Management of Irritable Bowel Syndrome: Concepts and Strategies for Registered Dietitians

Delores Truesdell, MS RD and Diane Rigassio Radler, PhD RD

Prevalence, Symptomatology, and Etiology of IBS

Irritable bowel syndrome (IBS) is a combination of cramps, flatulence, bloating, and irregular bowel function (diarrhea, constipation, or alternating episodes of both). This uncomfortable, potentially lifestyle altering chronic symptom complex of altered bowel habits and abdominal pain is sometimes mistaken for other motility disorders or inflammatory bowel diseases such as ulcerative colitis. The exact cause of IBS is unknown; however, anxiety and stress as well as bacterial gastroenteritis may precipitate IBS in susceptible individuals. Thus, IBS may have both behavioral antecedents and inflammatory processes in its development.

A case control study by Gwee et al, involving 15 individuals (30-48 years old) and using rectal biopsy results, found inflammatory changes during acute gastroenteritis in six patients. Patients with gastroenteritis that then developed IBS had a higher expression of IL-1β mRNA during and even three months after acute gastroenteritis compared with patients who did not develop IBS. Gwee et al concluded that some individuals with gastroenteritis who develop IBS are susceptible to inflammatory stimuli, and that this inflammation plays a role in the pathogenesis. However, the authors also suggested in reviewing their findings and comparing their results to others and animal studies, prior stress may enhance the response to subsequent inflammatory stimuli and the same stress could reactivate colitis and accompanying changes in gut physiology. Therefore, based on this study and the conclusions of these researchers, IBS had both an organic and behavioral component involved in development.

Genetic studies may also be important, particularly related to getting an accurate diagnosis, and in the absence of sufficient clinical evidence. In 2008, Von Stein et al showed that multigene analysis helped discriminate between ulcerative colitis, Crohn’s disease, and IBS. In this study involving 300 patients, seven marker genes were identified to help distinguish IBS from ulcerative colitis or Crohn’s disease including three genes with a described function in tissue repair/remodeling and inflammation (Reg IV, Vanin-1, and MMP-7) and one with a direct role in inflammation (GRO-α). Von Stein et al could confirm the diagnosis of the physicians in 85% to 98% of all cases. These researchers concluded “the studies demonstrated the utility of applying expression profiling to identify expression markers from biopsies of patients with IBD and/or IBS whose collective expression signatures could form the basis for a quick and reliable diagnosis and ultimately improve disease management.”

In the U.S., IBS has been reported to cost $8 billion each year in medical expenses and to account for 3.5 million physician visits. It is the most common diagnosis in gastroenterology practices, with Viera et al estimating that up to 20% of the general population has symptoms consistent with IBS, but less than one third of those patients seek help. The symptoms of IBS are characteristically complex and exacerbated by food intake, depression, or stress. In women, symptoms can begin in childhood or young adulthood, increase during menstruation, and decrease with age.

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The United States spends more to stay healthy than any other industrialized country. That would be acceptable if Americans were also the healthiest, yet we are falling far short of that benchmark. As the talk for healthcare reform is being revisited by our new government, people are losing their jobs and with that, their health insurance. No longer is a yearly physical the norm. People forgo their trips to the doctor because they do not have insurance. They eliminate often crucial medications because of cost. They do not get care for their escalating blood pressure, cholesterol or sugar – the tests, the medications, are too expensive.

One thing that many of us who practice complementary care are seeing is an increase in self treatment with supplements and complementary and alternative medicine. Unfortunately, as people seek alternative modalities, many do so online or because it worked for a friend, neighbor, or family member. This is the time that we can capitalize, if you may, on providing evidence based complementary care to those who are seeking alternative ways to manage their disease states.

Granted, not all conditions can be effectively treated without prescription medication (insulin for type 1 diabetes or some medications for stubborn hypertension as examples) but lifestyle measures and appropriate supplementation may help ameliorate some of the symptoms and long term health risks of most disease states. Practices as simple as regular aerobic exercise, a daily multivitamin and or other appropriate supplements, focusing on increasing healthy fibers and probiotics in the diet, and meditation can all be incorporated as complementary therapies.

We also want to make sure that what our patients/clients are doing is not throwing good money after bad; that they are not over supplementing on expensive supplements that are not USP or NSF certified or from companies that do not follow GMPs or that they are engaging in practices that would endanger their health or pocketbooks.

This newsletter issue focuses on IBS as a condition that may be treated with complementary therapies. A review of vitamin C which is regaining popularity as a supplement that is essential to the immune system and a nutrient that we can benefit from on a daily basis is offered. The Institute for Functional Medicine and the Center for Mind Body Therapy are offering many benefits for NCC DPG members and I encourage you to seriously consider participating in one or more of their offerings.

As always, I encourage you to share with our members your experience with complementary nutrition and medicine, especially in these uncertain times. Feel free to drop me an email or give me a call if you have an idea for an article or something you would like to share with our membership.
Dear Members,

Greetings to each of you.

As we prepare to complete this program year, it is my greatest hope that you utilized and participated in many of the member benefits we offered you.

One of our most successful endeavors has been the establishment of our two network relationships, one with the Institute for Functional Medicine (IFM) and the other with the Center for Mind Body Medicine (CMBM). IFM provided our members with three complimentary webinars in March and April and there are plans for an additional three this summer and fall. CMBM is currently offering our members a 20% discount for their Food as Medicine Conference to be held in Washington, DC in June. Having attended this conference in 2006, I know first-hand how it revitalized me and reminded me after many years why I became a RD. These relationships allow us to provide you with cutting-edge professional development.

The best vehicle for us to let you know about these opportunities is through our eblasts. I am sure you noticed that this system has been significantly improved. While I know you receive way too many emails, this is one that I think you should open and take a quick look at, as it contains valuable information about your NCC benefits.

Thank you to those who responded to our newsletter survey. We are assessing the results and will be making a decision regarding electronic versus hardcopy publishing. Many who responded to the survey were not aware that our newsletters for the past 10 years are archived on our website under Member Benefits. Speaking of our newsletter, I would like to thank Sarah Laidlaw and her newsletter staff for continuing to provide a top-notch DPG newsletter.

The NCC DPG executive committee (EC) has gone above and beyond the call of duty and spent more hours than what should be expected of a volunteer. It is amazing to think that every benefit brought to you takes many hours of research, assessment, and deliberation. The EC wants to provide you with the best evidence-based information in this field. Most of the EC was new this year, and we had quite a learning curve. I want to thank Rita Batheja, Sheila Dean, Colleen Fogarty-Draper, Deb Ford, Mary Harris, Dorothy Humm, Ane Marie Kis, Kathy Moore, Deralee Scanlon, and Kathie Swift. It has been an enlightening and rewarding experience to work with each of these individuals whose goal is to improve the health of communities, clients, and families. Every time I started to lose some energy, someone would come up with an idea that got me moving again.

