

## Diabulimia in Adolescent Females

By Nancy Childers and Melissa Hansen-Petrik, PhD, RD, LDN

### Introduction

Intentional insulin manipulation for weight loss in adolescent females with dual diagnosis of type 1 diabetes mellitus (T1DM) and an eating disorder (ED) is known unofficially as “diabulimia”. According to the Juvenile Diabetes Research Foundation (1), diabulimia is a “condition [that] occurs when type 1 [diabetic] individuals skip, restrict, or manipulate their required insulin doses in order to lose weight.” While not an official medical term, the American Diabetes Association does consider diabulimia a recognizable medical condition (2). The term was coined to represent the nature of the disorder, which includes characteristics of both diabetes and bulimia nervosa (BN).

### Type 1 Diabetes and Body Weight

The interaction between T1DM and BN is centered on body weight control through insulin manipulation. BN is an eating disorder that, along with binge-eating disorder (BED), is one of the most common EDs manifested in individuals with T1DM (3). The bulimic behaviors often manifest themselves through symptoms of Diabetic Ketoacidosis (DKA). DKA is a common result of insulin omission in diabulimia because there is no insulin to enable the entry of glucose into cells (4). The buildup of extracellular glucose results in glycosuria, which allows the individual to lose weight through loss of an energy source (5). As insulin is reintroduced through an exogenous insulin injection regimen, this spilling of glucose into the urine ceases (4,5). In fact, as individuals implement insulin treatment and attain glycemic control, weight gain is a common result (3).

Further compounding the problem of weight gain, individuals with T1DM are unable to release amylin, a hormone that plays a key role in regulation of satiety, since this hormone, like insulin, is secreted by pancreatic beta cells (3). In the absence of amylin, feelings of fullness and appetite reduction will not occur as readily upon eating (3). The use of amylin analogs such as pramlintide improves glycemic control by increasing feelings of fullness, slowing the rate of gastric emptying, and preventing post-prandial glucagon release (6). Consequently, amylin analog pramlintide’s effect on satiety may also aid in weight control (6).

Kishiyama et al (6) examined the effects of pramlintide in ten adolescents with type 1 diabetes (50% female) over a 28-day period. The treatment group received a pre-prandial pramlintide dose of 15 micrograms per day for the first four days and a 30 microgram daily dose thereafter. Significant reductions in maximum blood glucose levels were observed at breakfast and dinner in the treatment group. Additionally, the researchers observed reductions in hemoglobin A1C (HbA1C) and weight, although these were not statistically significant.

### Diabulimia as a Diagnostic Term

According to the language of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V), BN is characterized by the practice of “recurrent inappropriate compensatory behavior in order to prevent weight gain, such as self-induced vomiting; misuse of laxatives, diuretics, enemas, or other medications; fasting; or excessive exercise” (9). Although insulin manipulation or omission is not

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[newsletter@bhndpg.org](mailto:newsletter@bhndpg.org)

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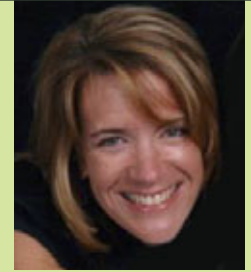
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## From the Chair

Therese Shumaker, MS, RD, LD



How thrilling to start my term as Chair of Behavioral Health Nutrition (BHN) dietetic practice group! In the coming year, I hope to build on the achievements of the past and bring even more of those ideas to fruition. With the help of an enthusiastic Executive Committee, a plan for the coming year is in place that will help you, our members, receive even more value from your BHN membership than ever before. Our vision is to expand BHN's presence, "BHN Everywhere," and make BHN the "go-to" practice group for dietetic professionals looking for information in any of our four practice areas.

You can look forward to the many benefits afforded BHN members in the coming year.

