Celiac Disease, Infertility and Pregnancy Complications
By Olivia Eisner, MPH, RD, CLC and Vanessa Maltin, RD

Infertility, while biological in nature, carries profound psychological, emotional, social and cultural implications for couples attempting to conceive a child. Defined as the biological inability for either a man or woman to contribute to conception or the inability to carry a pregnancy to term, infertility in couples has dramatic implications for an individual's or couple's health and well-being.

Reproductive endocrinologists utilize strict guidelines in defining infertility. According to the American Society for Reproductive Medicine, a couple is considered to be infertile if:

- They have not conceived after 12 months (for females <34 years old).
- They have not conceived after 6 months (for females ≥35 years old).
- A woman is unable to carry a pregnancy to term (1).

According to the Center for Disease Control and Prevention's 2002 National Survey of Family Growth, approximately 12% of reproductive-age couples or around 7.3 million women and their partners in the United States are affected by infertility (2). Myriad factors influence the ability of a couple to conceive or carry a pregnancy to term including genetics, biological abnormalities, chronic diseases, health-related behaviors, lifestyle and environmental factors.

Although once believed to be a predominantly female-related issue, it is now commonly accepted that men and women are affected equally by fertility problems. Female-related issues account for about one-third of fertility problems, while one-third of cases originate in the male partner. The remaining cases are a combination of problems in both partners or remain unexplained (1).

Causes of infertility in women include:

- **Ovulation disorders triggered by** hormonal disruption, and resulting in diminished luteinizing hormone (LH) and follicle stimulating hormone (FSH). Possible contributing factors include polycystic ovary syndrome (PCOS), anovulation resulting from excessive exercise, starvation, injury or tumors, and diminished ovarian reserve due to age, early menopause, autoimmune disease or genetic factors.

- **Blocked or damaged fallopian tubes** resulting from endometriosis or pelvic inflammatory disease.

- **Congenital malformations of the uterus.**

- **Uterine fibroids or adhesions,** which may impede implantation of a fertilized egg.

- **Lifestyle factors,** including tobacco or drug use, underweight or overweight, stress, etc.

Male infertility commonly results from problems with the quantity or quality of sperm. Abnormally shaped sperm can impair fertility by reducing sperm motility and/or impeding sperm from fertilizing the ovum. Excessive heat to the scrotal area (i.e. from hot tubs or laptop computers), testicular trauma, genetic disorders, low testosterone levels and infections may contribute to problems with the production of sperm. Alternatively, obstructions to sperm passage or impaired delivery of sperm also play a role in infertility issues. Whether due to sexual problems including erectile dysfunction and premature ejaculation, spinal cord injury, or blockage of the epididymis or ejaculatory ducts, the inability of sperm to reach the ovum will clearly impede conception. Male infertility may also result from other health problems including diabetes, thyroid issues, adrenal or hypothalamic-pituitary disorders, or lifestyle factors such as obesity, tobacco, alcohol, drug use, stress, age and environmental factors/exposures.

While certain causes of infertility can be easily diagnosed and treated with medical intervention, approximately 15% of couples experiencing problems display no known abnormalities. For these couples, determining the cause of infertility in the absence of the major contributors is a great challenge. Recent research has indicated that some of these so-called unexplained infertility cases may be due to systemic maternal and/or paternal disorders that have subtle effects on the reproductive system. One such disease that has been discussed in relation to infertility is celiac disease.

What is Celiac Disease?
Celiac disease (or gluten-sensitive enteropathy) is a genetically inherited autoimmune condition that affects the villi of the proximal small intestine. When healthy and intact, villi appear like tall and slender finger-like projections, offering a large surface area for the absorption of important nutrients. In individuals with celiac disease, the ingestion of dietary gluten, a protein found in wheat, rye and barley, damages the intestinal villi through an inflammatory...
from the chair

Denise Andersen, MS, RD, LD, CLC

It is with great enthusiasm that I begin my year as Chair of the Women’s Health Dietetic Practice Group (WH DPG). On behalf of the Executive Committee, welcome to the WH DPG!

I first became involved with the WH DPG as a member at its inception. The information provided assisted me in developing skills and knowledge related to the field of women’s health. At the time, I was involved with teaching classes to nurse practitioners working in the NICU, adult ICU, oncology, and GI departments; managing RD staff; and working closely with my hospital’s OB/GYN Collaborative Practice Committee in the Heathcare Care System in Minneapolis, MN. Following that, I worked with the Home Infusion company Coram Healthcare specializing in high risk pregnant women, long term nutrition support patients, and pediatric surgical and transplant patients. Currently, I work as the Regional Clinical Nutrition Manager with Morrison Management Specialists and the Clinical Nutrition Manager of Abbott Northwestern Hospital, the largest of the twin cities' hospitals in Minnesota.

Whether you are a new member or whether you have been one for some time, thank you for joining our practice group. WH DPG continues to make a significant contribution to the field of women’s health from public policy efforts to getting the Institute of Medicine’s Prenatal Weight Gain guidelines revised. We will continue to excel at promoting and protecting women’s health initiatives as outlined in the WH DPG strategic plan.

It is an exciting time to be a member of the WH DPG. Your membership entitles you to many benefits, including:

- WH newsletters: The Women’s Health Report is a quarterly publication that includes feature articles, case studies, cutting-edge research, practice guidelines, resource reviews and member spotlights.
- WH Web site: http://www.womenshealthdpg.org features numerous resources for the dietetic professional from helpful links to past issues of the newsletter.
- WH Listserv: On-line forums for members to discuss the latest research, case studies, solicit advice, share resources and promote the profession.
- Professional development/networking opportunities.

As the new chair I would like to share our goals for the coming year: -

- Develop and implement evidenced based women’s health practices that support our goals and mission.
- Assist in the development of a certification in women’s health.
- Offer teleseminars/Webinars with continuing education credits.
- Assist with recommendations for achieving higher quality healthcare through initiatives that focus on quality indicators such as safety, efficacy, equitable, patient-centered and cost-effective care.

I have had the opportunity to meet many members of our DPG that continue to contribute to the growth and development of the field of women’s health. As we go forward this year, we have many opportunities for members to be active in the WH DPG. It is my goal to recruit and engage as many members as possible to participate on important committees, task forces and special projects.

