

APPLYING FUNCTIONAL NUTRITION FOR CHRONIC DISEASE PREVENTION AND MANAGEMENT: BRIDGING NUTRITION AND FUNCTIONAL MEDICINE IN 21ST CENTURY HEALTHCARE

Ruth DeBusk, PhD, RD, Victor S. Sierpina, MD, and Mary Jo Kreitzer, RN, PhD

I am a lifelong learner who has taken on the challenge of learning and applying the principles of functional medicine in my integrative healthcare practice and personal life. As such, I was eager to invite a special article by Dr Ruth DeBusk on an innovative development in functional nutrition education. She brilliantly contextualizes the major issues of facing chronic disease in this succinct yet in-depth manifesto. She also lays out the foundational principles of not only a functional nutritional course but the broader application to systems biology as well as systems-based practice. Additionally, she and the Institute for Functional Medicine team have conceived of a practice team model including the functional nutritional practitioner as an advanced practice expert, coach, and resource for the primary care team and their patients. This is a creative solution to

one of the current dilemmas in primary care and a way of encouraging behavioral change in relation to chronic disease.

Ralph Snyderman, MD, and others have for some time championed the concept of personal, predictive, preventive, and participatory medicine, most notably at the 2009 Institute of Medicine Summit on Integrative Health Medicine and the Health of the Public (see <http://www.iom.edu/Reports/2009/Integrative-Medicine-Health-Public.aspx> for a summary of the summit). This vision of the future of healthcare is exactly the touch point and paradigm in which the functional nutritional approach for chronic disease management and prevention can and will play a major role. The ready adoption of new scientific findings in nutritional genomics, behavioral epigenetics, and even prenatal influences on chronic disease fit neatly into this functional and systems biology matrix.

I know you will enjoy deep learning in this article and hope you can perhaps follow it up with some hands-on educational course work, ultimately applying it to improving the care of your patients and communities.

Victor S. Sierpina, MD

OUR CHALLENGES

We are facing numerous crises in healthcare, none more serious than the global escalation of complex, chronic disease with its unsustainable economic and human costs. Common chronic disorders include heart disease, stroke, hypertension, diabetes, cancers, osteoporosis, pulmonary conditions, and mental disorders. Chronic disease is the leading cause of the

global health burden.¹ In the United States alone, the direct (eg, treatment) and indirect (eg, lost productivity) economic costs of chronic disease are estimated to exceed \$1 trillion annually and projected to rise 600% by 2050.² According to the Centers for Disease Control and Prevention, chronic diseases are the leading cause of death and disability in the United States. Chronic disease accounts for major limitation in activities of daily living for approximately 10% of Americans (approximately 25 million) and for 70% of all deaths (1.7 million annually).³

Hidden within these statistics is the untold suffering of the millions of people with chronic disease and the frustration of healthcare professionals who struggle daily to deliver effective, compassionate care to these individuals. The anticipated influx of at least 32 million additional patients⁴ who will use our present healthcare system as a result of recent reforms in healthcare access threatens to swamp primary care providers (PCPs) already staggering under the current volume of patients with chronic conditions.

These challenges are further compounded by our lack of a comprehensive system for delivering effective chronic-disease care. Primary care training continues to be hospital based and focused on acute care, yet today's chronic disease patients are mostly community-based and struggling with multiple conditions (comorbidities). The acute care model is limited by its focus on organ dysfunction rather than being whole person centered. We need a new lens through which to view today's patients, one that allows us to focus on the "health" component of healthcare.

Content on integrative healthcare and complementary and alternative medicine is being taught in hundreds of educational programs across the country. Nursing, medical, osteopathic, chiropractic, acupuncture, naturopathic, and other programs are finding creative and innovative ways to include these approaches in new models of education and practice. This column spotlights such innovations in integrative healthcare and CAM education and presents readers with specific educational interventions they can adapt into new or ongoing educational efforts at their institution or programs. We invite readers to submit brief descriptions of efforts in their institutions that reflect the creativity, diversity, and interdisciplinary nature of the field. Please submit to Dr Sierpina at vsierpi@utmb.edu or Dr Kreitzer at kreit003@umn.edu. Submissions should be no more than 500 to 1,500 words. Please include any Web site or other resource that is relevant, as well as contact information.

In the past 20 years, we have seen major leaps in understanding of the scientific underpinnings of medicine, such as systems biology, the critical nature of genes in health and disease, and the mind-body-spirit connections to health. The need to treat the whole person is in conflict with today's organ-system approach. Developments in genomics and mind-body medicine are barreling at us at dizzying speeds, and the pace is expected to accelerate in the years ahead. We must be able to incorporate these and other new developments into our thinking and continually update our knowledge and skills as these concepts expand. At its core, chronic disease is diet-and-lifestyle disease and requires effective diet-and-lifestyle solutions. However, as with the medical profession, the nutrition profession is struggling to develop new perspectives, knowledge, and skills. There is a growing need to integrate genomics into nutrition, target interventions to underlying mechanisms, understand how food acts at the molecular level, and equip practitioners with the knowledge and skills essential for working with community-based patients with chronic disorders. Molecular nutrition will become the foundation for modern nutrition.