- Webinars are planned for each of the four practice areas, in addition to a free webinar offered on a new topic related to behavior change.
- Watch for expanded information in the newsletters, on the Web site, and in discussion topics on the EML including counseling skills and motivational interviewing. We are the behavior experts in nutrition and want to make it known!
- Our Web site will provide many FREE resources, including a bibliography/resource list and handouts for each practice area.
- Plans are in process for updating the current BHN publications. Seriously consider getting involved in these projects; by doing so you will gain tremendously in your professional network and practice skills.
- The student presence in BHN is poised for making them known. We have a new student liaison, David Wiss ([david.wiss.65@my.csun.edu](mailto:david.wiss.65@my.csun.edu)), and new student assistant newsletter editor, Caroline Yoder ([yoder.cw@gmail.com](mailto:yoder.cw@gmail.com)). Please contact them if you want to contribute to BHN's student membership.
- Continuing education credits will continue to be free for feature articles in the quarterly newsletter and offered for each of our webinars. Speaker Stipends are available when presenting on any of the four practice areas in BHN, consider applying for a stipend.
- Resource professionals are available in each practice area to assist our members with resolution of specific questions or issues. Please find their contact information on the website as the resource professionals are eager to help!
- BHN's annual awards program and reception will be held at FNCE 2012 honoring our members, providing opportunity to network, and receiving continuing education applicable to behavioral health nutrition practice. Look for details in the announcement on page 9 of this newsletter.

I am urging you to make the connection to BHN through our Facebook page and Twitter account. Don't forget to join our EML: send an email to Milton Stokes at [miltonbhn@yahoo.com](mailto:miltonbhn@yahoo.com) and include your full name and email address to subscribe. We will keep you informed of upcoming events through these sites.

It is my pleasure to be working with an incredible Executive Committee this year. I invite you to connect with any one of them, as they are all talented, committed to BHN, and ready to serve you!! I also invite you to email me anytime with your questions, comments or any concerns that you may have: [shumaker.therese@mayo.edu](mailto:shumaker.therese@mayo.edu) or [shumakertherese@yahoo.com](mailto:shumakertherese@yahoo.com)

Therese Shumaker, MS, RD, LD  
 BHN Chair 2012-2013

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specifically enumerated here, many professionals consider this practice to qualify as an “inappropriate compensatory behavior” (10) involving the misuse of “other medications” (9).

Recently, there has been some discussion about the possible re-wording of the DSM-V to specifically identify insulin manipulation as a criterion for the diagnosis of BN (10). Shaw et al (10) recently made the case to the editor of the DSM-V to consider including diabulimic behaviors in the new manual, citing that 14% of females with T1DM and 50% of females with both T1DM and an eating disorder (ED) engage in this practice as a method of weight loss or control. In the article, they described a case study in which a 22 year-old with comorbid T1DM and BN omitted her insulin dosages for the purpose of losing weight. As a result, her HbA1C rose from 7% to 16%. Only with medical and psychological therapy was she able to see improvements in HbA1C levels and control urges to omit insulin. This case study demonstrates that diabulimic practices have serious medical consequences and advocates for inclusion of the term diabulimia in the DSM-V.

### Bridge to Diabulimia and Other Eating Disorders

While all populations, especially those in Westernized societies (7), are at risk for the development of EDs, studies indicate that young females with T1DM are at as much as a 2.4 times higher risk of developing EDs than their non-diabetic cohorts (5). It is critical to understand the reason(s) behind this higher risk in order to identify potential targets for prevention and treatment.

According to a review by Goebel-Fabbri (5), the very nature of the diabetes treatment regimen may contribute to the increased risk of EDs in this population. They state, “the attention to food portions (especially

carbohydrates), blood sugars, weight, and exercise that comprises the standard recommended medical treatment for T1DM parallels the rigid thinking about food and body image that is characteristic of women who have EDs but do not have diabetes” (5).

Additionally, risks of depression and anxiety are higher in populations with diagnosed chronic diseases, such as T1DM, and either of these psychological issues can exacerbate preexisting disordered eating tendencies (5).

Olmsted et al (8) identified factors in Canadian girls with T1DM that could predict the onset of disturbed eating behaviors (DEB). The study assessed 126 females ages 9-13 years old with T1DM at baseline and over a 5-year follow-up period using the Children’s Eating Disorder Examination as well as several other surveys. Subjects who developed DEB during the course of the study were compared to subjects who did not develop DEB to identify potential predictors of DEB.

Two of the strongest predictors of DEB identified in this study were scores on the Children’s Depression Inventory and Body Mass Index percentile (8), indicating that depression and weight status may predict risk of DEB. Since depression and weight gain commonly appear in diabetes, this may explain, in part, the elevated risk of EDs among individuals with T1DM. One limitation in applying the findings of this study to diabulimia is that DEB was defined as a wide spectrum of disordered eating behaviors and was not limited exclusively to insulin restriction or omission.