Many thanks to our Past Chairs Jamillah Hoy-Rosas, MPH, RD, CDN, CDE, and Cathy Fagen, MA, RD, for their contributions to the Women's Health DPG. Their mentorship and support have allowed me to reach my goal of becoming chair and I know that I can carry on their successes with your help. Again, welcome and thank you for your membership in the WH DPG! Please contact me at any time at whdpgchair@gmail.com.

from the editor

Olivia Eisner, MPH, RD, CLC

Welcome to the Women's Health Dietetic Practice Group! For those that have been long time supporters, we welcome you back. And to those who are discovering the Women’s Health DPG for the first time we hope that you will take full advantage of the many educational offerings, resources and opportunities that are available. This summer’s newsletter delves into celiac disease and the myriad ways it can affect women from contributing to infertility to shaping the ways we feed our families. Of late, it seems everyone is talking about celiac disease but after conducting research for our lead article on Celiac, Infertility and Pregnancy Complications the most salient thing to me is how little we still know about the disease, its’ vast array of symptoms and most strikingly the mechanisms by which gluten can contribute to real systemic damage. To help answer some of these questions, Nancy Lapid, a medical editor and contributor to the popular website www.about.com has been kind enough to answer some of our members’ questions about celiac disease. Our lactation section editor Julie Harker Buck, MHE, RD, CD, LCCE presents a case study and review of celiac disease in a breastfeeding mother and her children. To round out our exploration of celiac disease, Miri Rotkovitz, MA, RD, Communications Chair for the WH DPG has created a handout on popular celiac blog sites for our membership to use with their clients. This handout is free to reproduce and will be easily accessible from our Web site at www.womenshealthdpg.org. We are always looking for talented writers to contribute to our peer-reviewed publication. If you’d like to see your name in print, please contact me at whdpgpublications@gmail.com. Here’s to a productive and positive year together!
immune response. This can cause the villi to become blunted or flattened, thereby inhibiting the absorption of important nutrients.

Celiac disease affects about 1 in 133 people (roughly 3 million people) in the United States, although only about one to three percent are currently diagnosed (3). Current estimates indicate that in individuals with related GI symptoms the prevalence of celiac disease jumps to 1 in 56. Celiac disease prevalence has also been shown to be higher in women and certain populations including individuals of Arab descent (3).

What are the Most Common Symptoms?
According to the National Institutes of Health’s National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK), symptoms of celiac disease vary tremendously between individuals and occur not only in the GI system but throughout the body - which may help to explain the fact that 97% of individuals with celiac disease are currently undiagnosed (4).

Digestive issues including abdominal pain, bloating, chronic diarrhea, gas, constipation and fatty stools are common in individuals with celiac disease. Adults also report more subtle and non-gastrointestinal symptom such as unexplained iron-deficiency anemia, dental enamel defects, depression, osteoporosis, bone or joint pain, arthritis, numbness in hands and feet, seizures, canker sores in the mouth, an itchy skin rash called dermatitis herpetiformis, and infertility or pregnancy complications (5). Long term clinical manifestations of celiac disease may include but are not limited to decreased liver and thyroid functioning, skin disorders, and reproductive complications.

In infants and children, typical warning signs include failure to thrive, short stature, unexplained weight loss, delayed puberty (including menarche), and behavioral changes. These less subtle symptoms often account for earlier diagnosis in this population.

Individuals may experience one, multiple or none of these symptoms, which is why celiac disease has historically been difficult to diagnose. Many people go for years and sometimes decades without a proper diagnosis because of the hugely varied clinical manifestations of the disease. In addition, individuals are often misdiagnosed as any of the symptoms may be mistaken for those of other conditions including irritable bowel syndrome, anemia related to menstural blood loss, infection and chronic fatigue syndrome (5). Researchers are currently hard at work to determine why celiac disease affects people in such different ways - but it is important to remember that although many think of celiac disease as solely a gastrointestinal issue, it is also an abnormal immune reaction.

TESTING FOR CELIAC DISEASE:
Antibody Celiac Tests:
Serological tests provide an effective first step for the clinical provider. An individual with celiac disease will have higher-than-normal antibody levels in response to the gluten protein.

Although variation exists, the most common antibody panel test includes anti-tissue transglutaminase (tTG-IgA), total serum IgA and anti-endomysial antibody (EMA-IgA) (6). In order for the test to be accurate, patients must be eating gluten regularly, equivalent to about four servings per day for six weeks. If a patient has a positive antibody test, a small intestine biopsy is needed to confirm a celiac disease diagnosis.

Small Intestine Biopsy
Endoscopic biopsy of the upper small bowel is the gold standard of diagnostic testing to determine a celiac diagnosis. Due to the invasive nature of this test, it should be reserved for those who test positive for gluten antibodies.

Genetic Testing
Although not routinely performed, genetic testing can be an important component in diagnosing celiac disease. According to the NIDDK "Nearly all individuals with celiac disease have gene pairs that encode for at least one of the human leukocyte antigen (HLA) gene variants, designated HLA-DQ2 or HLA-DQ8. While these are found in approximately 40% of the general population, negative findings for HLA-DQ2 or HLA-DQ8 can rule out current or future celiac disease in patients for whom other tests do not provide a clear diagnostic result" (7).

Treatment of Celiac Disease
The only treatment for celiac disease is a life-long gluten-free diet. Eliminating all forms of wheat, rye and barley from the diet will help relieve symptoms and prevent long-term complications of the disease. Hidden sources of gluten including additives such as modified food starch, preservatives and stabilizers also need to be avoided and special attention needs to be paid to food items manufactured in factories where wheat is present, as cross-contamination is a crucial problem. Individuals should be aware that gluten also exists in numerous non-food related products including medications, vitamin preparations, toothpaste, soaps, and cosmetic products. Although research is underway to find a treatment for the disease, there are currently no medications or surgeries that offer a cure. While improvements begin within days of adopting a gluten-free diet, it may take several months to several years before a damaged small intestine regains its ability to fully absorb nutrients.