Behavior modification is another major cornerstone of effective chronic care, yet neither that nor molecular nutrition is central to the nutrition professional's training. Medical professionals and nutrition professionals alike will need to sharpen their critical thinking, root cause analysis, pattern recognition, and counseling skills, and rely on the scientific literature as the basis for developing up-to-date approaches—all while seeing an increasing number of patients. The challenges are daunting, but ignoring them is not an option if we are to stem the chronic disease pandemic and transition to a health promotion orientation.

A VIABLE SOLUTION

What is needed is a cohesive system that provides a logical framework for weaving nutrition-related medicine into an integrative and synergistic whole that delivers effective care for chronic disease. The functional medicine model has been proposed as just such a system. In an insightful exploration of the challenges that face healthcare, Jones et al,⁵ on behalf of The Institute for Functional Medicine, lay out

this model as a viable solution to the chronic care dilemma. This patient-centered model has been evolving over the past four decades. It focuses on identifying the antecedents, triggers, and mediators of disease: determining the root cause of a patient's dysfunction (aka *disease*), pinpointing the underlying mechanisms that have been triggered and that perpetuate the chronic condition, and developing interventions targeted to these mechanisms. Practitioners experienced with this model have likened it to the difference between searching a dark room with a flashlight compared to turning on the light. Using this framework and factoring in all aspects of the whole person illuminates the path for restoring health and, ultimately, for identifying early on those who are genetically susceptible and helping them to prevent chronic disease.

Clearly, chronic disease is complex, and no single health profession or practitioner has the full complement of knowledge and skills that is needed. Effective care in an era of chronic disease demands that we integrate multiple modalities and establish collaboration among multiple health-related professionals. In order to accomplish this goal, we must work from the same comprehensive model and speak a common language. In this era of rapidly expanding knowledge, it's essential that we have an organizing system that allows us to sort through the complexity and sheer volume of information in an organized fashion. The model must provide practitioners with a logical framework on which they can "hang" facts as they emerge and that facilitate pattern recognition, the connecting-the-dots skill so essential for practitioners working in chronic care.

The functional medicine model embodies the type of systems-oriented, personalized approach that is needed. Further, it facilitates development of integrated healthcare by providing a road map for transforming clinical practice, education, and research.⁵ This model is an evolving one that easily incorporates emerging evidence. It has been finely tuned over the years to the point where it can be taught to any health practitioner with a background in the basic medical sciences and, thus, is applicable to physicians, nurses, nutrition professionals, and a diversity of health practitioners that will be needed in the chronic care era.⁵

THE NEED FOR FUNCTIONAL NUTRITION PRACTITIONERS

Functional nutrition is a cornerstone of functional medicine. Just as functional medicine is an enhancement to conventional medicine, functional nutrition builds on and similarly enhances conventional nutrition. It is the advanced practice of personalized nutrition assessment, diagnosis, intervention, and monitoring, with the goal of promoting optimal health and preventing diet-and-lifestyle-related disease. Like functional medicine, its focus is on the whole person and the need to improve the quality of the person's life through restoring health and preventing disease. The diet-and-lifestyle modalities used in functional nutrition are particularly appropriate for chronic disorders.

In integrative primary care, nutrition plays a much larger role than in conventional care and requires the expertise of a specially trained nutrition professional, the functional nutrition practitioner (FNP). Since chronic disease is overwhelmingly a function of diet-and-lifestyle choices that act adversely upon an individual's genetic vulnerabilities, this information is particularly important to primary care physicians and physician extenders in arriving at the medical diagnosis and intervention. The FNP must be able to speak the language of the providers and be able to perform a thorough nutrition status evaluation using the framework of the Nutrition Care Process developed by the American Dietetic Association.^{6,7} This evaluation includes conducting a nutrition assessment, arriving at the nutrition-related diagnosis, developing a personalized nutrition intervention for the patient, monitoring and regularly evaluating the patient's progress, and keeping the providers updated on a regular basis.

The nutrition assessment includes anthropometrics (including body composition analysis), nutrition-related biomarker and lab analysis (including appropriate genetic testing), evaluation of clinical indicators, and a comprehensive diet-and-lifestyle assessment. This latter includes food intake quantity and quality, exercise and other lifestyle habits, sleep quality and amount, and various psychosocial parameters. The intervention is innovative and based on a core food plan that has been developed with the busy PCP in mind. The base consists of whole foods free of

toxins. Medical foods, functional foods, and dietary supplements are incorporated as appropriate. The PCP completes the initial medical assessment and determines the labs and initial medications needed. The patient is then referred to the nutrition professional and receives the core food plan prior to leaving the office of the PCP. In this way, the patient is started on a health-promoting path until the functional nutrition practitioner can meet with them. At that time, the practitioner will help the patient transition from the standard American diet (often referred to as "SAD") and personalize the plan to the patient's individual needs as determined by the nutrition evaluation. The practitioner then communicates to the provider the findings from the nutrition status evaluation, recommends any nutrition-related testing, and outlines the nutrition component of the patient's continuous health improvement plan. Such practitioners become vital members of the healthcare team, ensuring that patients receive the various services needed and return to the provider for ongoing care as appropriate.