### Severity and Complications of Diabulimia

Goebel-Fabbri et al (11) in Boston demonstrated some of the dangers associated with insulin restriction and omission. This study followed 234 women with T1DM who had been assessed for BMI, HbA1C, diabetes-related behaviors and fears, and psychological problems (such as EDs symptoms), eleven years prior to the study. At the follow-up, researchers

collected information about morbidities and mortalities in these women and compared them to the baseline characteristics. The results showed that women with baseline insulin restriction (30% of the 234 women) were significantly more likely to experience neuropathy and foot problems by the time follow-up data were collected. Furthermore, women who restricted insulin at baseline suffered a 3.2 times higher risk of mortality at follow-up. It should be noted that this study was conducted among women ages 13-60, so direct application to the adolescent age group requires caution and further research.

Takii et al (12) in Japan further demonstrated the dangers of insulin omission in their study of 109 women with T1DM and diagnosed EDs of all types, with the purpose of pinpointing the behaviors most associated with microvascular complications of diabetes, such as retinopathy and nephropathy. Results of multiple regression analysis showed the behavior most associated with microvascular complications was the duration of insulin omission (12). The researchers attributed this strong association to the fact that insulin omission causes a loss of glycemic control, which is known to lead to retinopathy, nephropathy, and other complications. It should be noted that study participants were exclusively female, but they were not exclusively adolescents. Therefore, future studies in this age group are necessary in order to fully understand the role insulin omission and microvascular complications play in a younger population. Nevertheless, this study and that of Goebel-Fabbri (11) suggest that insulin restriction does carry significant consequences and merits the attention of the medical community and consideration for inclusion in the DSM-V (10).

### Identifying Diabulimia

It is helpful for healthcare personnel, family, and friends involved in the life of an individual with T1DM to be aware of risk factors that may pre-dispose

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someone to engage in diabulimic behaviors. They should be equipped to identify signs and symptoms that indicate diabulimic behaviors already exist. Some risk factors for EDs may include mood disorders, history of any type of abuse, lack of strong family support, female gender (including inherent pressures to be thin), low self-esteem, and extreme carefulness (4). While the presence of these risk factors may not indicate an ED, these factors can elevate an individual's risk of developing an ED such as diabulimia (4).

Signs and symptoms of diabulimic behaviors include usual symptoms of hyperglycemia along with depression or anxiety, "lack of finger stick marks, lack of prescription refills for insulin, weight loss, spikes in HbA1C levels that do not match the patient records, low self-esteem, and poor body image" (13). If any of these symptoms are observed by healthcare professionals, family, or friends, the patient should be evaluated for potential diabulimic behavior (13).

Since individuals with T1DM may be at an increased risk for EDs, it is important to have a system in place to quickly and accurately screen for risk factors or behaviors that may already be present. Ideally, this tool would be designed for exclusive use in the diabetic population because tools for the non-diabetic population may either misinterpret necessary diabetic treatment measures, such as food obsession, or fail to address insulin-related issues (14).

A study by Markowitz et al (14) sought to provide this type of tool by updating the Diabetes Eating Problem Survey (DEPS) for a pediatric population. The DEPS 28-item screening tool is used to identify disordered eating behaviors in adults with T1DM. The Markowitz et al study looked at 112 adolescents with T1DM, ages 13-19 years old, receiving treatment in

the Boston area. The subjects and their parents were given numerous questionnaires, including the DEPS and the Pediatric Quality of Life Inventory. Additional information included anthropometric and lab data, insulin regimen information, and information from the subject's physician about adherence to treatment. Researchers then revised the DEPS to include 16 items, excluding the items that either were not a true measure of disordered eating behaviors or that repeated previous questions.

When the DEPS-Revised (DEPS-R) (14) was given to study participants, it correctly identified older age, high BMI, family conflict, high HbA1C, and negative perceptions of self-monitoring of blood glucose as being positively correlated with higher scores (indicating the presence of disordered eating behaviors). It also identified the frequency of self-monitoring of blood glucose and quality of life as being negatively correlated with higher scores. Additionally, physician reports about adherence to treatment showed that those reported as insulin restrictors tended to score higher on the DEPS-R. This further confirmed the validity of the DEPS-R as an important screening tool that the authors of the study urge "can be used routinely in the clinical care of youth with diabetes" (14). It should be noted that the population in this study was 56% female, therefore the conclusions can be applied to both male and female adolescents with T1DM, and the DEPS-R has been validated for use in both genders.