Link Between Celiac Disease & Pregnancy Complications
Over the last few decades, several European studies have examined the link between celiac disease and infertility and found that between 4 and 8% of women suffering from unexplained infertility also have celiac disease. A thorough review of the literature conducted by Eliakim and Sherer reveals that patients with celiac disease share a number of characteristics such as significantly delayed menarche, early-onset menopause and an increased presence of secondary amenorrhea (or the absence of a menstrual cycle in a woman who is neither pregnant or breastfeeding) (7).

Patients with untreated celiac disease often suffer from reproductive difficulties such as infertility, higher rates of recurrent miscarriages, increased fetal growth restriction and lower birth weights. On a positive note, Ciacci et al demonstrated that in patients with untreated celiac disease, higher rates of spontaneous abortion, low birth weight babies and a reduced duration of breastfeeding were effectively corrected by the adoption of a gluten-free diet (7).
The manner in which celiac disease interferes with reproduction is not yet understood. Some researchers have proposed that celiac disease's interference in reproduction is related to the multi-faceted nature of the disease. As a risk factor for infertility, celiac disease results in a) micronutrient and vitamin deficiencies; b) increased frequency of autoimmune and endocrine diseases; and c) an abbreviated reproductive period marked by late menarche and early menopause.

Malabsorption with consequent deficiencies in micronutrients and vitamins such as iron, folic acid, and fat-soluble vitamins plays a major role in pregnancy outcomes. These micronutrients are essential for organogenesis and in males for spermatogenesis. A well-reported case-control study in Italy found that of 94 women with untreated celiac disease, a relative risk factor of 8.9 for spontaneous abortion and 5.8 for low birth weight babies was present when compared to their treated counterparts. In addition, the untreated women's duration of breastfeeding was 2.5 times shorter than their case controls (8). The higher rate of intrauterine growth restriction (IUGR) is perhaps the most predictable outcome of impaired maternal nutrient absorption, and is a potential indicator of long-term health effects in the child. A 9-fold increase in IUGR has been reported in individuals with celiac disease (7).

It has been proposed that poor absorption of folic acid may lend itself to an increased theoretical risk of neural tube defects in babies of an affected mother. One British study found that in 60 mothers of children with neural tube defects had celiac disease (9). However, few studies have been done to explore this link and those that have failed to demonstrate higher prevalence than in the normal population.

Iron deficiency anemia (IDA) may also be implicated in the celiac-infertility connection. IDA, a common sign of celiac disease, is often the only symptom present in 40% of patients (10). It has been suggested that IDA may result from GI tract bleeding as a result of duodenal lesions or the reduced absorption of iron from the bowel. In either case, IDA has been shown to influence a woman's ability to conceive and maintain a pregnancy (11). Adopting a gluten-free diet has been demonstrated to improve the iron status in patients with positive serological testing for gluten-sensitive enteropathies.

The fact that celiac disease is an autoimmune disease alone may be a good enough explanation for the unfavorable outcomes of infertility and pregnancy complications in those with celiac disease. Having one autoimmune disorder predisposes individuals to other autoimmune conditions. It has been clearly established that individuals with celiac disease have higher rates of other autoimmune disorders. Two main theories exist to explain this phenomenon: 1) a genetic link exists amongst certain autoimmune disorders predisposing individuals to multiple disorders, or 2) gluten exposure acts as a trigger for the onset of other autoimmune conditions by increasing the permeability of the intestines to a variety of environmental triggers. Common co-morbidities to celiac disease include type 1 diabetes, autoimmune thyroid disorder, and other endocrine disorders such as hypo- and hyper-thyroidism, Addison's disease and primary gonadal failure in men. Regardless of the mechanism, these co-morbidities play a role in the overall systemic wellbeing of individuals.

In vitro approaches to studying pregnancy outcomes of women with celiac disease have also led some researchers to suggest that the placenta may be directly targeted by the maternal immune system leading to functional impairment (12). The consequences are not fully understood but as the placenta is a major site of nutrient transfer, the impairment of the membrane processes may have profound effects on fetal outcomes.

Women with celiac disease however, are not the sole contributors to infertility problems. In males with celiac disease, gonadal dysfunction, including low plasma testosterone levels along with a variety of abnormalities of hypothalamic-pituitary-gonadal function have been implicated in sexual dysfunction and infertility (13). It has been shown that males with celiac disease have a significantly higher prevalence of teratozoospermia, or abnormal-looking sperm (46% of subjects) and asthenozoospermia, or reduced sperm motility (75% of subjects) (14). New questions about the paternal effect on neonatal outcomes are also being researched. Interestingly, Ludvigsson and Ludvigsson found that the risk of low birth weight babies born to celiac fathers was 5 times higher than in the general population (11% v. 2.5%) (15).

Although a fair amount of research has demonstrated the prevalence of celiac disease in infertile couples, we still have a very limited understanding of the mechanism by which celiac disease affects reproduction. While screening for celiac disease on its own is still relatively uncommon, it is even more so amongst fertility specialists and obstetricians. Yet, the profound and varied effects of celiac disease on the systemic health of individuals is slowly gaining recognition in the medical community. For practitioners, especially those working with infertile or pregnant couples, it is imperative to understand the role celiac disease may play during the preconception period as well as its potential effects on birth outcomes.

While there remains no cure, those with celiac disease can prevent poor health outcomes, reverse complications and improve their wellbeing by the adoption of a life-long gluten free diet. As experts on women's nutritional needs throughout the reproductive period it is vital that dietitians understand the myriad ways in which celiac disease may be expressed in individuals and be prepared to offer appropriate assistance and counseling to patients embarking on the transition to a gluten-free way of eating.

References
6. Celiac Disease awareness Campaign of the National Institutes for Health Available at www.celiac.nih.gov
UNINTENDED CONSEQUENCES OF SIMPLE MESSAGES – HELPING NEW RDs ACHIEVE BALANCE

By Lindsay Ek, RD and Gail Frank, DrPH, CHES, RD

Note: In a leadership rotation, dietetic interns develop professional writing skills. This article is one product of a 4-day leadership rotation through the 2009 Dietetic Internship at California State University Long Beach, where Lindsay Ek completed her internship in June 2009. She currently resides in San Diego, California attending graduate school at San Diego State University and is a newly-employed district dietitian for the Chula Vista Elementary School District. Dr. Frank is a Professor of Nutrition and Director of the ADA Dietetic Internship at California State University Long Beach.

