group level." In 2008, Rhein [14] further specified that "Vitamin D deficiency is widespread in Scotland." In 2009, the Scottish Government acknowledged the need to educate its population about the importance of vitamin D3 supplementation [15]. From that time until the present, the Scottish Government, United Kingdom National Health Services, and various advocacy groups and programs (e.g., ScotsNeedVitaminD.com[16], Healthy Start, which provides vitamin D supplements to all children and pregnant women in Scotland [17]) continue assertive public health campaigns recommending vitamin D supplementation and increased vitamin D production via sun exposure via the "Shine on Scotland" program initiated in 2009 [18] for all of its citizens [19-23].

Vitamin D supplementation has been the subject of many clinical trials documenting anti-inflammatory, antiviral, and anticancer benefits. Correction of vitamin D deficiency has significant anti-inflammatory [24] and immunomodulatory [25] benefits. Vitamin D and its direct metabolites promote production of antimicrobial peptides which have antibacterial and antiviral properties, while also reducing viral replication by inhibiting the NF-kappaB pathway. Consistent with these immunomodulatory and

antiviral mechanisms, data from several placebo-controlled trials shows that vitamin D provides benefit in a variety of infectious conditions including human immunodeficiency virus (HIV) [26], hepatitis C virus [27-29] and upper respiratory infections [30-31]. Vitamin D administration displays impressive clinical effectiveness against dermal HPV as shown in case reports, clinical series, and placebo-controlled trials, with remarkable safety, high efficacy, and a consistent trend toward complete resolution of lesions [32-36]. In 2014, Schulte-Uebbing et al [37] published "Chronic cervical infections and dysplasia (cervical intraepithelial neoplasia [CIN] 1-2): vaginal vitamin D treatment" showing that among 200 women with cervical dysplasia, vitamin D vaginal suppositories (12,500 IU, 3 nights per week, for 6 weeks) provided "very good anti-inflammatory effects" and "good antidysplastic effects" in women with CIN 1. In 2017, Vahedpoor and colleagues [38] published a double-blind placebo-controlled trial of vitamin D in women with HPV, in which they found that vitamin D3 administration for 6 months among women with CIN1 resulted in its regression and had beneficial effects on markers of insulin metabolism and antioxidant status. In 2018, Vahedpoor and colleagues [39] published a double-blind placebo-controlled trial of vitamin D in women with HPV, in which they observed, "The recurrence rate of CIN1/2/3 was 18.5 and 48.1% in the vitamin D and placebo groups respectively", thereby clearly favoring treatment with vitamin D over placebo.

In Scotland, programs advocating HPV vaccination (started in 2008) and vitamin D supplementation (started not later than 2006 and again in 2009) occurred in close chronologic proximity. Crediting the reduction in HPV-related disease solely to vaccination via retrospective population study is potentially invalid and misleading, especially when the authors make no account whatsoever of the national program for vitamin D supplementation which started in the same timeframe. Numerous studies have shown that vitamin D provides immunomodulatory, anti-inflammatory, microbiome-modifying, antiviral and anti-HPV benefits with high safety, good efficacy, low cost, wide availability, and clinically important collateral benefits.

My reply makes quite obvious the shortcomings of their biased research publication. One should reasonably wonder why the *BMJ* would publish such a flawed report, and then pay for a "commissioned" "editorial" which was "not peer-reviewed." Then, the editors collectively stifled any further conversation regarding the antiviral action of vitamin D delivered to the same population in the same time-frame, despite its proof of clinical effectiveness. Such a compilation of errors could hardly seem accidental, although they would synergize fantastically for promoting sales and government mandates of the HPV vaccine.

And now for the silent treatment from BMJ editors:

Reasonably anticipating that the BMJ would share my well-cited concerns with their readership via publication in a Letter to the Editor or Reply, I waited to hear from the Editors. When no response arrived by several weeks later, I emailed the Letters Editor and the Editor in Chief along with two other associate editors. The probability of none of them receiving my email nor noting my two posted rapid replies is essentially zero, and they have offered no response nor explanation for why their publications omitted this key data.

From: Dr Alex Vasquez
 Date: Thu, May 9, 2019 at 4:34 PM
 Subject: Re: Letters timeframe
 To: Davies
 Cc: Doshi, Godlee, Ludwig

Thank you for your earlier replies. I am following-up with interest in publishing the concerns raised in my rapid responses, because the original research appears to have looked at a chronological correlation without looking at the national health campaigns that started in the same time-frame. In particular, the public health campaign that I detailed has double-blind placebo-controlled evidence of clinical effectiveness, so it is worthy of consideration.

Of the two rapid responses posted (thank you), the second is a bit more refined and has (a few) better citations (I think I changed 2 of them).

1. Scotland's public health programs and trends improving nutritional status should be considered when discussing HPV trends <https://www.bmj.com/content/365/bmj.l1375/rr-4>

2. Scotland's public health campaigns to improve vitamin D nutrition occurred within the same timeframe as HPV vaccination <https://www.bmj.com/content/365/bmj.l1161/rr-8>

As noted in my responses, vitamin D demonstrates anti-inflammatory, microbiome-modifying, immune-supporting (eg, antimicrobial peptides, sIgA) and it specifically demonstrates effectiveness against HPV. I trust that we share the same goal of helping patients avoid HPV-related disorders, and cholecalciferol clearly shows benefit, safety, wide availability, and low cost.

[32] Moscarelli L, Annunziata F, Mjeshtri A, Paudice N, Tsalouchos A, Zanazzi M, Bertoni E. Successful treatment of refractory wart with a topical activated vitamin d in a renal transplant recipient. *Case Rep Transplant.* 2011;2011:368623. doi: 10.1155/2011/368623. Epub 2012 Jan 3.

[33] Aktaş H, Ergin C, Demir B, Ekiz Ö. Intralesional Vitamin D Injection May Be an Effective Treatment Option for Warts. *J Cutan Med Surg.* 2016 Mar-Apr;20(2):118-22. doi: 10.1177/1203475415602841. Epub 2015 Aug 20

[34] Raghukumar S, Ravikumar BC, Vinay KN, Suresh MR, Aggarwal A, Yashovardhana DP. Intralesional Vitamin D3 Injection in the Treatment of Recalcitrant Warts: A Novel Proposition. *J Cutan Med Surg.* 2017 Jul/Aug;21(4):320-324. doi: 10.1177/1203475417704180. Epub 2017 Apr 6.

[35] Naresh M. A Study of Effectiveness of Intralesional Vitamin D3 in Treatment of Multiple Cutaneous Warts. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)* 2019;18(3),84-87

[36] Abdel Kareem IM, Ibrahim IM, Fahmy Mohammed SF, Ahmed AA. Effectiveness of intralesional vitamin D3 injection in the treatment of common warts: single-blinded placebo-controlled study. *Dermatol Ther.* 2019 Mar 28:e12882. doi: 10.1111/dth.12882

[37] Schulte-Uebbing C, Schlett S, Craiut I, Antal L, Olah H. Chronical cervical infections and dysplasia (CIN I, CIN II): vaginal vitamin D (high dose) treatment. *Dermatoendocrinol* 2014 Oct; 6:e27791. doi:10.4161/derm.27791

[38] Vahedpoor Z, Jamilian M, Bahmani F, Aghadavod E, Karamali M, Kashanian M, Asemi Z. Effects of Long-Term Vitamin D Supplementation on Regression and Metabolic Status of Cervical Intraepithelial Neoplasia: a Randomized, Double-Blind, Placebo-Controlled Trial. *Horm Cancer.* 2017 Feb;8(1):58-67. doi: 10.1007/s12672-016-0278-x. Epub 2017 Jan 3

[39] Vahedpoor Z, Mahmoodi S, Samimi M, Gilasi HR, Bahmani F, Soltani A, Sharifi Esfahani M, Asemi Z. Long-Term Vitamin D Supplementation and the Effects on Recurrence and Metabolic Status of Cervical Intraepithelial Neoplasia Grade 2 or 3: A Randomized, Double-Blind, Placebo-Controlled Trial. *Ann Nutr Metab.* 2018;72(2):151-160. doi: 10.1159/000487270. Epub 2018 Feb 21

Thank you,
 Dr Alex Vasquez

Again expecting the journal's editors might value research accuracy, journalistic integrity, and the importance of ethical standards in clinical care and research, I was a bit surprised that these five BMJ Editors would collectively fail to reply to cited concerns about the quality of their publication. BMJ claims on its website that it hosts and/or represents an "international community of readers, authors, and editors" but apparently this sense of "community" does not apply to the questioning of publications that show obvious bias by ignoring other influences and funneling the results toward vaccine endorsement.

Basic components of research integrity: Tutorial articles published in journals as well as textbooks such as *The Lancet Handbook of Essential Concepts in Clinical Research*¹¹ can inform the implementation and evaluation of research. Ideally (but largely theoretically), research is performed honestly and competently, critically reviewed postproduction and prepublication by independent scientists/scholars, and then refereed by at least one expert-level Editor prior to publication and dissemination; the fourth component of research integrity is post-publication critique by readers and correspondence between such readers and the original authors. A fifth component of research integrity is the publication of article-specific editorials/commentaries that provide context and perspective for the new information presented; as with the original research, such Editorials should be independently peer-reviewed in a blinded manner by internal or external reviewers prior to publication.