The functional nutrition practitioner must be adept at critical thinking, pattern recognition, dietetics, lifestyle modalities, and functional medicine. What is envisioned for the future of integrative primary care is for FNPs to function as midlevel providers, capable of doing an exceptional job in the nutrition/nutritional genomics arena but also being able to coordinate delivery of the multiple modalities that are needed for a given patient's care, such as provided by exercise professionals, behavioral specialists, and health coaches. Health coaches are skilled in helping patients make needed behavioral changes and are expected to become increasingly essential as chronic care demands and patient loads escalate. The result of integrating these practitioners into a multidisciplinary chronic care team is comprehensive, individualized, patient-centered care for the whole person.

THE FUNCTIONAL NUTRITION COURSE

The demand is growing steadily for nutrition-oriented health professionals, yet only a handful of functional nutrition practitioners and nutritional medicine

physicians currently exist. The obvious question is how will we meet the needs for training professionals in functional nutrition? The Institute for Functional Medicine has stepped up to take the lead by developing a two-and-a-half day functional nutrition course targeted primarily to PCPs interested in learning how to integrate nutrition into their practices and nutrition professionals interested in learning the functional approach. An important component of the course is to facilitate collaborative relationships between these two communities in preparation for developing effective chronic care teams. Each must speak the language of the other and arrive at a synergistic relationship that results in better patient outcomes than either is able to achieve alone.

The first offering of the weekend course was held in south Florida in December 2010. The course is organized around the steps of the Nutrition Care Process as described above. Participants learn to develop nutrition care plans for their patients (including nutritional genomics applications); develop nutritional interventions targeted to underlying biochemical mechanisms by using the core food plan and its therapeutic modifications; and work collaboratively across disciplines to form an integrative, synergistic partnership. The faculty has developed tools appropriate for primary care that help participants streamline the process in their practice. The course is taught using a combination of lecture, case examples, and workshops, and a panel discussion focuses on models for successful functional practice. In short, the course is designed to be practical and to fill the growing need for nutrition to be an integral part of primary care practice, with its increasing caseload of patients with chronic disorders and the need for diet-and-lifestyle-related solutions.

REFERENCES

1. World Health Organization. *Preventing Chronic Diseases: A Vital Investment*. Geneva, Switzerland: World Health Organization; 2005:45.
2. Devol RA, Bedroussians A, Charuworn A, et al. *An Unhealthy America: The Economic Burden of Chronic Disease*. Milken Institute. October 2007. Available at: http://www.milkeninstitute.org/pdf/chronic_disease_report.pdf. Accessed October 8, 2010.
3. Centers for Disease Control and Prevention. Chronic disease prevention and health promotion. Available at: <http://www.cdc.gov/chronicdisease/index.htm>. Accessed October 9, 2010.
4. Kaiser Family Foundation. Summary of the patient protection and affordable care act. Available at: <http://www.kff.org/healthreform/upload/8023-R.pdf>. Accessed October 8, 2010.
5. Jones DS, Hofmann L, Quinn S. *21st Century Medicine: A New Model for Medical Education and Practice*. Gig Harbor, WA: Institute for Functional Medicine; 2009. Available at: http://www.functionalmedicine.org/ifm_ecommerce/ProductDetails.aspx?ProductID=174. Accessed October 8, 2010.
6. Writing Group of the Nutrition Care Process/Standardized Language Committee. Nutrition care process and model part I: the 2008 update. *J Am Diet Assoc*. 2008;108:1113-1117.
7. Writing Group of the Nutrition Care Process/Standardized Language Committee. Nutrition care process part II: using the International Dietetics and Nutrition Terminology to document the nutrition care process. *J Am Diet Assoc*. 2008;108:1287-1293.

Ruth DeBusk, PhD, RD, is the lead developer of the Institute for Functional Medicine's course on functional nutrition. Dr DeBusk was trained in genetics and molecular biology as well as in food and nutrition. As a genetics professor at Florida State University, she was among the early pioneers in nutritional genomics. Today she is active in developing curricula and teaching healthcare professionals about nutritional genomics within the framework of the functional medicine model. Dr DeBusk practices functional nutrition in Tallahassee, Florida and can be reached at ruthdebusk@comcast.net.

Victor S. Sierpina, MD, is the W. D. and Laura Nell Nicholson Professor of Integrative Medicine and a professor of family medicine at the University of Texas Medical Branch, Galveston, Texas. He is an associate editor for *EXPLORE: The Journal of Science and Healing* and the immediate past chair of the Consortium of Academic Health Centers for Integrative Medicine.

Mary Jo Kreitzer, PhD, RN, is the founder and director of the Center for Spirituality and Healing and a professor in the School of Nursing at the University of Minnesota, Minneapolis, Minnesota. She is a member of the executive committee of the Consortium of Academic Health Centers for Integrative Medicine.