Introduction

Due to enormous technological advances over the past few decades, registered dietitians (RDs) and healthcare providers have the world at their fingertips. The latest research has the potential to arrive in living rooms in various forms virtually as soon as it is published. Consumers receive nutritional messages not only via face time with RDs, but through magazines and books, blogs, websites, food and beverage labels and ads. Health professionals may also be exposed to nutritional messaging via Webinars and teleconferences.

It is thrilling to see health and nutrition information reach so many arenas. However, many single studies receive a major headline. This means it is not only important to consider the information carefully, but also essential to anticipate any negative repercussions from inappropriate conclusions or immediate changes individuals make. Individuals may believe that any topic given a headline is absolute truth.

RDs, especially those new to the profession, must remember that our well-intentioned, sensible messages are not always perceived the way we intend them to be. Despite the valiant efforts of all RDs, clients may still be lost when it comes to the basic concept of a healthful eating plan. Simple nutritional messages in the media or espoused by RDs which focus on increased or decreased consumption of a single food, food component, food group or single nutrient, in relation to a health condition, may, in fact, have unintended consequences.

Recent health marketing campaigns have focused on simple messages to increase consumption of a single food group, e.g., whole grains, low-fat dairy or colorful fruits and vegetables. Each message is valuable not only for promoting increased intake of specific nutrients, but also because a positive, simple message does not overwhelm the recipient.

Focusing on one food group can be an effective way to encourage healthful eating. However, it is possible that those who follow simple messages may believe that they create a ‘healthful diet’ by achieving a single challenge. Such consumers may, however, neglect to eat a larger variety of foods integral to maintaining and promoting health. By focusing on a single health message, such consumers run the risk of a diet that lacks the components of a healthier pattern of intake.

The USDA’s Healthy Eating Index for 1999-2000, reported that only 10% of the U.S. population was consuming a “good diet” while 74% “needed improvement” in terms of adequacy, moderation and variety (1). The general public still lacks a clear understanding of a well-rounded diet. Focusing on simplified messages may improve awareness and consumption of one food group, but it may not be effective in achieving good nutrition or promoting balance and variety.

Take a Lesson from Messages about Fat

Research shows that an eating plan high in fat, especially saturated and trans-fats, can increase risk for cardiovascular disease. A tracking survey conducted by the American Heart Association from 2006 to 2007 reported a high level of public awareness of both trans- and saturated fats (2). Public interest swelled as individuals began to believe that these fats could increase their risk for heart disease, however fewer than 30% of individuals were able to identify food sources of these fats on an unaide basis (2).

Advice to minimize or eliminate fat from one’s eating pattern was perhaps one of the clearest examples of how a simple message provoked unintended consequences. Back in the 1990’s, the “fat-free” trend led many to attempt to entirely eliminate fat from their diets. The public believed that eliminating fat would yield an additional fast track to weight loss. Food product manufacturers, fueling the trend, began marketing fat-free products.

When food manufacturers eliminate certain macronutrients from products, a replacement must be incorporated to maintain palatability. The compensation of one macronutrient or ingredient for another, i.e. sugars for fats, created a new slew of nutritional problems, including consumption of large portion sizes and excess total energy. People thought they were doing what was best for their health by choosing low- or non-fat foods, but it was not the case.

Provencher et al. suggests that when individuals are told a certain food is “healthy,” consumption of that food usually increases (3). The fat free example is interesting because at the same time the intake of fat free foods increased, weight gain and obesity actually increased in the population.

A similar dilemma may occur regarding trans-fats, as individuals simply rely on trans-fat labeling alone to make their choice. In 2006, the FDA required that the Nutrition Facts Panel state how much trans-fat was in one serving of food. Various manufacturers began drastically eliminating trans-fats from their products, reducing the trans-fat content or shrinking a serving size so that their products contained the required 0.5 grams or less of trans-fat per serving for accurate labeling. This process has allowed many manufacturers to slip under the trans-fat radar, deeming their products eligible for the "0 grams trans-fats" packaging claim.

Due to the volume of information concerning the dangers of trans-fats, many consumers may consult food labels and buy products marked “trans-fat free” without considering other important components such as total calories, total or saturated fat, grams of carbohydrate or additives in the list of ingredients. Some may purchase products that actually contain slightly less than 0.5 grams per serving of trans-fat but are labeled with "0 grams trans-fats.” If, in turn, they eat several servings, total trans-fat intake may be 1.5 grams or more, not to mention the total fat and calorie load (4).

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BREASTFEEDING & CELIAC DISEASE: A Case Study and Review

By Julie Harker Buck, MHE, RD, CD, LCCE

Case Study:
J.B., a thirty-five year old vegetarian mother of five children, was diagnosed with celiac disease in September 2008. She had never heard of celiac disease until her husband read an article about the condition and shared it with her. Upon further research and study, J.B. became convinced that her symptoms including stomach aches, lifetime anemia, diarrhea and stunted growth warranted being tested. At her yearly exam she scheduled a blood test and endoscopy. After receiving positive confirmation of a diagnosis, she proceeded to go on the prescribed gluten-free diet. Symptoms resolved within nine months.

Very committed to breastfeeding, J.B. had breastfed all her children: a 15-year old daughter born in 1994, a 14-year old son born in 1995, a 5-year old daughter born in 2003 and twin boys born in 2006. All of J.B.’s children were extremely colicky (as diagnosed by a physician) with uncontrollable screaming/crying throughout the day and “blow-out” diapers (loose stool up the babies’ backs and down their legs). When introduced to grains as infants, all had varying signs of intolerance. Both daughters were lactose intolerant from infancy, with the youngest daughter manifesting more serious symptoms of colic such as writhing on the floor in pain. J.B. followed recommendations and suggestions for dealing with colicky children and even visited a dietician at one time. However, despite seeking help from multiple clinicians, the question of allergies never came up. As she stated: “What mother would not do everything in her power to help their children?…” Breastfeeding was an “awful” experience because the babies would nurse all day long. She said, “I could have worn them as jewelry;” as she always had a baby latched on. “They were always hungry, starving.”