Authorial and editorial bypassing of research integrity: A notorious pitfall in the publication of descriptive and retrospective studies such as the one by Palmer et al being discussed here is that of false attribution; that is, the erroneous assumption that because an intervention was followed by an observation that the former caused the latter. This error is intellectually grave as it can lead to erroneous conclusions about cause-and-effect relationships, thereby misleading government policy and clinical care. This error is also described as overstepping the data, erroneous inference, and—in Latin—post hoc ergo propter hoc which translates to “after this, therefore because of this”, also known as the post hoc fallacy. In truth, causal relationships can only be established in appropriately conducted clinical trials; non-interventional retrospective population studies such as this one led by Palmer can add only accessory information but are incapable of establishing or refuting causality, especially when the study itself fails to control for other variables and considerations.

“Errors” in study design may be accidental or intentional. In addition to the failure to consider other causes for an observed outcome, investigators can also accidentally or intentionally “stack the deck” in order to make a certain conclusion more or less likely. Strategically or innocently, researchers can select patients that may have covariables that are of major importance to the outcome being studied. Indeed, the authors noted that “partial immunization was associated with increased deprivation, having left school, and increasing age” but they failed to follow-up on these considerations and their HPV-relevant implications. Co-variables that correlate with more vaccination are better financial status, better healthcare insurance coverage, better nutrition, less sexual promiscuity and less social inequality/defeat stress. Improved nutrition obviously provides an anti-viral effect by reducing inflammation-promoted viral replication and also by enhancing immune defenses; wealthier and better

educated persons are known to consume more nutritional supplements. A reduced number of sexual exposures would obviously affect the prevalence of a sexually transmitted diseases (STD). Less socioeconomic stress would lead to a relative improvement in immune function compared to a group with stress-induced immunodysfunction and immunosuppression. Obviously—and completely ignored by all of the authors and editors of this BMJ publication—is the fact that the act of vaccination itself with its attendant information (ie, behavior-changing education) regarding the risks of sexual behavior (ie, promiscuity verses abstinence) and the value of STD-blocking barrier methods (e.g., condoms) would be clearly expected to reduce HPV-related disease. As noted in *The Lancet Handbook of Essential Concepts in Clinical Research* (page 35), “When selection bias or information bias exists in a study, irreparable damage results. Internal validity is doomed.” Also (page 46), “Although assessment of many outcomes is often cited as a positive attribute of cohort studies, this feature can be abused. For example, testing the associations between exposure and many outcomes, but only reporting the significant ones, represents misleading science.”

In this case, the authors quite obviously failed to consider anything other than their chosen vaccine program, and then they assumed that the vaccine program was responsible for the observation that cervical disease was decreased in the vaccinated group. How these researchers were able to remain ignorant of a well-publicized government-endorsed nationwide public health campaign emphasizing improved nutrition and vitamin D supplementation¹² (which is proven with a variety of clinical research to reduce the burden of HPV infections, to improve general immunity, and to reduce inflammation) is unclear; one can only reasonably speculate why the journal’s editors would fail to publish commentary and consideration in this regard.

Bizarrely, BMJ allowed the study’s lead author to post additional commentary on his own research, as if the publication needed any additional biased aggrandizement. Not surprisingly, Palmer¹³ agreed with his own perspective and endorsed the greatness of his research, stating that his research revealed “a veritable triumph for medicine” and that the intervention he endorses is “the only feasible solution” to preventing HPV-related cervical cancer. As would be expected in one of the “mainstream medical journals”, zero mention was made of nutritional immunorestitution, microbiome modification, nor antiviral nutrition strategies—all of which have a clear role in the prevention of HPV-related cervical disease. Clearly, if the only intervention considered is vaccination, and all other social and biological interventions are ignored, then the only possible solution will appear to be vaccination, regardless of the lack of merit of this conclusion. Whether or not one “believes in” the common oversimplified model of HPV-induced cervical disease and/or the promul-

gated “value” of vaccination, we should all want the research to be accurate and for all variables and treatment options to be considered for this condition, especially when the promoted vaccine appears responsible for a large number of injuries and deaths.¹⁴ As noted recently (2018) by former BMJ Editor Richard Smith, the BMJ and its publishing group sells millions of dollars/pounds/euros worth of “product advertising” (e.g., £2.7m) and article reprints (£1.98m or \$2,497,770 United States dollars); most of these advertisements and article preprints are purchased by the medical device and drug (including vaccine) industry to promote sales of their products.¹⁵

The case for postpublication retraction: According to the Committee on Publication Ethics,¹⁶ journal editors should strongly consider retracting a publication if any of the following occur: 1) evidence that the findings are unreliable, either as a result of misconduct [e.g. data fabrication] or honest error [e.g. miscalculation or experimental error], 2) redundant publication, 3) plagiarism, 4) unethical research. In my opinion, any legitimate critical reading of this article would have easily led to its pre-publication rejection or its post-publication retraction, but because the article has financial value by promoting a multibillion dollar vaccine paradigm and up to thousands/millions of dollars in article reprints and pharmaceutical advertising, it was published, editorially praised, and then publicly glorified without (to my knowledge) any scientific criticism. In the irony of ironies, lead author Palmer was quoted by Medscape (op cit) as stating: “One of the things this study really does hammer home is that the anti-vaccine lobby are actually peddling falsehoods.”

The importance of nutritional expertise and independent publications in the post-truth and pro-pharmaceutical era: The international community has been living in the post-truth era—defined as being dominated by utter disregard for truth in the service of financial and political power—now for many years.¹⁷ Given that nutritional education is generally excluded from medical education and post-graduate training, the only way for clinicians to learn about the clinical use of vitamins and minerals to prevent and treat a wide range of diseases—including but not limited to HPV-related diseases—is to access independent publications such as *Journal of Orthomolecular Medicine*,¹⁸ expert-level textbooks,¹⁹ nutrition-inclusive conferences and online courses. A clinician will likely never learn that HPV diseases can be prevented and treated by nutritional interventions by reading and following the mainstream medical journals and mass media. But from the orthomolecular perspective, the rationale supporting such interventions is quite obvious and strongly grounded in legitimate science, biological plausibility, and clinical trials (e.g., antiviral nutrition strategies).²⁰

Author information: Dr Alex Vasquez is a lecturer and author of numerous articles, letters, and books related to

topics of nutrition, clinical medicine, neuroinflammation, human microbiome and immunonutrition. Dr Vasquez has served as a consultant to Biotics Research Corporation. Dr Vasquez has archived the PDF versions of the herein-discussed rapid replies in free-access depositories, specifically <https://ichnfm.academia.edu/AlexVasquez> and https://www.researchgate.net/profile/Alex_Vasquez2.

Citations

1. Palmer T, Wallace L, Pollock KG, et al. Prevalence of cervical disease at age 20 after immunisation with bivalent HPV vaccine at age 12-13 in Scotland: retrospective population study. *BMJ*. 2019 Apr 3;365:l1161. doi: 10.1136/bmj.l1161
2. Brotherton JML. The remarkable impact of bivalent HPV vaccine in Scotland. *BMJ* 2019;365:l1375 <https://doi.org/10.1136/bmj.l1375>
3. Wallace D. UK’s HPV vaccination program ‘dramatically’ reduces risk of cervical cancer, study shows <https://www.foxnews.com/health/u-k-hpv-vaccination-program-dramatically-reduces-risk-of-cervical-cancer-study-shows> Published 5 April 2019 and accessed May 2019
4. Russell P. HPV Vaccine Linked to ‘Dramatic’ Decrease in Cervical Disease. <https://www.medscape.com/viewarticle/911346> April 04, 2019
5. Vasquez A. Critique of “Prescription-strength omega-3 fatty acids to prevent heart disease” by Harvard Medical School 2019 Feb <https://www.academia.edu/38289348> and video <https://vimeo.com/314997927>
6. Vasquez A, Pizzorno J. Concerns About the Integrity of The Scientific Research Process—Focus On Recent Negative Publications Regarding Nutrition, Multivitamins, Fish Oil And Cardiovascular Disease. *Integrative Medicine* 2019 Feb; 8-15 Externally archived at <https://www.ichnfm.org/public>
7. Vasquez A, Cannell J. Calcium and vitamin D in preventing fractures: data are not sufficient to show inefficacy. Comment on Randomised controlled trial of calcium and supplementation with cholecalciferol (vitamin D3) for prevention of fractures in primary care. 2005 Jul 9;331(7508):108-9 PMID: 16002891 PMCID: PMC558659 DOI: 10.1136/bmj.331.7508.108-b
8. Smith R. Medical Journals Are an Extension of the Marketing Arm of Pharmaceutical Companies. *PLoS Med*. 2005 May; 2(5): e138 Available from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1140949/> and <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0020138>
9. “VISION: To prevent cancer and infectious diseases through excellence in the PROVISION OF public health services supporting screening and vaccination.” vcs.org.au/about-us/strategic-plan/. Also noted and of importance: Impact of HPV vaccination: Achievements and future challenges. *Papillomavirus Research* (2019), The