Kathie Swift, incoming chair, and I have worked hand-in-hand this year, which will result in a seamless transition. She will continue to lead this group and move us leaps and bounds. There are plans to offer pod casts, more webinars, and our second pre-FNCE conference on Achieving Hormone Balance: An Endocrine Dance of Environment, Genes, Diet and Detoxification. (Check out our website to purchase a CD of last year’s Gut Health pre-FNCE conference.) While many of us still enjoy the face-to-face events, we know that technology provides us a world of opportunities to enhance knowledge. We look forward to continually improving the website with Rick Hall, our newly hired Web Manager, NCC member, and past chair. I would also like to thank Kathy Bernard, NCC’s Executive Assistant. Her time spent in this position helped with valuable historical information. Lastly, I want to thank the membership for this opportunity to serve you and this DPG. I look forward as serving as an advisor in the past chair position. Please contact me and/or Kathie Swift with ideas and concerns.

Respectfully,

Mary Alice Gettings, MS, RD, LDN, CDE
NCC Chair

As part of our Networking Relationship with the Center for Mind Body Medicine, NCC DPG members will receive a 20% discount to the Food As Medicine Conference June 11 – 14, Washington, DC.

To obtain the code to receive this discount, email fam@cmbm.org.

For more information about Food As Medicine, go to http://www.cmbm.org/holistic_medicine_PROFESSIONAL_TRAINING_EDUCATION/food_as_medicine_description.php

This is what other RD’s have said about the Food As Medicine course.

“This course was the most inspiring course I have attended in the 20 years I been practicing nutrition!”

Silvina Cox, MPH, RD, Private Practice, Thousand Oaks, CA

“Every dietitian should be required to attend this course! Dietitians need Food as Medicine in their bag of tricks. Food as Medicine brings together the emotional, physical, and spiritual components of food beautifully.”

Becky Overholt, RD, Goshen Center for Cancer Care, Goshen, IN

“This conference rejuvenated my interest in the field of nutrition. I highly recommend it to you all RDs.”

Diane Whelan, MPH, RD, Private Practice, Los Angeles, CA

“This is, by far, the best conference I have attended in twenty years. I can’t wait for my next FAM conference.”

Cyndi Weis, RD, Breathe Yoga, Rittsford, NY

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Typical symptoms include exaggerated gastrointestinal reflex, altered gastric emptying, increased small bowel contractions, and increased small intestinal transit; these frequently occur after eating and resolve temporarily following a bowel movement. Individuals with IBS may also experience anxiety, hypochondriasis, and depression. IBS is not considered life-threatening, and research shows no increased risk of complications such as cancers of the gastrointestinal (GI) tract. While no structural damage to the bowel is usually found, acute infection and the resulting inflammation may play a role in the pathogenesis and duration of the symptomatology that interferes with daily activities.1-2

**Treatment for IBS**

As recognized in the introduction, treatment of IBS is a multifactorial process that includes: psychosocial counseling and stress management to identify and alleviate triggers and symptoms of IBS, medical nutrition therapy (MNT), drug therapy, and education about IBS and normal GI function.3,5-9 MNT is determined after obtaining a careful diet history and focuses on assuring adequate nutritional intake, normalizing eating, and ensuring enough fiber without increasing gas production. Adequate nutritional intake may require the elimination of certain foods such as those containing fructose, gluten, lactose; an increase or change in fiber intake; and dietary supplementation. The goal of pharmacotherapy is to attenuate symptoms; lastly, education focuses on imparting knowledge about IBS and its management. The remainder of this paper will outline the aforementioned therapies.

**Cognitive Behavior Therapy**

Cognitive behavior therapy (CBT) is the most commonly recommended psychological treatment in the U.S. for stress management; it is typically utilized in eating disorders, schizophrenia, diabetes, and in situations where there is resistance to drug treatment.7 CBT is a structured, problem-oriented approach to the management of people with weight control issues, chronic diseases, or disorders with a mental or psychological component, and draws on such methods as self-monitoring, stimulus control, parroting, delay, decentering, distraction, and reattributing.1-9

Self-monitoring refers to keeping records; for example, keeping a record of what one eats but perhaps also feelings that arise or are associated with the food or eating event. Stimulus control refers to identifying problematic stimuli ahead of time plus pinpointed solutions so that a person can cope or the problem can be better managed.7 Parroting is a technique where one parrots or repeats positive affirmations or certain phrases to himself or herself so as to dissipate undesirable urges.7 Decentering means taking into account more than one perspective on an issue or problem.7 Delay and distraction involves coming up with a list of alternate behaviors that may delay or distract from an urge, for example, the urge to eat, urge to worry, or the urge to do something undesirable.7 Reattributing is a technique that challenges faulty self-perceptions.7

The basic concept of CBT is the A-B-C model, where an activating event ‘A’ leads to behavioral consequences ‘C’, with the consequences being mediated by behaviors ‘B’.7 In clients with IBS, the goal of CBT is to help them to identify the antecedents of the symptoms, and identify and change dysfunctional beliefs and assumptions about the GI tract and related symptoms, with the aim of altering their emotional and behavioral responses to the symptoms in order to cope effectively.7 The core of CBT is the way a client thinks about his/her GI tract.7 For example, thoughts after a bowel movement such as “there must be more stool” can lead to anxiety which then exacerbates symptoms of IBS. Stress does not cause IBS, but can trigger symptoms; CBT along with biofeedback and hypnotherapy may help patients control physiological consequences of stress.3

While several investigators suggest CBT is helpful in IBS, recent published research is limited.3,5-7 Heymann-Monnikes et al designed a 14-week study (with additional follow-up evaluations at three months and six months posttreatment) to evaluate whether the combination of medical plus behavioral therapy was more effective in the treatment of IBS than medical therapy alone.6 The standardized multi-component behavioral therapy (SMBT) treatment involved 10 sessions, each 60 minutes; there were also follow-up evaluations, and the clinician provided information, muscle relaxation, cognitive coping strategies, problem solving, and assertiveness and social skills training.6 Twenty-four outpatients with IBS met standard Rome criteria for diagnosis and were randomly assigned to the combination of SMBT plus standard medical treatment or standard medical treatment alone (SMT).6 The Rome criteria require the patient have at least three months of continuous symptoms of abdominal pain relieved by defecation and/or associated with a change in stool consistency or stool frequency plus other symptoms such as altered stool passage, passage of mucus, and bloating.1 Outcome measures included quantification of gastrointestinal symptoms and patient ratings of symptoms by use of symptom diaries as well as of questionnaire measures on psychological distress, overall well-being, illness-related coping abilities, and quality of life.4 Pre- and post-treatment comparisons showed significantly (p<0.01) greater IBS symptom reduction in the SMBT group compared with the group that received standard medical treatment (SMT) alone.6 There was also improvement in overall well-being and quality of life in the SMBT group compared to the SMT group.6 Limitations of the study were the small sample size and the unequal contact time in both groups.6 In contrast, a 2003 study by Boyce et al, based on a study with 105 subjects, found no good evidence that CBT or relaxation therapy was more helpful than usual medical treatments in patients with IBS.3 The methodologies of the Boyce et al and Heymann-Monnikes et al studies differed in duration and primary outcome measurements.3,5-7

Viera, Hoag, and Shaughnessy, at the Naval Hospital in Jacksonville, Florida, provide a six step approach to behavior therapy for IBS.3 The first step is to provide information, the second step is to analyze the patient’s illness in terms of symptoms and triggers, and then in steps three and four the idea is to teach the patient relaxation techniques and ways to identify irrational thoughts regarding the gastrointestinal problems. Steps five and six offered by Viera and colleagues suggest the clinician discuss ways people cope with chronic illness and provide managing strategies for difficult...
Management of IBS

Social situations caused by gastrointestinal problems. A partial description of the components of a multicomponent treatment strategy that includes CBT for registered dietitians (RDs) outlined in Table 1.