Breastfeeding and Celiac Disease

Celiac disease is a digestive disorder that affects children and adults. When individuals with celiac disease eat foods that contain gluten, a protein in some grains including all forms of wheat (durum, semolina, spelt, kamut, einkorn, faro, rye, barley, tritcale, etc.), it creates an immune-mediated toxic reaction that damages the small intestine. Symptoms include gastrointestinal distress (bloating, gas, chronic diarrhea and/or constipation), anemia and failure to thrive (in infants). Gluten must be eliminated from the diet of diagnosed celiac disease patients who have been life-changing for us.”

The “PDR” of Breastfeeding a Child with Celiac Disease

1. Prevention: Teach families with a known history of celiac disease that women of childbearing age should breastfeed for a longer period of time and delay the introduction of solid foods (until at least 6 months of age). Remember, asymptomatic lactating women may be a carrier of the disease.

2. Duration: If a mother with a diagnosis of celiac disease chooses to breastfeed a baby or toddler she will need to follow a strict gluten-free diet. She should also continue breastfeeding for at least one month past the introduction of solid foods and up to 1 year or beyond as recommended.

3. Response: There is a chance that exposure to gluten in breast milk from a mother without a confirmed case of celiac disease to her celiac-free baby may help the baby develop a normal immune response to gluten (5).

References
1. Celiac Disease Foundation. Available at http://www.celiac.org

• Risk of a breastfeeding child developing celiac disease (compared to a weaned child) decreased 65%

The mechanism and duration of protection is unknown and warrants further study. It should be emphasized that while the total number of cases of diagnosed celiac disease did not decrease, the age of presentation was delayed when infant feeding practices were altered as indicated above. In Jan Riordan’s text, Breastfeeding and Human Lactation, many studies are cited that support the evidence that formula-feeding and the early introduction of solid foods accelerate the appearance of symptoms of celiac disease. Infants with the disorder are asymptomatic until gluten-containing foods are introduced. Symptoms indicate poor absorption of fat manifested by stools that are frothy appearing, foul smelling and considered excessive (2).

Case Study Continued...

Once J.B. was diagnosed she scheduled all of her children for the antibody blood test. The children all tested positive. J.B. was furious and upset over the lack of information available, specifically as it related to children and celiac disease. She proceeded to put all of her children on a totally gluten-free diet. Within a relatively short time, J.B noted that the oldest daughter who had struggled at school with learning problems and suffered with eczema showed significant improvement in her school work and over a longer period of time showed some improvement in her skin lesions. The breastfeeding twin boys had fewer “blow-out” diapers.

The 2-year old twin boys are now being weaned from breastfeeding. J.B. was originally going to wean the twins at 15 months; however after discovering they had celiac disease has decided to continue so as not to overwhelm them with all the changes. One twin also had to have hydrocele surgery, so J.B. decided that the additional nursing would be important to provide added comfort. J.B. provided words of wisdom for those reading this article: “If you suspect your children have a problem, get them tested...I can’t tell you how glad I am that they were tested young. It has been life changing for us.”

Very committed to breastfeeding, J.B. had breastfed all her children: a 15-year old daughter born in 1994, a 14-year old son born in 1995, a 5-year old daughter born in 2003 and twin boys born in 2006. All of J.B.’s children were extremely colicky (as diagnosed by a physician) with uncontrollable screaming/crying throughout the day and “blow-out” diapers (loose stool up the babies’ backs and down their legs). When introduced to grains as infants, all had varying signs of intolerance. Both daughters were lactose intolerant from infancy, with the youngest daughter manifesting more serious symptoms of colic such as writhing on the floor in pain. J.B. followed recommendations and suggestions for dealing with colicky children and even visited a dietician at one time. However, despite seeking help from multiple clinicians, the question of allergies never came up. As she stated: “What mother would not do everything in her power to help their children?…” Breastfeeding was an “awful” experience because the babies would nurse all day long. She said, “I could have worn them as jewelry;” as she always had a baby latched on. “They were always hungry, starving.”
Due to a significant increase in the total amount of food eaten and a concomitant total energy intake that occurred from 1971-2002 (5), it is reasonable to assume that many consumers are eating larger portions than what is defined as one serving of food on a label. There may be various health consequences of an over-consumption of virtually any one food. RDs must remember not only to mention specific risks with food components, such as total fat and trans-fat, but also to emphasize moderation and the importance of variety and balance.

The Problem with a Single Focus
Mozaffarian explains that what was once traditional advice may in fact be causing more harm than good. When the public was advised to choose foods lower in fat, carbohydrate intake increased, potentially causing health concerns such as dyslipidemia, insulin resistance and weight gain (6). When people attempt to eliminate a macronutrient, like fat, for an extended period of time, they are neglecting to provide their bodies with the proper nutritional needs required for normal body function. For this reason it is important to define ‘healthy eating’ for clients and the public and emphasize that the human body requires all macro- and micronutrients daily. At the same time it is important to decipher media messages and headlines that point consumers in the direction of focusing on just a single food or food group.

Woolf and Nestle discussed whether various dietary guidelines have fueled the obesity epidemic and stated, "When the prevailing message fails to achieve its intended aims or achieves the wrong ends, the solution is not to abandon the enterprise but to reshape the message to achieve desired outcomes (7)."

This applies to simplified messages. If new and established RDs direct their skills and knowledge toward addressing the obesity epidemic, then one important skill may be the ability to educate clients about what constitutes a healthy eating pattern. This means to avoid defining “healthy” by giving single messages about a food or food group. Instead messages should emphasize moderation in portion, variety and choice within each food group while eating from all the food groups. This broader message may help to eliminate inconsistencies, misconceptions and confusion.

Recommendations to Guide Consumers
New research will continue to alter what we define as the ideal eating pattern. With the update of the ‘2010 Dietary Guidelines,’ it will be interesting to see if the solution chosen by nutrition experts is to minimize or abandon prior messages about ‘overall healthy eating with balance, variety and moderation’ in lieu of strong single food group messages, or rather to reshape and strengthen the ‘balance, variety and moderation’ message for the American public.

As each new group of dietetic interns graduate and pass the RD exam, they emerge as new leaders in the quest to promote healthy eating. Together with established RDs, they must continuously formulate and reshape their messages to ensure clients create healthy eating patterns with balance, variety and moderation. Understanding that single messages or guidelines are just that—only one piece of information that should be weighed in relation to everything else we know—may help RDs especially new RDs, to guide their clients more clearly.