- remarkable impact of bivalent HPV vaccine in Scotland. *BMJ* 2019; 365 :1375. <https://www.vcs.org.au/our-impact/scientific-publications/> Accessed 2019 May 16
10. Vasquez A. Pharma Echo Chamber, Sociopolitical Matrix, and Power Vortex: A Diagram-Centric Conceptualization. *Int J Hum Nutr Funct Med* 2019;7:2 Externally archived at <https://www.academia.edu/38476348>
 11. Schultz KF, Grimes DA. *The Lancet Handbook of Essential Concepts in Clinical Research*. London, Elsevier. 2006
 12. "The proportion of adults who report taking dietary supplements (such as vitamins, fish oils, minerals etc) has increased slightly since 1998 (there was no change between 1995 and 1998). In 1998, 15% of men and 16% of women aged 16-64 took some form of dietary supplement, which increased to 20% and 26%, respectively, in 2003." *The Scottish Health Survey 2003*. Chapter 3 Fruit and Vegetable Consumption and Eating Habits. <https://www.webarchive.org.uk/wayback/archive/20180602183443>. "Therefore, routine vitamin D supplementation is recommended for all children over 1 year of age and should be continued until 5 years unless the diet is diverse and plentiful." Scottish Government. *Nutritional Guidance for Early Years: food choices for children aged 1-5 years in early education and childcare settings*. Published: 23 Jan 2006. <https://www.gov.scot/publications/nutritional-guidance-early-years-food>. Boy wins NHS backing in vitamin D campaign. *The Scotsman* 2009 December <https://www.scotsman.com/news/boy-wins-nhs-backing-in-vitamin-d-campaign>. "At scotsneedvitamind.com, we believe the people of Scotland would see health improvements by taking a regular Vitamin D supplement. We think there is enough evidence currently available to make all of us take action, from health care professionals to parents and teachers." <https://scotsneedvitamind.com/about-us/>. "The United Kingdom National Health Services created a program called Healthy Start, which offers vouchers for free vitamin D supplements to qualifying pregnant women, women with a baby under one year old and children under the age of five years located in Scotland, Northern Ireland, England and Wales. In April of 2017, the Scottish government partnered with the Healthy Start program to offer free vitamin D supplements to all Scottish pregnant women, regardless of whether they qualify for vouchers. This joint effort was created to decrease the risk of rickets and other health complications caused by vitamin D deficiency. Scotland offers free vitamin D supplements for all pregnant residents. Posted on: November 28, 2017 by Missy Sturges and John Cannell, MD. <https://www.vitamindcouncil.org/scotland-offers-free-vitamin-d-supplementation>. See also: National Health Services Scotland. Vitamin D. <https://www2.gov.scot/resource/0038/00386784.pdf> Scottish warning over vitamin D levels. 19 September 2010 <https://www.bbc.com/news/uk-scotland-11355810> "Following recommendations from the Scientific Advisory Committee on Nutrition (SACN), Scottish Government advice on vitamin D for all age groups has been updated as follows: Everyone age 5 years and above should consider taking a daily supplement of 10 micrograms vitamin D, particularly during the winter months (October – March)." Scottish Government. Vitamin D. <https://www2.gov.scot/Topics/Health/Healthy-Living/Food-Health/vitaminD> Scottish Government. Vitamin D information for health professionals in Scotland. November 2017 <https://www.gov.scot/binaries/content/documents/gov-scot/publications/pub...> "Scots should consider taking vitamin D supplements all-year round, but particularly in autumn and winter, according to new health advice." All Scots advised to take vitamin D says new health guidance. 21 July 2016. <https://www.bbc.com/news/uk-scotland-36856176> "International experts are calling for food in Scotland to be fortified with vitamin D, in an attempt to cut the large numbers of people who develop multiple sclerosis at sunshine-deprived northern latitudes." Add vitamin D to Scotland's food – experts: Dosing whole population would help cut levels of multiple sclerosis, say scientists. 23 Dec 2011 <https://www.theguardian.com/uk/2011/dec/23/vitamin-d-scotland-food-multi>. All Scottish babies should have vitamin D supplement, CMO says. *The Pharmaceutical Journal* 2017 Nov 30. <https://www.pharmaceutical-journal.com/news-and-analysis/news/all-scotti...> Accessed April 2019
 13. Palmer T. Bivalent HPV vaccine in Scotland is having a considerable and sustained effect. <https://blogs.bmj.com/bmj/2019/04/03/tim-palmer-bivalent-hpv-vaccine-in-scotland-is-having-a-considerable-and-sustained-effect/> Posted April 3, 2019 and accessed May 2019
 14. See HPV vaccine danger-related rapid responses to the article online <https://www.bmj.com/content/365/bmj.l1161/rapid-responses>, especially from Noel Thomas (<https://www.bmj.com/content/365/bmj.l1161/rr-6> posted 10 April 2019) "When Steve Hinks drew attention to the totals for the HPV vaccine in 2017, there were over 300,000 adverse events recorded, and more than 400 deaths, following HPV vaccination. (2,3) ... However, a Freedom of Information request to the MHRA last year, revealed that in the period May 2006- -Feb 2018, in the UK, adverse event reports for the HPV vaccine totaled 3194, total reactions 12,783, fatal outcome reports, 8. (4)" See also the following:
 15. Smith R. The hypocrisy of medical journals over transparency. <https://blogs.bmj.com/bmj/2018/01/24/richard-smith-the-hypocrisy-of-medical-journals-over-transparency/> Posted January 24, 2018 accessed May 2019
 16. Committee on Publication Ethics. *Retraction Guidelines*. <http://publicationethics.org/files/retraction%20guidelines.pdf> Accessed May 2019

17. The challenge of the post-truth era. *Nat Cell Biol.* 2018 Nov;20(11):1231. doi: 10.1038/s41556-018-0231-z. See also: Talton J. In our post-truth era, how we view reality is more important than ever. *Seattle Times* January 3, 2019 <https://www.seattletimes.com/pacific-nw-magazine/in-our-new-post-truth-era-the-way-we-view-reality-is-more-important-than-ever/>. See also: Harari YH. Are we living in a post-truth era? Yes, but that's because we're a post-truth species. Sep 7, 2018 <https://ideas.ted.com/are-we-living-in-a-post-truth-era-yes-but-thats-because-were-a-post-truth-species/>
18. Vasquez A. Orthomolecular Medicine, Catalytic Creativity, and the Psychosocial Ecosystem. *Journal of Orthomolecular Medicine.* 2018 Dec <https://isom.ca/article/orthomolecular-medicine-catalytic-creativity-and-the-psychosocial-ecosystem/>
19. Vasquez. *Textbook of Clinical Nutrition and Functional Medicine.* Barcelona; International College of Human Nutrition and Functional Medicine, 2016
20. Vasquez. *Antiviral Nutrition* (ebook; <https://www.amazon.com/dp/B00OPDQG4W>) also published as *Antiviral Strategies and Immune Nutrition* (paperback; <https://www.amazon.com/dp/1502894890>). CreateSpace Independent Publishing Platform; 2014

Research

Prevalence of cervical disease at age 20 after immunisation with bivalent HPV vaccine at age 12-13 in Scotland: retrospective population study

BMJ 2019; 365 doi: <https://doi.org/10.1136/bmj.l1161> (Published 03 April 2019)

Cite this as: BMJ 2019;365:l1161

Linked editorial

[The remarkable impact of bivalent HPV vaccine in Scotland](#)

Linked opinion

[Bivalent HPV vaccine in Scotland is having a considerable and sustained effect](#)

- [Article](#)
- [Related content](#)
- [Article metrics](#)
- [Rapid responses](#)
- [Response](#)

Scotland's public health campaigns to improve vitamin D nutriture occurred within the same timeframe as HPV vaccination

(Word count without footnotes and citations: 934)

In April 2019, Palmer et al [1] published a retrospective population study crediting vaccination against human papilloma virus (HPV) with reduction in HPV prevalence in Scotland, and the authors attributed a reduction in HPV prevalence among unvaccinated women with “herd protection.” However the authors did not mention Scotland’s population-wide public health campaigns to address endemic

13 April 2019

Alex Vasquez

Physician, author, lecturer, editor

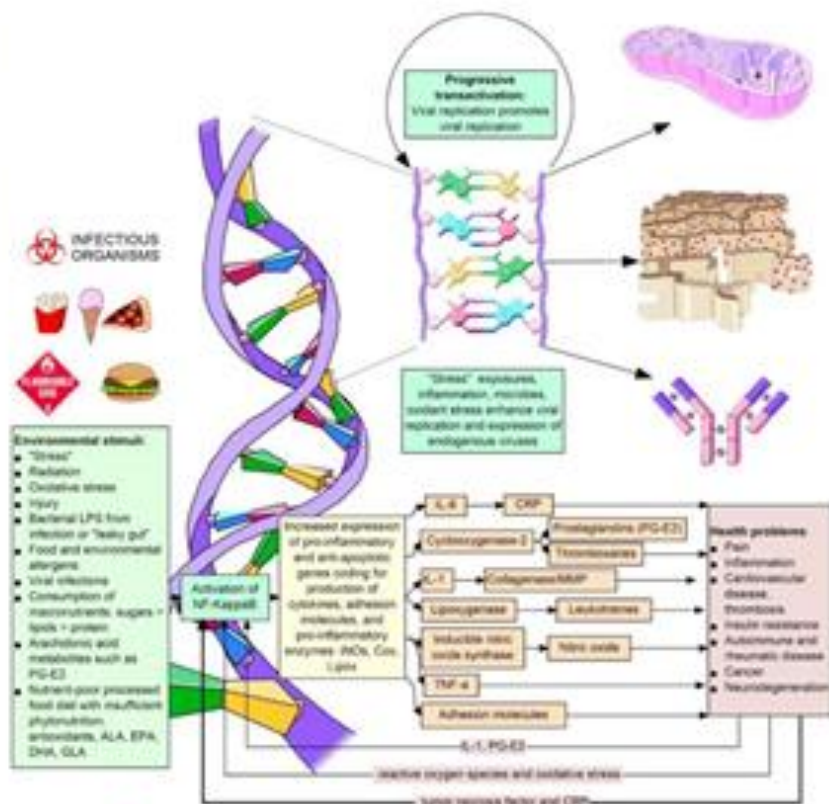
Barcelona, Spain

ANTIVIRAL NUTRITION

Against Colds, Flu, Herpes, AIDS, Hepatitis, Ebola, Dengue, and Autoimmunity: A Concept-Based and Evidence-Based Handbook and Research Review for Practical Use