Medical Nutrition Therapy (MNT) for IBS

Nutrition recommendations for IBS are individualized, focus on optimizing dietary patterns, and often include a trial of foods that are adequate in fiber (up to 25-30 grams/day), and low in fructose and gas or diarrhea producing foods. Many physicians and dietetic professionals advocate small meals and having patients limit alcohol, caffeine, fructose, sorbitol, xylitol, and total fat intake. Prebiotics, products containing microorganisms such as L. acidophilus, may be useful adjuncts in improving IBS abdominal pain and symptoms such as gas and distention. Benefits may depend on strain selection, dose, and viability, but they can help gut barrier function, decrease pathogen binding, modulate inflammatory response, and have a future role in the prevention of IBS. Prebiotics, substances in food (oligosaccharides) that stimulate the beneficial flora in the gut, might also be helpful at least with constipation-predominant IBS; however, randomized controlled trials of prebiotics in IBS are limited. In dosages of 12 to 30 grams per day, fiber products may help accelerate colonic transit time and help relieve the straining, lumpy, hard, and infrequent stool associated with constipation. However, the fermentation of fiber will produce bowel gas leading to distension or bloating. Therefore fiber should be individualized, most likely started at a low dose and titrated up to 20 to 30 grams a day. Again, individualization is important and in some people simply limiting apple and grape juice, in addition to higher fiber foods like bananas, nuts, and raisins may be helpful. Additionally, those with abdominal distention may benefit from decreased intakes of beans, cruciferous vegetables, and other foods containing resistant starches or gas-producing carbohydrates (raffinose, lactose, fructose, and sorbitol).

Shepherd and Gibson reported more than one in three adults with symptoms of IBS is unable to absorb a fructose load of 25 to 50 grams, and thus have fructose malabsorption. The results of the research suggest that patients with IBS limit the total load of fructose at any one meal by increasing glucose-rich accompaniments, increasing foods with a higher glucose to fructose ratio, limiting foods with significant fructan content, and limiting “free fructose” (>0.5 g/100 g fructose in excess of glucose). While controversial, some IBS patients may have celiac disease and benefit from a gluten free diet. Wahnschaffe et al also found increased prevalence of celiac disease-associated serum antibodies in diarrhea-predominant irritable bowel syndrome, and after six months of a gluten-free diet, stool frequency and GI symptom scores returned to normal values in 60% of IBS patients compared to 12% in those who did not have the disease. There are some nontraditional—more complementary and alternative therapies, such as herbs, botanicals/nutra-

GUT HEALTH PRE-FNCE CONFERENCE NOW AVAILABLE ON CD – PRE-ORDER TODAY –

Got a Gut Feeling?

We do! And we know you are going to love digesting and absorbing the latest nutrition information and practice pearls from “Gut Health: The Inner Tube of Life,” NCC DPG’s highly acclaimed 2008 pre-FNCE conference. Three leading experts in Integrative & Functional Medicine, Cathie Swift, MS, RD, Colleen Fogarty Draper, MS, RD, and Gerard Mullin, M.D., Gastroenterologist from Johns Hopkins, take you on a guided tour of the gastrointestinal tract that includes the enteric nervous system (your 2nd brain), immune system, and microbiota (gut flora). An overview of nutritional genomics and the connection between genes and gut health, including GI cancers and celiac disease, along with functional diagnostic testing and integrative approaches to common GI, autoimmune, and inflammatory conditions, is also covered. Various CAM modalities such as elimination diets, nutritional supplements, probiotics, and mindfulness based practices are highlighted and discussed.

Investment

NCC DPG Member - $90 (6 ADA CPEUS available*)
NCC DPG Member - $50 (no ADA CPEUS available)
ADA Member/Non-NCC DPG member - $120 (6 ADA CPEUS available*)

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NCC DPG website www.complementarynutrition.org

Biographies of speakers are available on the NCC DPG website www.complementarynutrition.org.

We are unable to accept credit cards at this time. We are working on a system that is cost-effective and efficient and hope to have this available in the future.
management of IBS

Various medications are used in the management of IBS including medications for diarrhea and constipation, antispasmodics, anxiolytics, anticholinergics, and even tricyclic antidepressants for unremitting abdominal pain and impaired daily functioning.\(^1\) Narcotics are not advised in the treatment of IBS and there is only anecdotal evidence that simethicone (Mylanta) for gas or bloating is helpful.\(^2\) Newer medications for IBS target neurotransmitter receptors in the GI tract and help with abdominal pain; two examples are tegaserod and ondansetron.\(^3\) Viera et al rates the level of evidence for using fiber in the management of constipation (although it may worsen bloating), tricyclic antidepressants for abdominal pain, and Loperamide and Alosetron (female patients only) for diarrhea at Level A.\(^3\)

Education

Major events such as illness are known to stimulate adult learning; however, whether education should be offered inpatient or outpatient or one-on-one or in a group format and the best time to counsel individuals following a diagnosis of IBS is still unknown.\(^4\) A nutritional diagnosis of altered gastrointestinal (GI) function or inadequate vitamin intake or excessive fiber intake or inadequate mineral intake is linked to IBS in the Nutrition Care Process, and could help guide the selection of patient education materials.\(^5\) A user friendly video from The National Institutes of Health is available for people with access to the Internet that could be included in the first or second brief nutrition education session, or as part of a comprehensive nutrition education plan.\(^6\) Depending on pain and readiness to learn, influenced by a client’s interpretation of his or her health problems, it may be important to offer educational materials before counseling takes place. Once a client understands the condition, feels understood, and rapport is established, cognitive and behavioral strategies to help with diet and activity changes may include: goal setting, self-monitoring, problem solving, social support, stress management, stimulus control, cognitive restructuring, and relapse prevention.\(^7\)

Nutrition and healthcare professionals should discuss the role of stress as well as provide information to the patient about common food intolerances such as lactose, drug/nutrient interactions, and normal GI functioning.\(^2\) Discuss with clients the possible benefits of stool examination for ova and parasites, cultures for enteric pathogens, and measurement of fecal fat. Educate on types of foods that may exacerbate diarrhea; for loose and watery stools, discuss types of food high in soluble fiber. Nontraditional therapies that may help relieve symptoms include relaxation therapies, biofeedback techniques, acupuncture, and herbs; although not all studies related to these therapies have had positive results.\(^8\) A client can reference the consumer version of The Natural Medicines Comprehensive Database that provides reviews of possible effective products (bifidobacteria, blond psyllium, guar gum, lactobacillus, wheat bran), possible ineffective products (Brahmi, fumitory, Javenese turmeric), and provides brief descriptions of foods/herbs/strategies where there is insufficient evidence related to IBS (artichoke, capsicum, melatonin, peppermint, reflexology, yoga).\(^9\) There is much information related to the efficacy of fiber, antispasmodics, and peppermint oil in the treatment of IBS presented in a recent 2008 meta-analysis, to which interested readers can go for more information that is beyond the scope of this paper.\(^9\) Regular physical activity is a lifestyle approach to consider, particularly since it helps to relieve stress and depression and assists in bowel function, especially in clients who present with constipation. Effective education is comprehensive, high quality, evidence-based, provides choices, and is gender and culturally sensitive.