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1. What is gluten intolerance? Is it different from celiac disease?

In celiac disease, individuals who eat gluten may or may not have obvious symptoms, but regardless of whether they feel sick when they eat gluten, their small intestines become damaged, and they usually have so-called "gluten antibodies" or "celiac antibodies" in their blood. In contrast, people with gluten intolerance always have uncomfortable physical symptoms from eating gluten, but they do not necessarily test positive for celiac disease in blood tests or intestinal biopsies.

2. How much gluten is too much?

The amount of tolerable gluten varies among people with celiac disease, but in general, research has suggested that a daily gluten intake of less than 10 mg is unlikely to cause significant damage to the intestines in most people with celiac disease (although these small amounts could still be enough to make a person feel unwell) (1).

To put that into perspective, the Celiac Sprue Association says that 1/8 teaspoon of regular all-purpose flour contains about 25-30 mg of gluten. Tricia Thompson, RD, a well respected authority on celiac disease, explains that a one-ounce slice of regular white bread contains approximately 3,515 mg of gluten, or 351 times the maximum daily amount that's safe for celiacs (2).

It is important to remember that odds are good that individuals are likely still ingesting a tiny amount of gluten every day regardless of following a strict gluten-free lifestyle. In most parts of the world, regulations say that to be labeled gluten-free, a product can contain no more than 20 parts per million of gluten. As Tricia Thompson also points out, even a slice of gluten-free bread contains a little over a 1/2 milligram of gluten.

3. What hidden gluten sources or ingredients should people watch out for?

Gluten lurks as a hidden ingredient in many products:

-- Many salad dressings, gravies, sauces and marinades contain gluten as thickeners. Soy sauce is a big danger in this category.
-- Canned soups often contain gluten, as do some soup mixes.
-- Puddings and pie fillings can include gluten; people with celiac disease need to find brands that use a safe starch (for example, potato, corn or tapioca) instead of wheat-based thickeners.
-- Most reduced-fat foods (such as meats and dairy products) use starches to make the product gel better; here too, it's important to be sure the starch isn't wheat-based.
-- In processed meats (cold cuts, hot dogs, sausages, etc.) modified gluten-based starches are often used to bind water.
-- Almost all ready-made meals and fast foods contain gluten. Among other reasons, the binding properties of starch help batters and coatings adhere to food and also keep the foods from getting soggy.
-- In prescription and over-the-counter medicines, fillers (also called "inactive ingredients" or "excipients") are added to provide shape and bulk for tablets and capsules and aid in water absorption (helping the tablet to disintegrate). Fillers can be derived from any starch source, including wheat.

It's important to remember that wheat is not the only source of gluten. Barley and rye are also unsafe -- and while manufacturers are now required to clearly state whether a product contains wheat, there's no requirement that they clearly disclose the presence of barley or rye or any of their derivatives. Barley malt is a common sweetener, especially in cereals. Anything made with malt vinegar is also off limits. Most commercial oatmeal is also unsafe, because it's harvested and milled with wheat and barley and contaminated in the process.

One of the most insidious sources of hidden gluten is cross-contamination (when gluten-free food comes into contact with food that does contain gluten). For example, gluten-free foods should not be prepared on the same surface used to prepare foods containing gluten unless the surface has been thoroughly cleaned. Deep-frying gluten-free foods in the same oil used to fry breaded items is also a problem (so say good-bye to French fries in most restaurants). It is also important to watch out for crumbs in spreadable condiments (such as jellies, butter, cream cheese and dips) being shared in a household.

In the U.S. individuals with celiac disease used to be told to avoid all grain alcohols, but now the prevailing opinion is that gluten doesn't survive the distillation process. An important exception is beer; because it's made from barley and is not distilled. In the past few years, a couple of gluten-free beers have come on the market, which has been a great breakthrough.

The Canadian Celiac Association explains, "Distilled alcoholic beverages such as gin, vodka, scotch whisky and rye whiskey are made from the fermentation of wheat, barley or rye. Since they are distilled, they do not contain prolams [a component of the gluten protein] and are allowed unless otherwise contraindicated. Beer and ale, usually made from barley, may contain 1-2 mg of prolams per pint (570 mL) and therefore is not allowed" (3).

4. Why does there appear to be an increasing epidemic of celiac disease? Do we know what causes celiac apart from a genetic component? Is it a result of early feeding or environmental circumstances?

There are several reasons why it seems there are more and more people with celiac disease these days. One reason is that diagnostic methods have improved. About a decade ago, a blood test for celiac disease became available, and that made it much easier for doctors to test their patients. Another factor is that until fairly recently, doctors thought that celiac disease only developed in babies, so they never thought to look for it in their adult patients. Also fallen by the wayside is the old theory that patients with celiac disease are always thin -- that turned out to be false, too. Lots of other myths about celiac disease have been disproved recently, so more and more doctors are realizing that they need to consider the possibility that older children and adults have celiac disease.

But that's not all that's going on. It's actually true that the prevalence of celiac disease has been rising. In July of this year, Mayo Clinic researchers reported that in the United States, celiac disease is four times more common now than it was 50 years ago (4). They did a very interesting study -- they had frozen blood samples from a large number of military personnel from the 1950s, and they were able to test those samples for celiac disease antibodies and compare the prevalence then with the prevalence in blood samples obtained today. The research team believes the increase is due to an environmental factor, perhaps related to changes in quantity, quality, or processing of cereal. Similar increases in celiac disease prevalence have been reported in Europe.
Internet Resources on Celiac Disease and Gluten-Free Living

Whether you’re looking for accurate, understandable information about celiac disease, need help adjusting to a gluten-free lifestyle, or just want to know what to make for dinner, there are some fantastic internet resources to help you out. Following are some top-notch Web sites on celiac disease and gluten-free living, selected for the breadth, depth, and objectivity of their content.