Inflammation Mastery series Chapter 6 • Volume 2 of *Dysbiosis in Human Disease*

2-Part Learning System of Text and Video



DR. ALEX VASQUEZ

INFLAMMATIONMASTERY.COM



Editorials

The remarkable impact of bivalent HPV vaccine in Scotland

BMJ 2019; 365 doi: <https://doi.org/10.1136/bmj.l1375> (Published 03 April 2019)

Cite this as: BMJ 2019;365:l1375

Linked research

[Prevalence of cervical disease at age 20 after immunisation with bivalent HPV vaccine at age 12-13 in Scotland](#)

Linked opinion

[Bivalent HPV vaccine in Scotland is having a considerable and sustained effect](#)

- [Article](#)
- [Related content](#)
- [Article metrics](#)
- [Rapid responses](#)
- [Response](#)

Re: Scotland's public health programs and trends improving nutritional status should be considered when discussing HPV trends

Julia Brotherton's Editorial [1] accompanying the retrospective population study crediting vaccination against human papilloma virus (HPV) with reduction in HPV prevalence in Scotland [2] considers a variety of possibilities for the presumed success of the HPV vaccination program. However, her Editorial does not mention the concomitant public health programs organized by the Scottish Government and other groups to improve vitamin D nutriture throughout Scotland that occurred in the same time-frame. The Scottish Government recognized the high prevalence of vitamin D deficiency in its population and began recommending vitamin D supplementation not later than 2006. By 2009, coincident with the start of the HPV vaccination campaign in 2008, numerous vitamin D

Dermatol Ther. 2019 Mar 28:e12882. doi: 10.1111/dth.12882

[37] Schulte-Uebbing C, Schlett S, Craiut I, Antal L, Olah H. Chronical cervical infections and dysplasia (CIN I, CIN II): vaginal vitamin D (high dose) treatment. *Dermatoendocrinol* 2014 Oct; 6:e27791. doi:10.4161/derm.27791

[38] Vahedpoor Z, Jamilian M, Bahmani F, Aghadavod E, Karamali M, Kashanian M, Asemi Z. Effects of Long-Term Vitamin D Supplementation on Regression and Metabolic Status of Cervical Intraepithelial Neoplasia: a Randomized, Double-Blind, Placebo-Controlled Trial. *Horm Cancer*. 2017 Feb;8(1):58-67. doi: 10.1007/s12672-016-0278-x. Epub 2017 Jan 3

[39] Vahedpoor Z, Mahmoodi S, Samimi M, Gilasi HR, Bahmani F, Soltani A, Sharifi Esfahani M, Asemi Z. Long-Term Vitamin D Supplementation and the Effects on Recurrence and Metabolic Status of Cervical Intraepithelial Neoplasia Grade 2 or 3: A Randomized, Double-Blind, Placebo-Controlled Trial. *Ann Nutr Metab*. 2018;72(2):151-160. doi: 10.1159/000487270. Epub 2018 Feb 21

Competing interests: Dr Alex Vasquez is a lecturer and author of numerous articles, letters, and books related to topics of nutrition, clinical medicine, neuroinflammation, and the human microbiome. Dr Vasquez has served as a consultant to Biotics Research Corporation.

11 April 2019

Alex Vasquez

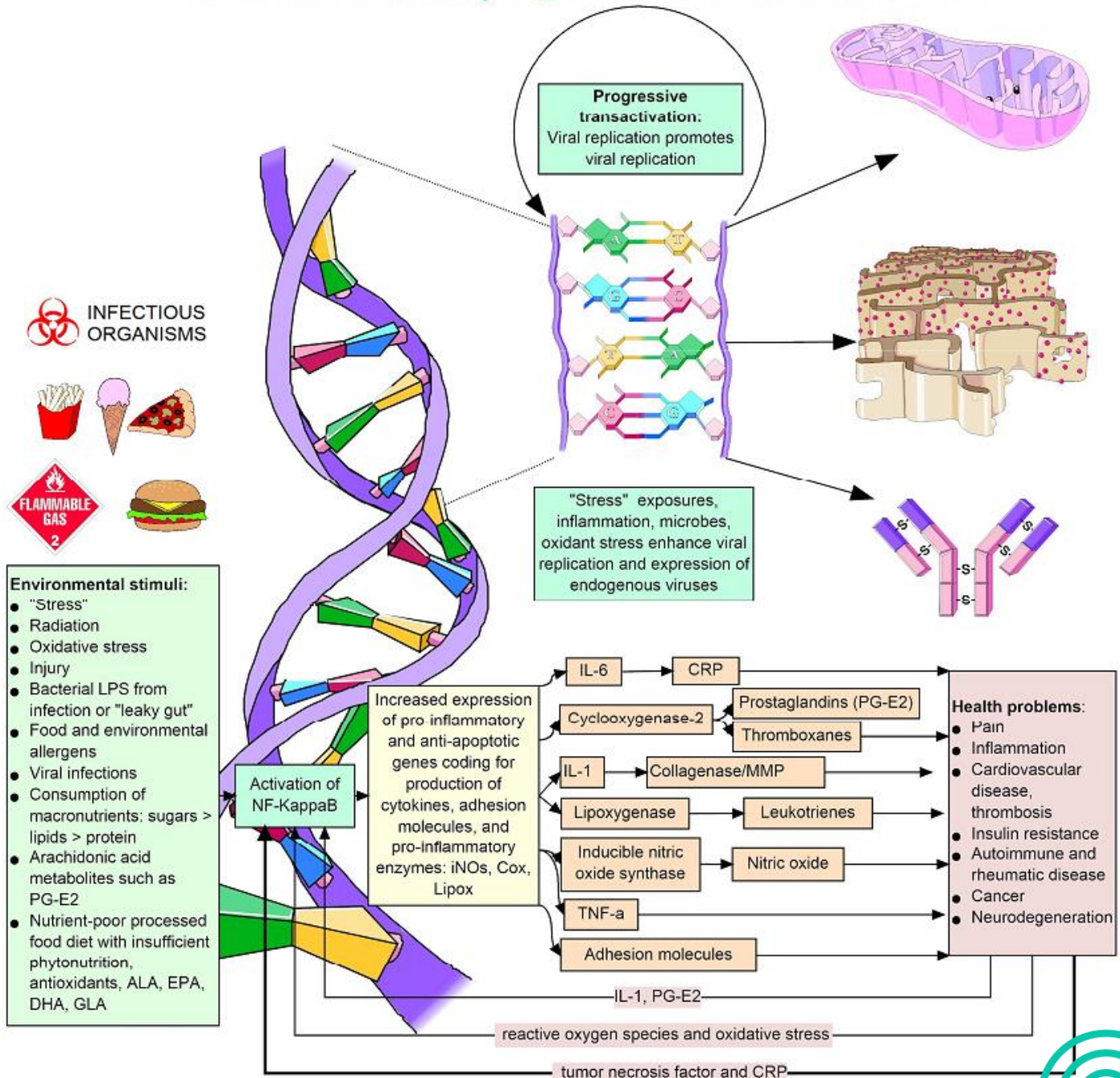
Physician, author, lecturer, editor

Barcelona, Spain

ANTIVIRAL STRATEGIES AND IMMUNE NUTRITION

Against Colds, Flu, Herpes, AIDS, Hepatitis, Ebola, Dengue, and Autoimmunity: A Concept-Based and Evidence-Based Handbook and Research Review for Practical Use

Inflammation Mastery series Chapter 6 ♦ Volume 2 of Dysbiosis in Human Disease
2-Part Learning System of Text and Video



DR. ALEX VASQUEZ
INFLAMMATIONMASTERY.COM





Photos © by Dr Vasquez, 2013-2015

Mini-Review • Continuing Education • Microbiome • Dysbiosis • Infectious Disease

Translating Microbiome (Microbiota) and Dysbiosis Research into Clinical Practice: The 20-Year Development of a Structured Approach that Gives Actionable Form to Intellectual Concepts

Alex Vasquez DC ND DO FACN

Experience and Perspectives

Many years ago when I published my first books^{1,2} and articles³ detailing "dysbiosis", the word could hardly be found in the Medline index, the topic was controversial at best and ethereal at worst, the term "microbiome" (first published in French in 1949 and in English in 1988) was virtually unknown, and I spent most of the time and space in my lectures and articles substantiating and defending the condition's existence. These days, everyone is talking about microbiome, dysbiosis, "leaky gut" (thanks largely to Leo Galland MD), and my 1996 article on "Silent Infections and Gastrointestinal Dysbiosis" has been downloaded at least 4,000 times and is one of the top 1% most popular articles on Academia.edu.⁴ In the preparation of my dysbiosis lecture at a major functional medicine conference in 2010, I found that only 180 Medline articles indexed the term "dysbiosis", and now—slightly less than five years later—more than 1,200 articles index that term. Obviously, the dysbiosis concept has become better known to the point of actually being popular, but this does not mean that clinicians understand what to do with it. A recent article from the June 2015 issue of *Nature Medicine* perfectly summarized this discrepancy between microbiota research and clinical action: "*In the three years since the completion of the first phase of the Human Microbiome Project, the number of scientific papers linking the microbes that live in our gut to diseases ranging from diabetes and colitis to anxiety and depression has grown exponentially. Yet, these tantalizing connections have yielded few benefits from a therapeutics standpoint.*"⁵ To the extent that this information is being integrated into clinical practice at all, the current level of

"Dysbiosis" is an important concept, but doctors cannot treat concepts.