Take Home Message

Since symptoms of IBS originate from a complex interaction of psychological, social, and physiological factors, an integrative treatment approach may be well suited for symptom management. Cognitive behavior therapy is the most commonly recommended psychological treatment in the U.S., and draws on such methods as self-monitoring, stimulus control, parroting, delay, decentering, distraction, and reattributing.\(^10\) It works well with open-ended questioning, reflective listening, empathy, assessing conviction, and assessing confidence. Counseling and CBT may be an adjunct to conventional drug treatment for IBS and offer many practical lessons for improvement of the patient’s self-esteem and symptoms related to IBS, especially if a trusting, normative relationship is created between the RD and the client.\(^11\) Therapy should be individualized and supportive; ultimately, the goal of IBS management is to prevent the development of abdominal pain, bloating, flatulence, nausea, headache, fatigue, depression, anxiety, and difficulty concentrating. If psychological improvement occurs independent of improvement in GI symptoms, keep working with the patient, and enlist and engage the help of other health care team members such as an allergist, gastroenterologist, and exercise physiologist.
Management of IBS

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Table 1: A Seven Step Behavior Therapy Approach for IBS

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<th>Step</th>
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<td><strong>Step 1. Establish rapport and trust.</strong> Assess readiness to change or a teachable moment. Be patient, a client with IBS may have difficulties in verbalizing feelings and thoughts or expressing their emotions or engaging in self-exploration. The health belief model and motivational interviewing might be used.</td>
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<td><strong>Step 2. Assess IBS risk/symptoms</strong> such as energy, headache, fatigue, anxiety, mood, anemia, family history, diarrhea, rectal bleeding, social embarrassment, and weight loss. Assess dietary practices, thoughts related to eating and related risk factors. Sometimes the patient knows foods best and can tell the clinician what works or doesn’t work. Have the patient keep a record of symptoms experienced related to eating. Look at the patient’s illness in terms of symptoms, circumstances of first onset, symptom triggers, contributing factors, and consequences. Paraphrase or provide short summaries, use simple open-ended questioning, reflective listening, and empathy whenever possible. An example of providing a short summary might be: You seem to prefer low fiber foods because otherwise you risk having diarrhea and not completing your work. An open-ended question might be: “What do you find hardest about taking care of your IBS?” Expressing empathy can be through a normalizing statement such as: “Many patients with IBS have that concern”, or “It must be difficult to be worried about having gas, painful bloating, and diarrhea especially while eating at a social event”.</td>
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<td><strong>Step 3. Provide advice and assist.</strong> Establish a regular eating pattern that does not worsen symptoms and provide information about the role of stress and IBS and normal GI functioning. Assist in changing dietary practices to decrease anxiety and stress and that do not exacerbate symptoms, or address motivational barriers with education and CBT. Use clear and simple language. The patient and clinician can devise goals and treatment strategies together for weight management and risk-factor control. Assist in establishing appropriate interventions for nutritional adequacy, body mass index, and other risks.</td>
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<td><strong>Step 4. Agree</strong> on individual diet change goals, suggest positive self-talk and related affirmations that can be helpful. Have the client write beliefs and worries in a diary and then later go over them together. Help the client identify irrational thoughts that accompany the onset of gastrointestinal symptoms; for example, thoughts that there is a risk for cancer or other serious digestive problems. Teach progressive muscle relaxation techniques to help with stress. In this process, perhaps more than once, the patient needs to be gently and confidently told that research suggests no serious disease, no damage to the bowel, and no increased risk of complications such as cancer. In addition to recording beliefs and worries, consider recording in a three column table specific events/triggers with the client, have them add thoughts about events (or behavioral or emotional responses to events), and then together come up with strategies for coping and go over these together as often as needed. Forms for this are available in the appendices of the textbook by King and Klawitter.</td>
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<td><strong>Step 5. Discuss ways to live with IBS or the ways people cope with problems that chronic illnesses bring to daily life, including difficulties related to social situations caused by GI problems.</strong> Be resourceful and creative with CBT. Ways to cope with stress might also be avoiding certain types of events where food is served, listening to music, could also be considered a CBT method to help decenter and distract. Advise clients with IBS to avoid eating too fast and to chew foods thoroughly; this might reduce the chance of swallowing air and minimize abdominal distention.</td>
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<td><strong>Step 6. Refer to a medical doctor and/or more intensive behavioral nutritional counseling, if needed.</strong> Weight loss and malabsorption concerns should always be investigated and treated to avoid further problems, for example, to avoid vitamin deficiencies or bacterial overgrowth but also to enhance quality of life. IBS does not damage the bowel, but if diarrhea lasts 7 days in adults it should be investigated by a physician, especially in patients with bloody diarrhea. Prompt treatment, within 24-48 hours, is also important for very young and older people as they are more susceptible to the effects of dehydration. Referral to a psychologist is especially important if the patient reports depression that is getting worse or untreated depression, and/or a history of verbal or sexual abuse. The websites: <a href="http://www.ibsgroup.org">www.ibsgroup.org</a>, <a href="http://www.nlm.nih.gov/medlineplus/irritablebowelsyndrome.html#cat57">http://www.nlm.nih.gov/medlineplus/irritablebowelsyndrome.html#cat57</a>, and <a href="http://www.acg.gi.org">http://www.acg.gi.org</a> provide clinical updates or information related to support groups and coping with symptoms.</td>
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<td><strong>Step 7. Arrange for follow-up. This might be in the form of classes.</strong> It has been recommended by the American Dietetic Association that patients with IBS see an RD for a minimum of three visits upon diagnosis. CBT is similar to taking a class. The therapist and patient together come up with goals and techniques to solve problems.</td>
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The Year-Round Benefits of Vitamin C Supplementation

Mark Moyad, MD, MPH
Nancy Kondracki, RD

With all that vitamin C can do for the human body, it comes as no surprise that it is among the top five most consumed dietary supplements in the United States (US) and worldwide, both by general consumers and health care professionals. Vitamin C supplements are most often purchased for immune/cold support, antioxidant/cancer protection, or to enhance iron absorption. Although these may be among the better known benefits of vitamin C, there are many others. An article in the winter issue of this newsletter focused on the evidence supporting vitamin C’s use for cold support. This article will take a broader look at the ways in which vitamin C can be beneficial throughout the year.