**CELIAC DISEASE 101:**

Celiacdisease.about.com

Whether you’re newly diagnosed or have been living with celiac disease for some time, it’s important to have a go-to resource for objective, up-to-date information about living gluten-free. Medical editor Nancy Lapid, About.com’s Guide to Celiac disease, became an expert on the topic by necessity when she was diagnosed with the condition in 1999. Her exhaustive site covers everything from diagnosis and symptoms to research news, from recipes to alerts about gluten-free product recalls. She shares her perspective on how to cope with the potentially daunting dietary and lifestyle changes those with celiac disease must undertake, maintains an active reader forum, and even offers tips for finding everything from gluten-free wedding cakes and pizza to dining out safely. The site’s content is also reviewed for accuracy by About.com’s Medical Review Board.

**GLUTEN-FREE COOKING:**

Glutenfreegirl.blogspot.com

When Shauna James Ahern learned she had celiac disease in 2005, she embraced the diagnosis that represented freedom from the illnesses that had been plaguing her, and set out to chronicle her new “adventure” and path to health. As much a lover of words as food, Ahern writes passionately, and her blog is both poignant and entertaining. Whether she’s sharing her stellar gluten-free recipes, or tales of her romance with the Chef (and their subsequent marriage, and new baby), Ahern’s prose is proof positive that a celiac diagnosis doesn’t preclude dining – or living – with gusto. An added bonus is Ahearn’s extensive blogroll and well-edited link list – her personal picks of must-read gluten-free and general food bloggers, celiac information sites, tasty gluten-free products, and cooking resources.

Glutenfreegoddess.blogspot.com

For vegetarians, the gluten-free diet can seem especially restrictive. Fortunately, this site, also known as Karina’s Kitchen, is written by a former vegetarian, and offers a wide range of soy-free vegan and vegetarian recipes. The photos are enticing, and the recipes range from comfort food like vegan mac & cheese to international favorites.

Latartinegourmande.com

If ever you’re feeling down about following a gluten-free diet, latartinegourmande.com may well be the antidote. For pure gastronomic inspiration, it’s tough to beat the gorgeous food photography and evocative writing on this beautiful Web site. It’s important to note that only some of the recipes are gluten-free, but they’re easy to find. Just click on the tab right at the top of the page marked “gluten-free” for an index of all of the site’s gluten-free recipes.

**GLUTEN-FREE LIFESTYLE:**

Celiacchicks.com

Urban girls Kim and Kelly call their blog “the guide to the hip & healthy gluten-free lifestyle,” and their site will appeal to cosmopolitan types interested in dining out, travel, and nifty gluten-free shopping finds. Their tone is breezy, but the pair also include serious information about everything from celiac fundraisers, to studies recruiting subjects, to how to navigate gluten-free hospital stays. Posts are slightly New York-centric, but there’s an interactive gluten-free world map, occasional giveaways with gluten-free goodies, insider tips on international travel, and even some corn-free recipes (one of the celiac chicks is also allergic to corn and dairy).

**GLUTEN FREE TRAVEL RESOURCES:**

Celiactravel.com

The Web site is bare bones, but the authors offer gluten-free restaurant cards in 43 languages (the cards are gratis, but there’s a link available for any users who’d like to make a small donation via Paypal in appreciation of the service). There are also recipes, travel stories, and a helpful list of international celiac societies and gluten-free travel Web sites.

Glutenfreeguidebook.com

Written by a travel journalist/crime novelist, glutenfreeguidebook.com focuses on helping those with celiac disease travel successfully and safely. Blogger Hilary Davidson reflects on her own travels, and shares travel anecdotes and tips sent in by her readers. She covers everything from celiac-friendly accommodations and restaurants, to how to secure gluten-free fare while attending conferences.

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**MEMBER SPOTLIGHT** By Angela Grassi, MS, RD, LDN

**Mable Everette, DrPH, RD, FADA**

Tell us about your career path as an RD?

I have been a Registered Dietitian (RD) since 1973. My career path as an RD began with a job for the City of Houston Health Departments’ Maternal and Child Health Division. I also completed a 6-month preceptorship there as a pre-requisite for the RD exam. What a great way to start my career as a new MPH, RD through an enjoyable job with great mentors and active involvement in the activities of the Houston Dietetic Association.

Since moving to Los Angeles, CA in the late ’70’s, my work history has continued along the public health pathway. Jobs have included work with the California Health and Youth Authority Department; Women, Infant, and Children's Program; Head Start; and teaching opportunities in a Coordinated Undergraduate Dietetics Program. My professional activities have included: Chair of the Nutrition Section of Southern California Affiliate of American Public Health Association and various committees of the California (CDA) and Los Angeles Districts (LAD) Dietetic Associations. For the CDA, I acted as Vice President of Public Policy and with the LAD I held positions as President, Legislative Chair, and Minority Recruitment Chair.

What do you do now? What excites you about your current job?

My current work focuses on three major areas including: community nutrition education, diet counseling as a Medicare Part B Provider, and advocate for urban dwellers related to food sustainability. My current job keeps me very in touch with the community of preschool, school aged children, and their extended families through nutrition education activities. Even in this day of mass communication, it is still gratifying to know that community residents welcome interaction with a qualified nutrition professional.

What are the challenges concerning reimbursement?

The excerpted quotes are from the conclusion of ADA’s December 2008 Health Care Reform Task Force Report.

“Few issues that will confront the United States will have a larger economic impact than addressing health and the systems that serve it. American health literacy is low and our habits frequently contribute to costly diseases and conditions. Our current health care system is based in crisis-intervention and disease care with other than providers making medical decisions. The emphasis is not on disease prevention, wellness and healthy lifestyles.”

“The primary focus of any health care initiatives must be to improve the health status of Americans. The vital and unique role that nutrition plays in improving and maintaining an individual’s health as well as the health of all Americans should be explicit in US healthy policy.”

Why should RDs be concerned about reimbursement? What can RDs do to help?

The excerpted quotes are from the conclusion of ADA’s December 2008 Health Care Reform Task Force Report.

“Nutrition services are critical to comprehensive health care delivery systems. Health maintenance, wellness, disease prevention and early detection, delay in disease progression, and intervention in chronic care management are necessary components of a comprehensive health policy. Every American has a fundamental right to best quality of health care available. This right includes access to Healthy food, and qualified health professionals, including Registered Dietitian.”

This most crucial role that we can all have is to add our voices to those being sent through the legislative channels related to Health Care Reform. At a minimum, please respond to each ADA Action Alert! Beyond that, we can begin to visit our federal legislators and/or Legislative Aides in their “local offices.” In my experience, a constituent is always very warmly received.