We have to define, describe, and deconstruct the microbes, molecules, and mechanisms into their components, then rebuild a conceptual scaffold and intellectual structure that becomes a useful tool that, with study and experience, can be used in a clinical setting to effective benefit.

practical application is a bit indelicate and cumbersome beyond the most commonly repeated advice of advocating probiotics, avoiding antibiotics, perhaps delving into using botanical antimicrobials and laboratory testing. Breath testing (an insensitive test for only one subtype of gastrointestinal dysbiosis) and microbiologic testing have become popular to the point of overuse as doctors grapple for clinical clues. (Noteworthy in the conversation on functional laboratory testing is that one functional medicine laboratory in particular used inaccurate proprietary microbe-identification methods to extract millions of dollars of patient and physician money only to deliver innumerable wasted hours in patient suffering and



ICHNFM
International College of Human
Nutrition and Functional Medicine

ICHNFM has many videos on the topics of dysbiosis, persistent infections, and dysbiotic clinical conditions such as fibromyalgia at www.Vimeo.com/ICHNFM



Updates: The most complete version of this article is available at the following location <http://intjhumnutrfunctmed.org/>

Copyrights: Copyright © 2015 by author(s) and International College of Human Nutrition and Functional Medicine www.ICHNFM.org

Free access: Freely available and distributable with all content, text, and image rights reserved by author(s) and ICHNFM.

Citation: Vasquez A. Translating Microbiome (Microbiota) and Dysbiosis Research into Clinical Practice: The 20-Year Development of a Structured Approach that Gives Actionable Form to Intellectual Concepts. *Int J Hum Nutr Funct Med* 2015;v3(q2):p1

physician confusion due to misleading and worthless [e.g., "parasite present: taxonomy unavailable"] laboratory information.⁶⁾ So, despite the bloom in research and the exponential public awareness of dysbiosis, much progress still needs to be made in order to help clinicians—and ultimately patients—better appreciate, assess, optimize and maintain microbial health—eubiosis.

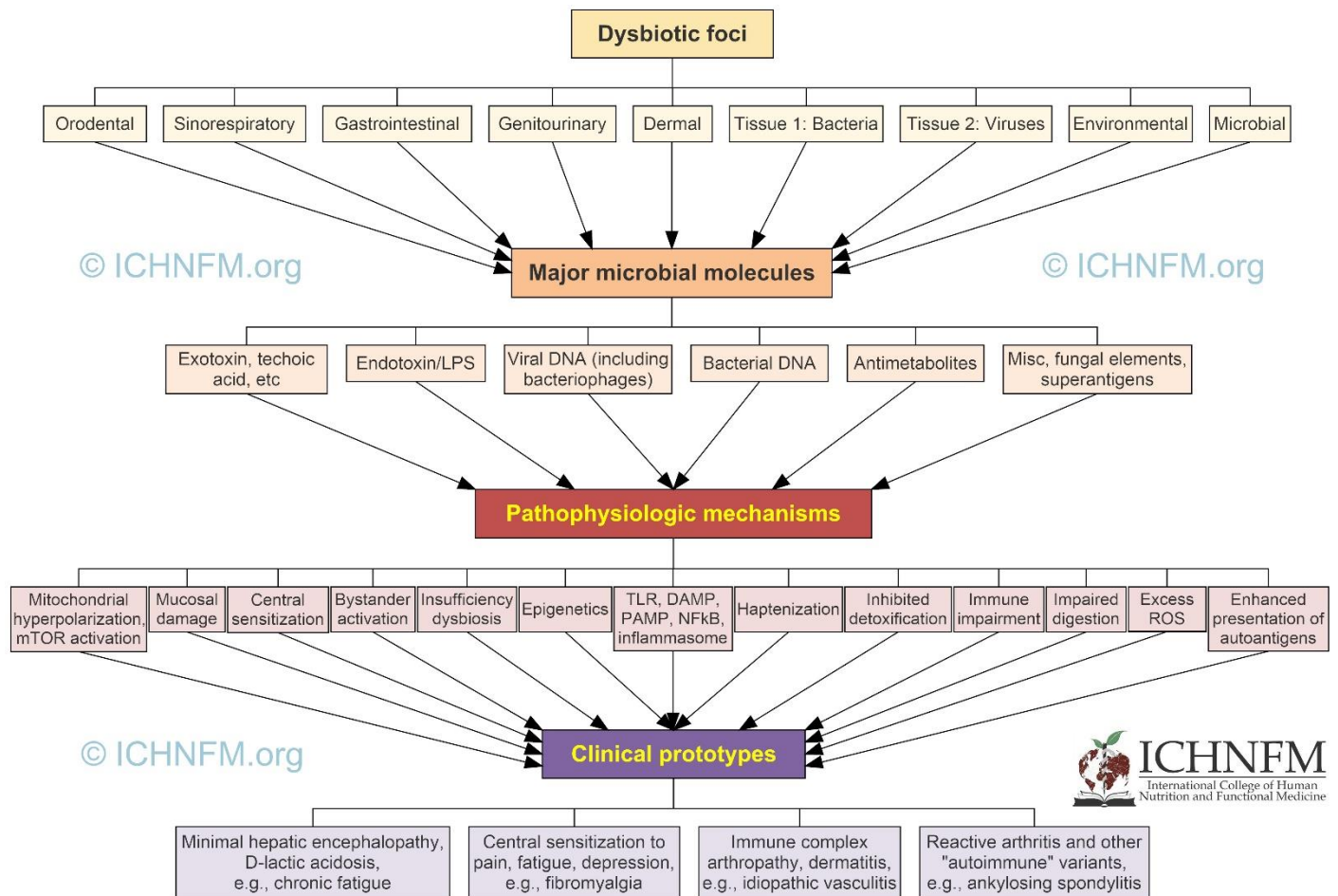
Clinical Importance

The priority is to understand the role of dysbiosis in clinical disease; patients are suffering day-by-day and hour-by-hour because of microbial colonization, bacterial allergy, reactive arthritis, systemic inflammation, fibromyalgia, insulin resistance, neurocognitive impairments, autoimmunity, and other manifestations of dysbiosis. The basic science and clinical research data on these various phenomena is crystal clear and intellectually sound but is rarely delivered in a manageable manner so that time-pressured clinicians can perceive the information in an interconnected context that expedites clinical application in patient assessment and treatment. Personally, I have generally approached clinical care with a sense of urgency, for altruistic reasons and because I know the experience of being

persistently ill—in my case, the situation lasted for seven years and still occasionally recurs, as discussed later.

Dysbiosis-Triggered Illness: Deconstructing the Phenomena and Helping Our Patients

Dysbiotic illness can ultimately be understood as a manifestation of human intolerance of the total microbial load (TML) and more specifically the total dysbiotic load (TDL) which is only one part of the total inflammatory load (TIL), alternately described as the total *impairment* load—that is, the total load of physiologic, biochemical, and psychosocial burdens that promote inflammation or any type of metabolic/physiologic/mental impairment. As I have said for many years, dysbiosis is a disease state best described as a "bad relationship" wherein neither the host nor the microbe(s) are unilaterally "at fault" but rather that they are—for a variety of modifiable and nonmodifiable reasons—currently incompatible. Conceptualizing dysbiotic illnesses as a *relationship* rather than as an *infection*—an extension of the acute infection model wherein the microbe is presumed guilty gives us three major areas of intervention: ❶ immunorestitution, ❷ tolerogenic or adaptive, ❸ antimicrobial.



Clinical pathophysiology of dysbiosis-induced disease: The total microbial load communicates to the human body in general and the innate/adaptive immune systems specifically from various locations via specific molecules, which then are "combinatorially summarized" in conjunction with the patient's physiologic profile—including genetic makeup, nutritional status, xenobiotic load, sleep and stress status—to produce a *pattern* of clinical manifestations. Doctors are trained to diagnose and treat the resulting prototypic pattern rather than the problems contributing to the pattern. Image from cover and text of Vasquez A. *Human Microbiome and Dysbiosis in Clinical Disease*. Published, copyrighted ©, trademarked ® by Dr Alex Vasquez and International College of Human Nutrition and Functional Medicine 2015. [ISBN 1512360295 / 9781512360295]

Personal Experience

I did not become an expert in dysbiosis entirely by choice; I had to become so in order to literally save my own life and preserve my own health. The year was 1995, the idea of "leaky gut" was new and ridiculed (in contrast to its wide acceptance today), and the entire concept of functional medicine had only been announced just a few years prior. Thanks to mostly to Metchnikoff, the naturopathic profession, a handful of allopathic doctors, and a few scattered and vintage medical articles, we had some vague ideas about dysbiosis but very few details with which to understand it better, let alone treat it effectively. In this case, I am discussing gastrointestinal dysbiosis, which is the prototype but obviously only one of the eight location-based subtypes of dysbiosis.