Nutrition surveys in the US indicate that deficiency and depletion of vitamin C are common, partly because most Americans are not getting enough vitamin C-containing fruits and vegetables in their diets on a regular basis. Individuals at risk for vitamin C deficiency or depletion include smokers (and non-smokers regularly exposed to second-hand smoke), alcoholics, pregnant or lactating women (due to increased requirements), extreme exercisers, the sleep-deprived, and older adults (due to loss of immune response with aging). New clinical evidence suggests that depletion and/or deficiency is associated with chronic disease, and that supplementation can often support immune function.

Vitamin C has numerous essential functions in the body. These include:

- For the formation of collagen, blood vessels, bones, tendons, cartilage, and teeth.
- For the biosynthesis of thyroid hormone, bile acids, serotonin, carnitine, and parts of DNA molecules.
- To aid in the prevention of anemia.
- To support lymphocytes and other immune cells to function effectively.

Under normal circumstances vitamin C and other antioxidants help to support immune strength by regulating transcription factors that alter the production of cytokines and prostaglandins. They also scavenge reactive oxygen species (ROS) that can cause cellular damage if unchecked, and along with other nutrients, reverse Th2 (T helper lymphocyte) cell-mediated immune responses resulting from inadequate nutrient intake. Chronic overproduction of ROS has been associated with diseases such as cancer and cardiovascular disease. It is theorized that the mechanism behind vitamin C’s ability to support immunity is its ability to either prevent T-lymphocyte apoptosis, or to ameliorate inflammatory responses by inhibiting the expression of oxidant-sensitive transcription factors that produce proinflammatory cytokines. A weakened immune system increases susceptibility to infections and may lead to increased morbidity.

Respiratory Diseases

As we head into springtime, respiratory symptoms such as coughing, wheezing, and phlegm become problematic for many people due to conditions including allergies, asthma, and chronic obstructive pulmonary disease. Numerous studies have been published that indicate a positive role for vitamin C in reducing lung inflammation, most likely due to its ability to fight oxidative stress. In a cross sectional study of randomly selected adults, participants with the highest vitamin C intakes (90th percentile) had less cough and improved forced expiratory volume (FEV) measures compared to those with the lowest intakes (10th percentile). These results added support to similar earlier studies. Two case-controlled studies found that healthy adults had greater dietary intakes of vitamin C than those with asthma, suggesting that respiratory health is associated with vitamin C. Another study found that young adult smokers with the highest vitamin C intakes experienced ameliorated cough and wheeze. In yet another study, 1500 mg of vitamin C per day improved post-exercise respiratory function and improved symptoms in adults with asthma. Childhood asthma has been associated with depletion of both enzymatic and non-enzymatic antioxidant defenses, including vitamin C. The marked increase in asthma prevalence over recent decades is one factor that has led to a plethora of studies on the effects of antioxidants on asthma. A recent review article summarizes current knowledge about the pathogenesis of lung disease as it relates to the imbalance between the body’s antioxidant system and the high levels of reactive oxygen (ROS) and nitrogen species (RNS) experienced by stressed lungs. Fewer studies have evaluated vitamin C with respect to allergic responses, but a recent animal study found that vitamin C produced a response to ragweed pollen extract that led to decreased inflammation of the lungs. In addition, plasma vitamin C levels have been shown to have an inverse logarithmic association with blood histamine levels in human subjects. Conversely, a study of allergic adults that evaluated markers of airway inflammation and immune response found no evidence of positive effects of vitamin C. Due to the inconsistency of results in related intervention studies, it is not yet possible to provide specific recommendations about vitamin C supplementation for the prevention or amelioration of respiratory illnesses. It is anticipated, however, that antioxidants, including vitamin C, will be used therapeutically for improving lung health in the near future.

Cardiovascular Disease and Stroke

Recognizing the association between inflammation and the pathogenesis of cardiovascular disease (CVD), it is not surprising that vitamin C has shown promise for reduction of risk for this type of chronic disease. Recently a meta-analysis of 13 randomized controlled trials concluded that...
Vitamin C

500 mg vitamin C for at least four weeks can significantly reduce LDL cholesterol and triglycerides but does not affect HDL levels.24 Vitamin C at 1000 mg per day for two months has been shown to reduce C-reactive protein (CRP) by more than 25% in those with elevated baseline levels, an effect which is potentially and preliminarily comparable to the CRP-lowering activity of some prescription lipid-modifying agents.25

The results of the Physicians Health Study (PHS) II recently reported that taking 500 mg of vitamin C daily was neither helpful nor harmful to the participants.26 Another finding from the PHS II study was that vitamin C had no significant side-effects, which supported previous findings.27 Other data embedded in this study provided promising evidence related to strokes and heart attacks. Among the participants in PHS II, there was a mild 11% reduction in the risk of overall stroke in the supplemented (vitamin C) group but a 23% reduction in the risk of dying from a stroke. In addition, men with a history of CVD experienced a 43% reduction in heart attack risk.

Two other major studies in the past year have shown promise in terms of vitamin C supplementation and stroke reduction. A large study of over 20,000 men and women 40 to 80 years of age from the United Kingdom found that those with the highest baseline blood levels (top quartiles) of vitamin C had a 42% decreased risk for stroke compared those with the lowest intakes (bottom quartile).28 In the randomized trial, The Women’s Antioxidant Cardiovascular Study, 500 mg per day of vitamin C failed to significantly reduce the prevalence of heart attack, coronary revascularization, or CVD-related death, but did appear to have a positive effect on ischemic stroke.29 In a pooled analysis of nine cohort studies involving approximately 300,000 individuals, a 24% reduction in heart disease was found in individuals consuming more than 700 mg per day of vitamin C from supplements; dietary vitamin C was not associated with heart disease risk.30

Cancer

A good summary of the evidence to date regarding vitamin C supplementation and cancer risk was published in 2007.5 The SU.VI.MAX Study demonstrated significant cancer risk reduction for men with higher blood levels of vitamin C; this study used a combination supplement that included 120 mg vitamin C.31 Recently PHS II reported no association between vitamin C supplementation (500 mg/day) and any type of cancer.32 Other prospective studies have yielded contradictory results.6 Results evaluating the intravenous (IV) administration of high doses of vitamin C are equally equivocal. The IV administration of pharmacologic doses of vitamin C reduced the growth of aggressive mouse tumors, including pancreatic and ovarian, by attacking cancer cells but preserving normal cells, according to one study.33 IV vitamin C successfully prolonged survival in three patients with advanced cancers, based on published case studies.34 In addition, pretreatment of cancer cells in vitro with high dose vitamin C led to 30-70% reduced effectiveness of various chemotherapy drugs.35 A pharmacokinetic study on humans with advanced cancers, however, failed to find a benefit from vitamin C (400 mg-1500 mg, three times weekly) administered intravenously.36 These inconsistencies have been largely attributed to differences in plasma vitamin C levels resulting from oral vs. IV routes.6, 37 Research is underway to further test this theory, as well as to investigate the circumstances under which vitamin C acts either as an anti- or pro-oxidant.