What made you get more involved with Women’s Health DPG?

I have been a member for a few years. Since my primary focus continues to be in the area of maternal and child health, this DPG seemed most appropriate. When the volunteer position of Reimbursement Chair was announced, I thought that volunteering would be a great way to use my long history of activities in the legislative and public policy arenas to educate the membership about this most important topic of Health Care Reform.

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**WOMEN’S HEALTH DPG - FNCE EVENTS SCHEDULE**

**SUNDAY, OCTOBER 18TH**

WHDPG Highlighted Session:
8:00 - 9:30am: The Role of Environmental Assessments in Promoting Sustainable Health Lifestyle Changes

**MONDAY, OCTOBER 19TH**

7:00-9:00am: WHDPG Networking Breakfast
sponsored by Sunsweet Growers, Inc
10:30-1:00pm: DPG Showcase

**TUESDAY, OCTOBER 20TH**

WHDPG Highlighted Sessions:
8:00-9:30am: Meeting Women’s Needs through Effective Communications in All Her Roles: Gatekeeper, Mother and Self
9:45-11:15am: An Evidence Based Approach for Managing Gestational Diabetes

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**Exchange...**

Connect and Share ideas

Connect with peers, friends and colleagues through shared experiences, workshops and social events including the DPG/MIG Showcase, ADA Foundation Nutrition Symposium and Research Symposium. Share your ideas by attending open space discussions, late-breaking hot topic sessions and challenging debate forums. And view over 400 Poster Sessions where you can meet researchers and discuss the latest developments in nutrition.

Discover emerging trends, expand your knowledge and power up your career at ADA’s Food & Nutrition Conference & Expo, October 17-20 in Denver.

Don’t miss out, register by September 10 to enjoy discounted savings! Visit [www.eatright.org/fntce](http://www.eatright.org/fntce).

**ADA Food & Nutrition Conference & Expo (FNCE)**
October 17-20, 2009 • Denver, CO
5. It seems that many people with celiac disease have to be proactive about doing their own medical detective work and advocating for celiac testing with their doctors. What are your feelings about the at-home tests — like the MyCeliacID genetic test, or the Canadian Biocard Celiac test kit? Is the do-it-yourself aspect a boon, or do you have concerns about potential misuse or misinterpretation of the tests?

I think the Biocard test, which measures IgA antibodies from a fingertip blood sample, is a valuable tool. Unfortunately, it costs about $50 for Canadians and 50 Euros plus shipping for Americans, which is not cheap, and if your doctor doesn't order it for you, your insurance company probably won't reimburse it.

As for the MyCeliacID test, that does not diagnose celiac disease. It only tells you whether you have the genes that predispose to celiac disease. (More than 97% of people with celiac disease have HLA-DQ2 or HLA-DQ8, or both.) Having these genes does not mean you're guaranteed to develop celiac disease. In fact, the vast majority of people with the genes never develop celiac disease. There's also a test available from a company called Kimball Genetics that tests for the genes in saliva or in cells from a cheek swab. One advantage of the genetic test is that if you don't have the genes, you can stop worrying that you'll get celiac disease.

6. I've heard countless stories of people flying under the medical radar for years before finally getting a celiac diagnosis. What do you feel clinicians — including doctors and dietitians — most misunderstand about celiac disease and its diagnosis? How can we do a better job of identifying people who should be tested?

There's no "typical" way for celiac disease to be recognized. It's easy to miss, unless doctors and patients remember to consider it. This is especially true for people with multiple medical or quality-of-life problems.

In 2004, a National Institutes of Health Consensus Development Conference on Celiac Disease concluded: "The single most important step in diagnosing celiac disease is to first consider the disorder by recognizing its myriad clinical features" (7).

A list of symptoms can be found here: http://celiacdisease.about.com/od/symptomsofceliacdisease/a/ceiliacsymptoms.htm.

By the way, it's very important that patients be tested for celiac disease while they're still eating gluten. Don't tell patients, "Stop eating gluten, and if you feel better, we'll send you for a celiac disease blood test." In order for the test results to be accurate, people have to be eating gluten. If they've stopped, they have to start eating it again for a few weeks (it's called a "gluten challenge").

7. As an expert on living with celiac disease, what would you like to see celiac researchers focus on next? Any big questions you'd like resolved, or innovations you'd want to see?

I know that most of my readers would say they want researchers to focus on finding some kind of pill they could take that would let them eat gluten. In fact, there's a lot of work going on in this area and I suspect there will be drugs on the market in the next 5 to 10 years that will at least help to relieve the symptoms of accidental gluten ingestion, and perhaps even allow people to start eating gluten again. There's also work being done in Australia on a celiac disease vaccine.

As for me, I'm one of those people who'd rather not take chronic medications if I don't have to, and I think that even were a drug available, I'd probably rather just stick to my gluten-free diet. The area of research that most fascinates me is the genetic links that are being found between celiac disease and other autoimmune diseases like diabetes and thyroid disease (8). I'm eager to learn more about those connections, and what they mean.

I think this information will be important for patients, but also for people who have the genes for these diseases but haven't developed them yet. I'm hoping we can figure out how to identify which individuals might benefit from a reduced risk for certain diseases if they stopped eating gluten. Right now, however, I don't like to hear people being advised go on a gluten-free diet if they don't have celiac disease or gluten intolerance. It's a difficult diet to follow, it's not free of its own risks and side effects (in particular, vitamin deficiencies), and gluten-free substitutes for "regular" products usually cost 4 to 5 times as much as "regular" products.

References:
Women’s Health
a dietetic practice group of the American Dietetic Association

GOALS OF THE WH PRACTICE GROUP

WH DPG promotes the development of dietetics professionals in the specialty area of nutritional care in women’s health which includes preconception through pregnancy and lactation and expanded to late menopause.

The objectives of the Women’s Health DPG are:

1. Build an aligned, engaged and diverse membership.
2. Proactively focus on emerging areas of women’s health.
3. Impact the research agenda in women’s health and nutrition.
4. Identify and influence key food, nutrition and health initiatives specific to women.
5. Increase demand, utilization and reimbursement of services provided by WH members.

"WH members are the most valued source of nutrition expertise in women's health"