I remember the exact day and moment that it all started. What began with the typical "brain fog" later progressed to physical inertia, multiple chemical sensitivity / environmental intolerance (MCS/EI), and progressive immediate-onset food allergies, most of which were frustratingly unidentified except for soy lecithin—of note, 1996 was the first year of genetically manipulated (GM) soy in the US. I was also progressively lymphopenic and had remarkable responses to parenteral vitamins, especially vitamin B12 (improved mental clarity) and folic acid (resolution of progressive lymphopenia). At this time, I was finishing chiropractic college, starting naturopathic college, and harvesting gems from every seminar, book, and audiocassette I could find, notably from Bland, Galland, Gaby and Wright. With new access to the internet, I scoured the earlier versions of Medline and spent my evenings and weekends in the medical libraries at Oregon Health Science University in Portland and University of Washington in Seattle. I started compiling and publishing articles, and my main research interests at the time—other than studying everything nutrition and trying to find solutions to my own mysterious illnesses—were rheumatology and hemochromatosis.⁷

Following graduation and licensure, I opened a clinical practice in Seattle, and later I was also invited to teach Orthopedics and Rheumatology at Bastyr University. The responsibility of teaching these courses gave me reason to dive even deeper into the research and to begin articulating and giving structure to what almost always starts as inklings and impressions. Slowly, I started to understand dysbiosis, its various permutations, and the variances of effect that different microbes could have, either in isolation or in combination—what I would later elucidate as *combinatorial dysbiosis*⁸ and continue to refine on an almost daily and regular basis.⁹

With effort and reflection, obscurity morphed into clarity. If all we had to work with is the laboratory result above, this alone would have been sufficient to explain and solve all my health problems *within hours*; I have this level of understanding now, but only after studying the topic—not simply for academic reasons or in a cursory manner, but with some sense of personal urgency—for twenty years. The main findings of the results above are the *Citrobacter freundii* and the *Klebsiella pneumoniae*, and additional finding on this same result was that of markedly elevated fecal beta-glucuronidase. With years of trial and error and a high degree of certainty based on personal experience backed by a massive review of the research literature, I would interpret the above results as follows:

- **The mental and physical fatigue** I experienced were due mostly to hydrogen sulfide (H₂S) produced by the *Citrobacter freundii*. H₂S is a mitochondrial toxin and thus

Bacteriology

Beneficial Bacteria

Lactobacillus species	N	4+
Escherichia coli	I	<NG
Bifidobacterium	N	4+

Additional Bacteria

alpha haemolytic Streptococcus	N	3+
gamma haemolytic Streptococcus	N	4+
Citrobacter freundii	P	4+
Klebsiella pneumoniae	P	4+
beta Strep (Not Group A or B)	I	2+

Mycology

Candida krusei	P	4+
Geotrichum capitatum	P	4+

Dr Vasquez's test results from ~1996: Everything is obvious when you know the answer; sample study guide and CE exam questions are available: <http://ow.ly/O15vd>

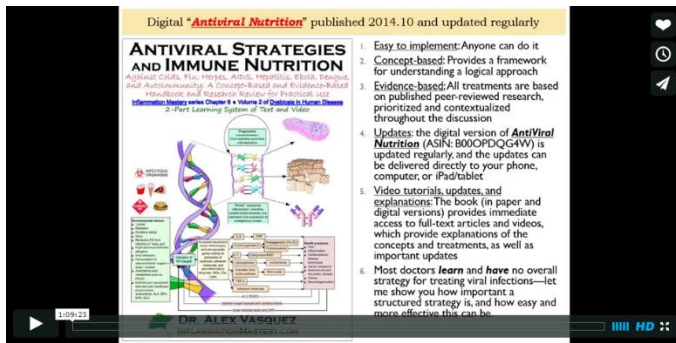
a neurotoxin, thereby explaining the fatigue, and it also chelates cobalamin, thereby explaining the response to vitamin B12, indicative of vitamin B12 deficiency, which was also contributing to the fatigue. Constipation was another problem that was not only miserable, but which also promoted the persistence of the dysbiosis and which was caused by the gut-paralyzing effect of H₂S.

- **The multiple chemical sensitivity / environmental intolerance (MCS/EI)** was due to impaired cytochrome p450 detoxification secondary to endotoxin in general and the O antigen of *Klebsiella pneumoniae* in particular. Additively and synergistically, the elevated fecal beta-glucuronidase was deconjugating whatever little cytochrome p450 detoxification was taking place, leading to the inability to clear *and thus the accumulation of* ambient chemicals and internal toxins that could not be oxidized for conjugation; notice the dual effect of endotoxin-mediated blockade of cytochrome p450 along with increased enterohepatic recycling due to the elevated fecal beta-glucuronidase. The folate deficiency and resultant lymphopenia are presumed due to a combination of malabsorption and increased utilization; at this time I also had an increased lactulose:mannitol ratio and dramatically elevated caffeine clearance with horrid benzoate conjugation.
- **Immediate-onset food allergies** were due to the increased intestinal permeability and immune activation, both of which can be blamed on elevated gastrointestinal endotoxin.

During this time, I gained personal *physician heal thyself* experience with practically innumerable nutrients, botanicals, and a few antimicrobial drugs; I also appreciated—and was ultimately cured by—my (in)famous vitamin C purge: first-morning consumption of two cups of coffee (peristalsis stimulant) and ~30 grams of vitamin C with the resulting osmotic laxative and exaggerated migratory motor complex providing gastrointestinal housecleaning *par excellence*.

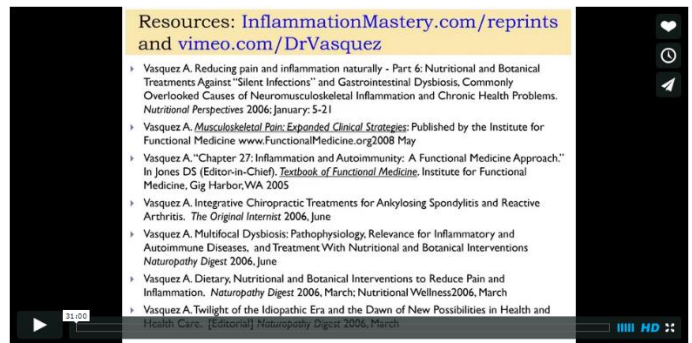
Conclusions

With the compilation of personal experiences and ongoing research from thousands of clinicians and basic scientists, we collectively have the knowledge and tools available to assess and alleviate dysbiotic illnesses in their various forms. The twilight of the idiopathic era and the dawn of new possibilities in health and healthcare continue to be progressively illuminated.¹⁰ ✎



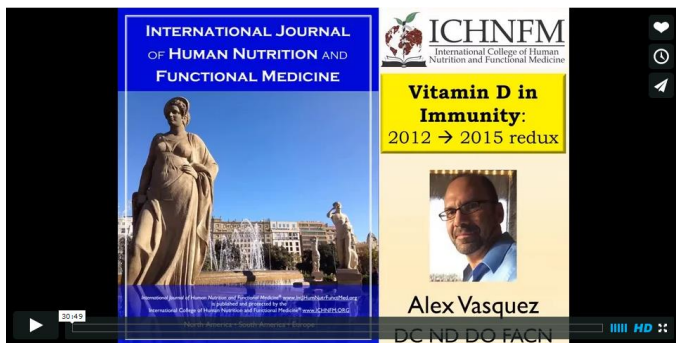
Functional Medicine & Immune Nutrition for Viral Infections: Part 1 Introduction and Contextualization

<https://vimeo.com/117742117>



Functional medicine • clinical nutrition • microbiome / microbiota • dysbiosis • online education • CME

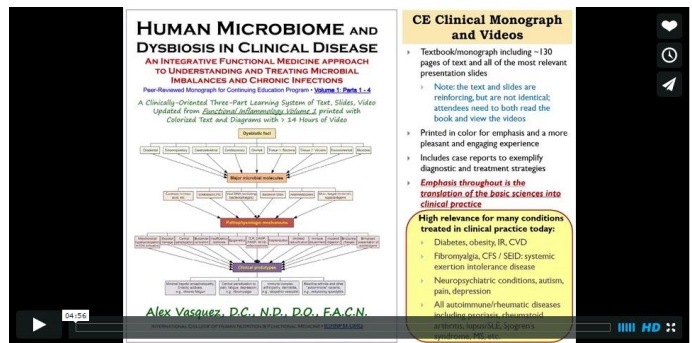
<https://vimeo.com/123715277>



Vitamin D Controversy: Article and Video

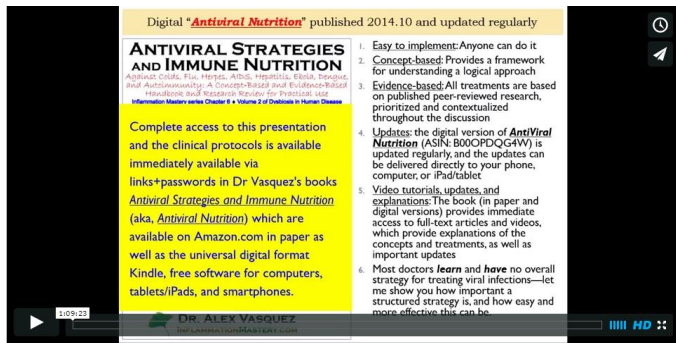
In this video and article, Dr. Vasquez discusses the merits of vitamin D and the controversy and risks associated with vitamin D deficiency, taking a stand against the intentional induction of vitamin D deficiency as treatment as advocated by a small group of doctors. The full-text article is available at: ichnfm.org/publications/content/IJHNFNM_2015_v3q1p1_HypovitaminosisDiatrogenesis_pro.pdf