Additional Benefits of vitamin C

Today, new and improved vitamin C supplements are available as various metabolites, such as calcium threonate and dehydroascorbate, that offer potentially distinct advantages over L-ascorbic acid or calcium ascorbate.38-39 These buffered forms of vitamin C are better tolerated and therefore promote improved compliance with recommendations for supplementation.40 Improved leukocyte retention of vitamin C with metabolites (vs. calcium ascorbate) has been demonstrated, suggesting support of immune function.41-42 In addition, vitamin C with metabolites has been found to reduce LDL cholesterol and triglyceride levels, which serve as markers for cardiovascular risk.43 Many experts now agree that the current recommended dietary allowances (RDAs) for vitamin C may not represent optimal intake. A significant body of research supports vitamin C supplementation in excess of the RDAs.44

In addition, evidence is building in support of the year-round use of vitamin C supplements for a wide variety of therapeutic purposes.44 Strong evidence supports recommending 500-1500 mg of daily vitamin C to decrease the risk of complex regional pain syndrome, which is common after experiencing a bone fracture.45 Waist circumference has also been inversely associated with vitamin C levels, thereby implicating a possible role in combating obesity.13 A recent Cambridge University study demonstrated a 62% reduced risk of developing type 2 diabetes among those with higher plasma vitamin C levels.36 Vitamin C as ascorbate and with metabolites have both been implicated in a reduction in risk of advanced macular degeneration.39 And the slight decrease in immune strength experienced by moderate to extreme exercisers has been demonstrated by a rapid decrease of blood vitamin C levels. Markers of muscle fatigue also have indicated a benefit from daily vitamin C supplementation.46

Take Home Message

Given the weight of the current evidence, recommending a daily vitamin C supplement to promote health year-round is sensible for most people. Forms of vitamin C that contain metabolites may offer some advantages. With the safety record of vitamin C supplements well documented, there is little risk associated with such a suggestion. While there are still many reasons to recommend greater dietary intake of foods containing vitamin C, it may be necessary for many people to use a supplement as well. Ongoing research is certain to provide the needed data for making specific recommendations about vitamin C dosages for a variety of therapeutic purposes.

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Vitamin C

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References

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References


Teaching Nutritional Genomics to Undergraduate College Students

Kelly Molten

Over the past several years, the newest development within the field of dietetics has been the push toward giving clients personalized nutrition advice based on their genetics. Nutritional genomics – as this field is called – has great promise for both the clinical and public health practice settings; but in order for tomorrow’s dietitians to be knowledgeable about this field, they must be educated on the topic. Unfortunately, most undergraduate dietetics curricula do not currently include genetics as a required component of classroom instruction. Therefore, I decided to conduct an undergraduate senior thesis project developing educational tools to make dietetics students aware of nutritional genomics. While these modules were developed for incorporation into the dietetics curriculum at the University of Delaware, it is my hope that other institutions use this as a model to incorporate into their own programs.

The Modules

Nutritional genomics had not been taught at the University of Delaware, and the dietetics curriculum was already tightly packed, so I decided to develop material that could be integrated into existing courses taught at this institution. I developed educational modules for two classes: one for an introductory level course (Introduction to Nutrition Professions, or NTDT 103) and one for a more advanced level course (Micronutrients, or NTDT 401), that could be taught in one or two class periods, respectively. In each case, I requested that the course professor teach the modules, as this would ensure the sustainability of the lectures. The module for NTDT 103 included the definition of nutrigenomics (now referred to as nutritional genomics), as well as future applications for the field. Opportunities for dietetics professionals include clinical practice, genetic counseling, teaching opportunities of both nutrition and health care professionals and of the general public, research opportunities, sales opportunities, and public health

genomics. The performance objectives for this class module were for the students to: 1) be able to state briefly what nutritional genomics entails, 2) be able to discuss the value of nutritional genomics to the field of nutrition and dietetics, and 3) be able to identify several jobs that will incorporate nutritional genomics. Teaching tools used in the NTDT 103 module included a PowerPoint presentation with information from a relevant Journal of the American Dietetic Association. The Journal article and Ruth DeBusk PhD, RD’s book Genetics: The Nutrition Connection, as well as a handout with resources for students.

The more advance level course (NTDT 401) emphasized nutrient-gene interactions at the molecular level. It was expected that students would be able to grasp the scientific basis of the subject, as they would already have nutritional biochemistry background knowledge. The students were taught the difference between nutritional genomics and nutrigenetics, about the mechanism by which folate interacts with the MTHFR gene, and about epigenetics (modifications to DNA that affect patterns of gene expression). The performance objectives for the NTDT 401 module were for students to: 1) be able to provide a definition of nutritional genomics, 2) show an understanding of gene-nutrient interactions by providing an example mechanism of an interaction, 3) provide an example of a solution that would ameliorate the problem in someone affected by this gene-nutrient interaction, and 4) be able to discuss the value of nutritional genomics to the field of dietetics. Tools used in the NTDT 401 module also included a PowerPoint presentation with information from relevant journal articles and books, as well as websites and other PowerPoint presentations. Also, the students in NTDT 401 were assigned to read a relevant textbook section.

In order to assess the effectiveness of the modules in educating students about nutritional genomics, pre- and post-surveys were conducted in each of the classes. The surveys included a combination of multiple choice and open-ended questions about previous exposure to nutritional genomics, definitions of certain terms and concepts, attitudes toward the field, and the potential for future applications. The post-surveys also asked about perceived benefits and limitations of the modules.

Results & Discussion

According to the results of the pre- and post-surveys, students in both courses demonstrated increased knowledge regarding nutritional genomics principles after being presented with the modules; they also demonstrated an increased appreciation of the field. Fifty-nine percent of the students in the NTDT 103 lecture had not heard of nutritional genomics prior. However, even if they had heard of it before, the students were not more likely to know the definition of nutritional genomics. This demonstrated that even if the students could acknowledge that the field exists, they did not necessarily know what the field entails, indicating the information taught in introductory biology and biochemistry did not provide enough background information on genetics, especially DNA transcription, translation, and gene-nutrient interactions.

Many students in both courses commented that they would have liked more time spent covering the topic, and would have liked to learn about additional specific gene-nutrient interactions. Specific interactions were not included in the NTDT 103 module because this is a class for freshman nutrition majors, who have presumably not yet taken very many nutrition courses, and would not have sufficient background to understand specific gene-nutrient interactions. Also, it is a class designed to introduce students to opportunities in the nutrition profession.
and therefore, such opportunities are what were emphasized in this module.

Unfortunately, due to time constraints, folate was the only nutrient included in the teaching module for NTDT 401. More gene-nutrient interactions should be integrated into NTDT 401 in the future, such as those for the vitamin D receptor, calcitonin receptor, coagulation factors for blood clotting, oxidative stress and detoxification, and angiotensinogen relating to hypertension susceptibility. Nutritional genomics should also be integrated into macronutrients classes, as there is a good amount of research done relating to macronutrients, such as apolipoprotein genes and peroxisome proliferator-activated receptors associated with lipid metabolism; insulin secretion and insulin sensitivity associated with risk for diabetes; and the effect of omega-3 fatty acids on inflammation.

Nutritional genomics could also be integrated into an undergraduate nutrition counseling course, as there are various factors to take into consideration when integrating nutritional genomics into clinical practice. Of particular importance is that the use of genetic information personalizes dietary advice, which has great potential for increasing clients’ self-efficacy. Another concern involves the ethical and legal issues related to using genetic information in a clinical setting. There are also case studies available in a video clip format that could be shown in a nutrition counseling course, such as segments of a National Coalition of Health Professional Education in Genetics (NCHPEG) broadcast. Another activity that could be done in any of these courses is prior to teaching the material, have the students visit select companies on the Internet that claim to give personalized diet advice.

One issue encountered during implementation included a lack of a clear differentiation between the terms nutritional genomics and nutrigenomics. In my, and student’s opinion another potential for improving curriculum implementation could involve guest speakers. Since NTDT 103 is a class with mostly presentations by outside dietetics professionals, some students suggested bringing in a guest speaker who is knowledgeable about integrating nutritional genomics into a dietetics career; this is something to be considered for the future. In NTDT 401, students would have liked more time focused on the subject and to learn about more nutrient-gene interactions. They appeared to have difficulty grasping the concepts of the material presented on epigenetics.

Several relevant books for the nutrition department at the University of Delaware were purchased to help the professors better acquaint themselves with the field. These included Genetics: The Nutrition Connection and Nutritional Genomics: Discovering the Path to Personalized Nutrition. However, since nutritional genomics is a cutting-edge field that will constantly have new information added to it, professors will need to keep up-to-date on the field so that the modules do not become outdated. They could do this by reading relevant journal articles such as those in The Journal of the American Dietetic Association, and by joining the nutritional genomics list-serve available through the European Nutrigenomics Organization.

**Strategies for the Future**

Currently, the dietetics curriculum at the University of Delaware as well as most didactic dietetics programs across the country do not provide sufficient preparation for future dietitians in terms of nutritional genomics. In the current study, the students’ background knowledge in genetics came principally from required biology courses, which did not provide them with adequate knowledge of gene-nutrient interactions. Unfortunately, due to the tightly-packed nature of current required courses, there is not a lot of time for much additional course content to be added. Therefore, it may be in the best interest of nutrition programs to revisit their curriculum requirements for nutrition majors, especially for dietetics majors. Required science courses should be reexamined and there should be more communication between the nutrition department and other departments (such as biology and chemistry), as dietetics is an interdisciplinary field.

The modules described here should only be thought of as a starting point that nutrition programs could build upon. With the promise that nutritional genomics holds in becoming an integral part of mainstream dietetics, the best option for the University of Delaware and many other didactic (and non-didactic, internship-based) dietetics programs in the country is to seriously re-evaluate current program requirements, ensuring the new material is fully integrated into the curriculum. The hope is that educators will not only teach this material, but will keep the information updated as new discoveries are made regarding associations between diet, genes, and health.

To stay abreast of new findings, educators can purchase copies of materials from nutritional genomics seminars at Food & Nutrition Conference & Expo (FNCE), use materials that are freely available online, and work with NCHPEG as it begins to develop educational materials. NCHPEG is expected to publish nutritional genomics modules on its website soon for dietitians and for dietetic educators.

The findings and analyses of answers to the pre- and post-survey questions underscore how important it is for individuals in the field of dietetics to stay up-to-date with research in the field. Continuing professional education in the field of dietetics is not only critical for staying abreast of the best ways to help clients improve their health, but it is required in order to maintain the registered dietitian credential. Therefore, it is wise to make sure dietetics students recognize the value of developing a personal education program early on in their career. Various additional ways students could do this is by joining the nutritional genomics becoming an ADA and NCC DPG member and reading the Association’s journal and the NCC newsletter and attending conferences.

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a. While members of the American Dietetic Association consider the term nutritional genomics to include nutrigenomics and nutrigenetics and define these two terms differently, other experts in the field, such as John Milner, have simply used nutrigenomics as a shorthand for nutritional genomics, and defined it as a summation of nutrigenetics (the interaction between DNA and bioactive food components), nutritional epigenetics, and nutritional transcription (personal communication, 3/18/09). In order to prevent confusion, a consensus should be reached between all experts in the field regarding the terminology.

b. Epigenetics focuses on modifications to DNA that affect patterns of gene expression, or whether genes are turned ‘on’ or ‘off’.
Nutritional Genomics

**NTDT 103 (“Introduction to nutrition professions”) Handout**

**Nutritional genomics: What else could I do?**

**Build a solid foundation!** Take science courses intended for majors:

- Chemistry (inorganic, organic, biochemistry), Physics, Biology (plant biology, cell biology, microbiology, anatomy and physiology, and genetics), Food science and nutrition (food science, metabolism, and diet therapy), Basic understanding of statistics and research design; Business skills and public policymaking also helpful.

- Genetic counselors need:
  - Solid foundation in human genetics, psychology, and psychosocial theory, ethics, and counseling techniques.
  - Master’s level professionals (genetics or genetic counseling)
    - 2-year training program including practicums.
    - Passed national certification exam.
  - American Board of Genetic Counseling (http://www.abgc.net).

**Have your own personal continuing education program:**

- Become an expert in diseases of particular interest to you, and their underlying genetic and biochemical bases.
- Stay up-to-date with new information.
- Investigate ethnic groups in which disease is most prevalent.
- Attend meetings in your focus area.
- Network!

**Public health genetics degree & concentration programs:**

- Sarah Lawrence College: http://www.sarahlawrence.edu/PHG.
- University of Iowa: http://www.registrar.uiowa.edu/registrar/catalog/collegeof-publichealth/PublicHealthGenetics.html.

**For Further Reading:**


**Kathy Molten graduated from the University of Delaware with an Honors Bachelor of Science with Distinction in Nutritional Sciences and Dietetics in 2008, and is currently in the International Concentration of NYU’s Community Public Health graduate program. Contact Kelly at: kmolten@nyu.edu or check out her blog, http://food4thoughtandaction.blogspot.com/**.