<https://vimeo.com/125074159>



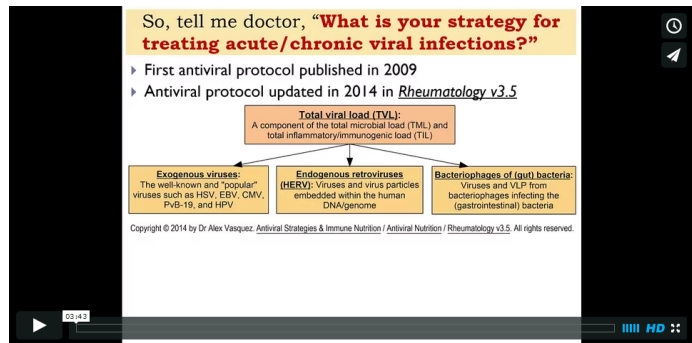
CE monograph: Human Microbiome and Dysbiosis in Clinical Disease

<https://vimeo.com/129841003>



2015.01 Functional Medicine & Immune Nutrition for Viral Infections: Part 1 Introduction and Contextualization

<https://vimeo.com/116470021>



AntiViral Strategies and Immune Nutrition: Antiviral Nutrition

<https://vimeo.com/109318556>

Upcoming CE/CME Events: Delivered to your home or office

What makes this system great:

- Learn at your leisure, at your own pace
- Order the monograph in full-color or black and white to be delivered to your home or office
- Discount code for printed monograph provided on website
- Strong foundation in molecular biology, translated for immediate clinical use
- Access the materials anytime, even for a while after completion of the program
- Online forums and live discussions available
- Save money, time, energy and *the massive carbon footprint* from the hassle of travel just for a conference; use your travel time for your own *real* vacation, not for work

Important clinical topics:

1. Dysbiosis and the Microbiome
 2. Mitochondrial Medicine and Mitochondrial Nutrition in Primary and Specialty Care
 3. Nutritional Immunomodulation for the Treatment of Allergy and Autoimmunity
 4. Chemical Toxicity, Clinical Disease, and Practical Detoxification
- More details posted at http://www.ichnfm.org/continuing_education.html

ICHNFM provides *R.E.A.L.* continuing education

- ▶ **Rigorous:** Experience the difference with *expert-level* CE/CME
- ▶ **Engaging:** Attendees access the material via several different media—text, graphics, audio-video, interactive sessions, and the final exam
- ▶ **Accountable:** Each program requires a “final exam” to demonstrate competency (not simply “attendance”) and awards a Certificate of Achievement with the CE/CME hourly credits
- ▶ **Life-changing:** At every step of the way in the preparation of these educational materials, the primary goals are to improve clinician intellectual understanding and clinical skills, ultimately culminating in improved healthcare delivery and clinical practice success

GET REAL

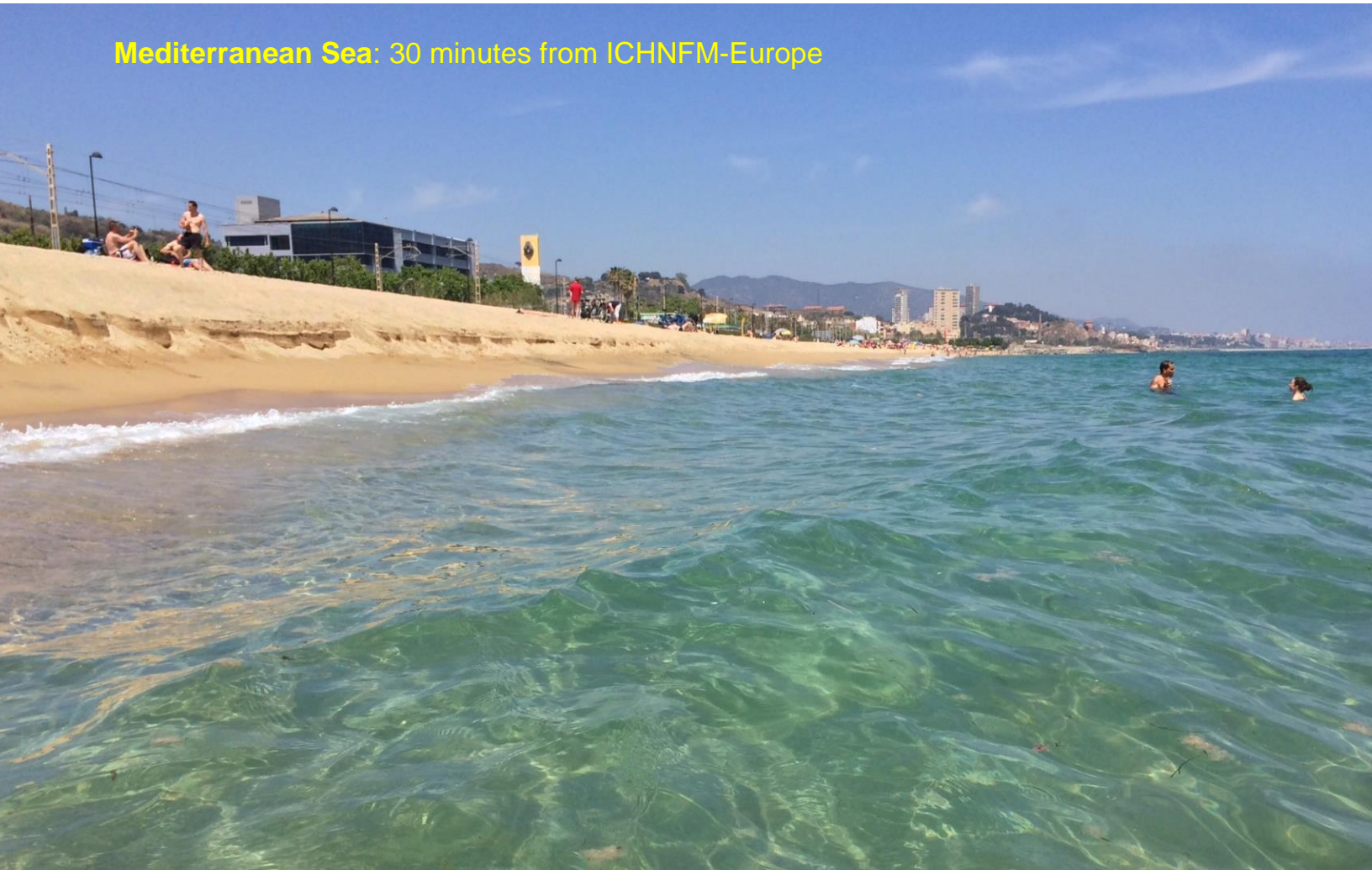


ICHNFM
International College of Human
Nutrition and Functional Medicine

History of this publication: This article was written and illustrated by Dr Alex Vasquez; editorial critiques and peer reviews were provided by a quorum of *IJHNF*M reviewers. Kind review was also provided by external laboratory specialists. Publication does not imply endorsement by all members of *IJHNF*M Editorial Review Board.

1. Vasquez A. *Integrative Rheumatology*. Integrative and Biological Medicine Research and Consulting, 2006. *
2. Vasquez A. *Musculoskeletal Pain: Expanded Clinical Strategies*. Institute for Functional Medicine, 2008. * Updated in 2014 as *Naturopathic Rheumatology v3.5* cited below.
3. Vasquez A. Multifocal dysbiosis: Pathophysiology, relevance for inflammatory and autoimmune diseases, and treatment with nutritional and botanical interventions. *Naturopathy Digest* 2006 Jun http://www.ichnfm.org/faculty/vasquez/reprints/2006_multifocal_dysbiosis.html
4. Vasquez A. Nutritional and Botanical Treatments Against “Silent Infections” and Gastrointestinal Dysbiosis, Commonly Overlooked Causes of Neuromusculoskeletal Inflammation and Chronic Health Problems. *Nutritional Perspectives* 2006 Jan. <http://ow.ly/O0Wau>
5. de Vrieze J. Microbiome models, on computers and in lab dishes, see progress. *Nature Medicine* 2015 June; 21: 543–544 www.nature.com/articles/nm0615-543
6. Gingras BA, Duncan SB, Scheuller NJ, Schreckenberger PC. Assessment of diagnostic accuracy of recently introduced DNA stool screening test. *International Journal of Human Nutrition and Functional Medicine* 2014;v2(q1);p1 <http://ow.ly/O2eRE>
7. Vasquez A. Musculoskeletal disorders and iron overload disease: comment on the American College of Rheumatology guidelines for the initial evaluation of the adult patient with acute musculoskeletal symptoms. *Arthritis Rheum*. 1996 Oct;39(10):1767-8 <http://www.ncbi.nlm.nih.gov/pubmed/8843875>
8. Vasquez A. *Naturopathic Rheumatology v3.5*. International College of Human Nutrition and Functional Medicine, 2014. [ISBN 0990620425 / 978-0990620426] <http://www.amazon.com/dp/0990620425>
9. Vasquez A. *Human Microbiome and Dysbiosis in Clinical Disease*. International College of Human Nutrition and Functional Medicine, 2015. [ISBN 1512360295 / 9781512360295] <https://www.createspace.com/5518130>
10. Vasquez A. Idiopathic versus Multifactorial: Twilight of the Idiopathic Era and the Dawn of New Possibilities in Health and Healthcare. *Naturopathy Digest* 2006 naturopathydigest.com/archives/2006/mar/idiopathic.php with minor edits made in 2010 and 2014 <http://ow.ly/O2fW6>