**References**

Nutritional Genomics

Sample slides from NTDT 401 (Micronutrients) module

5,10-Methylenetetrahydrofolate Reductase (MTHFR) gene variants

Normal

<table>
<thead>
<tr>
<th>5,10 Methylenetetrahydrofolate</th>
<th>Protein/enzyme (MTHFR)</th>
<th>5-Methyl THF</th>
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<tbody>
<tr>
<td>Normal</td>
<td>xxxxxxxCxxxxxx</td>
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<td>Ala</td>
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Polymorphism (C677T variant)

<table>
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<tr>
<th>5,10 Methylenetetrahydrofolate</th>
<th>Defected MTHFR</th>
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<tbody>
<tr>
<td>677 xxxxxxxCxxxxxx</td>
<td>Less 5-Methyl THF produced</td>
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5,10-Methylenetetrahydrofolate Reductase (MTHFR) gene variants

Normal

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<td>xxxxxxxCxxxxxx</td>
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<td>Ala</td>
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Polymorphism (C677T variant)

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<thead>
<tr>
<th>5,10 Methylenetetrahydrofolate</th>
<th>Defected MTHFR</th>
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<tbody>
<tr>
<td>677 xxxxxxxCxxxxxx</td>
<td>Need more folate to compensate</td>
</tr>
</tbody>
</table>

Summary

- Methylating DNA turns genes on and off
- Bioactive food components may inhibit histone deacetylases (HDACs) which affect gene expression
- MTHFR 677 CC:
  - normal MTHFR activity
  - highest amount of methylation
  - decreased risk of neural tube defects
  - lowest DNA synthesis
    - more of a chance for uracil incorporation into DNA if folate intake is inadequate

Summary

- MTHFR 677 TT:
  - In people with poor folate intake, increased risk of
    - neural tube defects
    - cardiovascular disease
  - In people with adequate folate intake,
    - Decreased chance of uracil incorporation into DNA

- MTHFR 677 CT: intermediate effect
Grape Seed Extract & Translating CAM

Grape Seed Extract May Help Neurodegenerative Diseases

Tauopathies—a group of neurodegenerative conditions such as Alzheimer’s disease—have been linked to the build-up of “misfolded” tau proteins in the brain. (Tau proteins are associated with microtubules, which help to regulate important cellular processes.) In light of previous studies indicating that grape-derived polyphenols may inhibit protein misfolding, an NCCAM-funded research center at the Mount Sinai School of Medicine recently examined the potential role of a particular grape seed polyphenol extract (GSPE) in preventing and treating tau-associated neurodegenerative disorders. The results of their in vitro study showed that GSPE is capable of interfering with the generation of tau protein aggregates and also disassociating preformed aggregates, suggesting that GSPE may affect processes critical to the onset and progression of neurodegeneration and cognitive dysfunctions in tauopathies.

An earlier study by the Mount Sinai researchers found that this GSPE reduced Alzheimer’s-type neuropathology and cognitive decline in a mouse model of Alzheimer’s disease and inhibited an Alzheimer’s-linked process called cerebral amyloid deposition. In another recent study, the researchers used a variety of analytical techniques to further clarify how the GSPE affects Alzheimer’s-related processes; an important finding was the extract’s protective effects against cellular toxicity. The researchers concluded that their laboratory findings, together with indications that this GSPE is likely to be safe and well-tolerated in people, support its development and testing as a therapy for Alzheimer’s disease.

References

Translating CAM Research Results Into Clinical Practice: Results From a National Survey of Physicians and CAM Providers

In an initial investigation of the potential for information from CAM research to influence clinical practice, a 2007 national survey asked acupuncturists, naturopaths, internists, and rheumatologists about their awareness of CAM clinical trials, their ability to interpret research results, and their use of research evidence in decision making. The survey was conducted by researchers affiliated with the National Institutes of Health, the Mayo Clinic, the University of Chicago, Harvard Medical School, and the University of Massachusetts. The survey focused on awareness of two major NCCAM-funded clinical trials that studied acupuncture or glucosamine/chondroitin for osteoarthritis of the knee.

• More than half (59 percent) of the 1,561 respondents were aware of at least one of the two clinical trials, but only 23 percent were aware of both trials. The acupuncture trial was most familiar to acupuncturists and rheumatologists, the glucosamine/chondroitin trial to internists and rheumatologists. Overall, awareness was greatest among rheumatologists and those practicing in institutional or academic settings.

• A majority of respondents said they were “moderately confident” in their ability to interpret research literature; few—20 percent of acupuncturists, 25 percent of naturopaths, 17 percent of internists, and 33 percent of rheumatologists—said they were “very confident.”

• All groups regarded clinical experience as “very important” in their decision making, although CAM providers were more likely to rate it “most important.” Physicians were much more likely than CAM providers to consider research results very important or “very useful” in their clinical decision making. CAM providers were more likely than physicians to say that patient preferences were very important. CAM providers were much more likely than physicians to rank research results as “least important,” whereas physicians were much more likely to rate patient preferences as least important.

• Awareness of CAM clinical trials was greatest among respondents with research experience, confidence in their ability to interpret results, and favorable opinions about the role of research in their practice. The survey team concluded that CAM research has the potential to make a difference in both conventional and alternative medicine clinical practice. They recommend concerted efforts to better train all clinicians in interpretation and use of evidence from research studies, and to improve the dissemination of research results.

Reference

Congratulations
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The NCC Chair has been awarded the Outstanding Dietitian of Pennsylvania Award given in recognition to the Pennsylvania dietitian whose record of leadership and service is outstanding and whose contributions to PADA and the public have been long standing and exceptional. This award is the highest honor the Pennsylvania Dietetic Association presents to one dietitian each year.
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Upon completion of this journal CPE, the dietetics practitioner will be able to:
1. Define Irritable Bowel Syndrome (IBS), listing its etiology and symptomatology.
2. Identify treatment and management modalities.
3. Define and list components of Cognitive Behavior Therapy.
4. List the conventional and emerging integrative components of Medical Nutrition Therapy.

This article is approved for 1 hour of Continuing Professional Education. Possible learning codes: 3000, 3005, 3100, 5000, 5220, 5420, 6010, and 6020.

Questions:
1. True/False: IBS is a functional dysmotility condition of the gastrointestinal tract identified by structural abnormalities as seen on endoscopy/colonoscopy.
2. True/False: IBS is more prevalent in men versus women.
3. True/False: Stress causes symptoms of IBS.
4. True/False: Behavior therapy in concert with biomedical—nutrition & pharmacotherapy—interventions are integral to successfully managing IBS.
5. Which are common symptoms associated with IBS?
   A. Structural changes seen on small bowel endoscopy/colonoscopy
   B. Decreased small bowel contractions and decreased intestinal transit time
   C. Diminished anxiety, food sensitivities, and perception of pain
   D. Altered gastric emptying, anxiety/depression, irregular bowel function, and abdominal pain
6. Which is not an aspect of Cognitive Behavior Therapy?
   A. Self-monitoring
   B. Repetitive positive reaffirmation
   C. Decentering followed by delay and distraction
   D. Ignoring symptom antecedents to facilitate avoidance
7. Which of the following is not a treatment modality for IBS?
   A. Cognitive Behavior Therapy
   B. Consistent purposeful physical activity regimen
   C. Reducing single meal fructose load
   D. Narcotics

Instructions to receive credit:

1) Read the article, “Management of Irritable Bowel Syndrome: Concepts & Strategies for Registered Dietitians”

2) Answer the questions listed above. For each question, select one best response. Compare your answers to the answer key on page 74.

3) Mail, fax, or e-mail the application for CPE credit to Annie Griffin, RD, LD: Please make sure the article title is included with the application, request for CPE credit, name, address, telephone number, e-mail address, and ADA member registration number.

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Those of you who would like to contribute an article or have topics that you would like to see in future issues, please feel free to drop me an email or give me a call – peaknut@cascadaccess.com or 702-346-7968 – or contact any one of the capable NCC leaders listed on the back of the newsletter.

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