Mediterranean Sea: 30 minutes from ICHNFM-Europe



Antiviral Nutrition Update #1 for 2018: Clinical Trial of Vitamin D3 against HPV/CIN1



ALEX VASQUEZ DO DC ND FACN

Clinician, Researcher, Lecturer, Academician, Consultant, Author



- Major books include *Inflammation Mastery 4th Edition* (and any later versions) printed also in separate and progressive volumes as *Textbook of Clinical Nutrition and Functional Medicine* (2016), with excerpts published as *Brain Inflammation* (2016), *Human Microbiome and Dysbiosis in Clinical Disease* (2015); anticipated new books include *Deciphering the Gut-Brain Axis in Clinical Practice* (2018) from which *Autism, Dysbiosis, and the Gut-Brain Axis* (2017) has been prereleased.
- Peer-reviewed/independent publications include: *The Lancet.com*, *British Medical Journal (BMJ)*, *Annals of Pharmacotherapy*, *Nutritional Perspectives*, *Journal of Manipulative and Physiological Therapeutics (JMPT)*, *Journal of the American Medical Association (JAMA)*, *Original Internist*, *Integrative Medicine*, *Holistic Primary Care*, *Alternative Therapies in Health and Medicine*, *Journal of the American Osteopathic Association (JAOA)*, *Dynamic Chiropractic*, *Journal of Clinical Endocrinology and Metabolism*, *Current Asthma and Allergy Reports*, *Complementary Therapies in Clinical Practice*, *Nature Reviews Rheumatology*, *Annals of the New York Academy of Sciences*, and *Arthritis & Rheumatism*, the Official Journal of the American College of Rheumatology.

The video of this presentation is archived at ichnfm.org/hpv1, and the transcript in PDF format—which is considered the final and citable version—is archived at academia.edu/35808436; any corrections or updates will be made to the PDF file. Observe that this video presentation is truly an *update* subsequent to previous publications and that therefore not all sources are cited; for citations, see the video, and for complete citations regarding the protocol in its entirety, see the book *Antiviral Strategies and Immune Nutrition* or the ebook version titled *Antiviral Nutrition*.

“Hello everyone, Dr Alex Vasquez here with our next video which is going to discuss antiviral nutrition. This will be the first update for 2018.

If I'm providing an update, then obviously that information will be founded upon and predicated upon some previous information. So let's take a look at those sources right now. This series of updates builds upon previously published books, articles, videos and blogs. In 2014, I published a small book called *Antiviral Strategies and Immune Nutrition*; it's also available as an ebook through the Amazon Kindle platform, that was published under the name of *Antiviral Nutrition*. I also published kind of an editorial journal article called “Unified Antiviral Strategy” in 2014, you can get that online for free. And I also did a presentation in 2016 at the International Congress on Naturopathic Medicine in Barcelona, you can see that on the internet for free as well and I've provided you the website address. Also in 2014, I published a series of videos which you can find online for free if you're interested in looking at those.

- Book:** Antiviral Strategies and Immune Nutrition (2014) <https://www.amazon.com/dp/1502894890/>
- eBook:** Antiviral Nutrition (Kindle ebook, 2014) <https://www.amazon.com/dp/B00OPDQG4W>
- Journal:** Unified Antiviral Strategy published by ICHNFM. *International Journal of Human Nutrition and Functional Medicine* 2014:v2(q4);p1 ichnfm.org/antiviral5

I will conclude with a brief summary and clinical contextualization. This study — “Effects of Long-Term Vitamin D Supplementation on Regression and Metabolic Status of Cervical Intraepithelial Neoplasia” published in February of 2017 in the journal *Hormones and Cancer* — is a small trial but it is placebo-controlled and does provide encouraging data consistent with known benefits of vitamin D supplementation, whether that's provided systemically (for an endocrine effect) or directly vaginally (for endocrine [systemic absorption], and local paracrine and autocrine effects)—specifically the effects that that vitamin D has on the vaginal microbiome via its antiinflammatory and eubiosis-promoting effects.

Enhancement of self-resolution I think is one of the major keys here. Given the well-established fact that most people clear various human papillomavirus infections without consequence, research (such as this) should be emphasizing those natural and endogenous factors that promote viral clearance.

Medical interventions related to HPV disease include PAP smears and these should be continued every one to three years. The controversial anti-HPV vaccination is expensive and has produced many biologically-proven adverse effects, including autoimmunity (e.g., acute disseminated encephalomyelitis⁵), neuroinflammation⁶, infertility⁷, and death⁸. And of course, that vaccine provides zero collateral benefits.

In contrast, nutritional interventions such as vitamin D and methylfolate or calcium folinate safely provide numerous disease specific and general collateral benefits. What we need in the future are well-performed clinical trials using a complete antiviral nutrition protocol such as the one that I published back in 2014.

So thank you for your attention during this short video. What we're going to talk about in one of the upcoming videos is again, the role of vitamin D in modulating the vaginal microbiome, reducing inflammation and reducing the clinical consequences of various diseases.



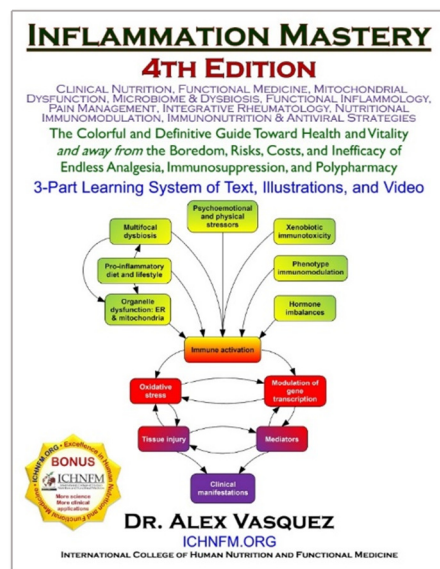
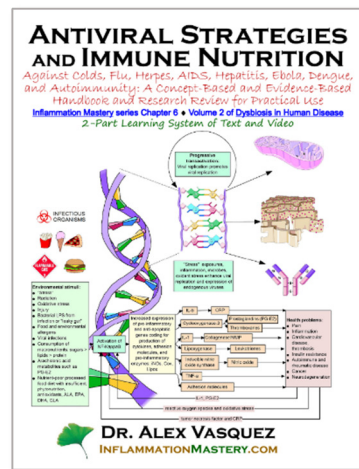
Citation: Vasquez A. Antiviral Nutrition Update # 1 for 2018. Video presentation (ichnfm.org/hpv1) and official transcript (academia.edu/35808436) 2018 January

Primary reference— same information in different formats and contexts:

- *Antiviral Strategies and Immune Nutrition* <https://www.amazon.com/dp/1502894890/>
- also published in digital ebook format as *Antiviral Nutrition* (Kindle ebook) <https://www.amazon.com/dp/B00OPDOG4W>.
- Also published in *Inflammation Mastery, 4th Edition* <https://www.amazon.com/dp/B01KMZZLAQ/> and
- *Textbook of Clinical Nutrition and Functional Medicine, vol. 1: Essential Knowledge for Safe Action and Effective Treatment* <https://www.amazon.com/dp/B01JDIOHR6/>

Introductory videos:

- Video introduction to books: <http://www.ichnfm.org/im4>
- Conference presentation—introducing the clinical protocol: <http://www.ichnfm.org/video-funct-inflam-1>



⁵ Sekiguchi et al. Two Cases of Acute Disseminated Encephalomyelitis Following Vaccination against Human Papilloma Virus. *Intern Med.* 2016;55(21):3181-3184
⁶ Takahashi et al. Immunological studies of cerebrospinal fluid from patients with CNS symptoms after human papillomavirus vaccination. *J Neuroimmunol.* 2016 Sep 15;71-8
⁷ Martínez-Lavín M, Amezcuca-Guerra L. Serious adverse events after HPV vaccination: a critical review of randomized trials and post-marketing case series. *Clin Rheumatol.* 2017 Oct;36(10):2169-2178
⁸ "The adverse reaction reports detail 26 new deaths reported between September 1, 2010 and September 15, 2011 as well as incidents of seizures, paralysis, blindness, pancreatitis, speech problems, short term memory loss and Guillain-Barré Syndrome. The documents come from the FDA's Vaccine Adverse Event Reporting System (VAERS) which is used by the FDA to monitor the safety of vaccines." Lind P. U.S. court pays \$6 million to Gardasil victims. *The Washington Times* December 31, 2014 <http://www.washingtontimes.com/news/2014/dec/31/us-court-pays-6-million-gardasil-victims/>