### Treatment of Diabulimia

Since diabulimia is a relatively new phenomenon in medical literature, there is little evidence supporting specific treatment strategies (5). However, a multi-disciplinary approach, similar to that used in treating both diabetes and eating disorders when they occur separately, may be effective. The key members of this team may include an endocrinologist, a dietitian (preferably a Certified Diabetes Educator), and a

psychologist (preferably with experience treating eating disorders). Other team members, such as a psychiatrist in the case of pharmacologically-treated mental health problems like depression or anxiety, may also be necessary (5). The treatment process brings together skills and offerings of each discipline, including physical evaluation and monitoring by the endocrinologist, diabetes education and management techniques by the dietitian, behavioral therapy by the psychologist, and drug therapy by the psychiatrist.

Goebel-Fabbri et al (15) identified characteristics related to stopping, starting, continuing, or avoiding insulin omission in 207 women with T1DM over an eleven-year period. Study participants were given a variety of self-reported psychological surveys at the beginning and end of the study. Some of these surveys included the Bulimia Test-Revised, the Self-Care Inventory-Revised, and the Hypoglycemia Fear Survey-Worry Subscale, among others. Final results were compared to those at baseline.

Some key findings (15) were that women who stopped omitting insulin during the course of the study showed less psychological and diabetes-related stress and were less likely to feel that insulin therapy would cause them to gain weight. A comparison of women who never omitted insulin versus women who began to omit insulin during the course of the study reinforced these findings by showing that women who chose not to omit insulin had less anxiety, diabetes-related stress, and fear about insulin therapy causing weight gain. The researchers noted that this study illustrates the importance of focusing on the patient's fears about the diagnosis and possible weight gain associated with diabetes since these were very predictive of the choices subjects made about insulin omission.

Applying the findings of this study (15) to the prevention and treatment process means that care providers should address fears head-on in the

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doctor's office or in therapy sessions, allowing patients to openly express their concerns. It also highlights the crucial role a mental health professional plays in a diabetes treatment team, because many fears and anxieties will likely be addressed most thoroughly in this setting.

One possible avenue for future treatment is the development, dispensation, and education regarding medications such as pramlintide. The Kishiyama et al (6) study results suggest pramlintide or other similar drugs, in addition to improving glycemic control, may potentially offset some of the weight gain of insulin therapy and relieve some anxiety associated with adherence to intensive insulin therapy.

### Conclusion

Diabulimia is a complex dual diagnosis disorder that combines the pathophysiology of T1DM with the psychopathology of BN and other disordered eating behaviors. Escalating media, clinical, and research attention indicate that diabulimia will be the focus of extensive future research, treatment, and outreach efforts. Professionals who specialize both in diabetes care and EDs will be valuable members of healthcare and research teams working to address this need. Registered dietitians working with people with eating disorders have the unique opportunity to become specialists in this evolving area of behavioral health care. Didactic and educational programs for dietitians entering and/or currently working in the field of ED treatment should refer to the Academy of Nutrition and Dietetics publications offering the best possible evidence-based treatment to patients/clients diagnosed with EDs and the role and responsibility of the RD as an essential component of the team treatment:

- The position paper on Nutrition Intervention in the Treatment of EDs (16),

- The Standards of Practice and Standards of Professional Performance for Registered Dietitians (Competent, Proficient, and Expert) in Disordered Eating and Eating Disorders (17), and
- The American Dietetic Association Practice Paper: Nutrition Intervention in the Treatment of Eating Disorders (18).

Furthermore, there is a great need for RDs and the dietetics community to demonstrate the effectiveness of RDs in the treatment of diabulimia.

### About the Authors:

**Nancy Childers** is an undergraduate nutrition major enrolled in the Chancellor's Honors Program at the University of Tennessee-Knoxville. At press time she was anticipating graduation in May 2012 with plans for entering graduate school. Nancy is available at [nchilder@utk.edu](mailto:nchilder@utk.edu).

**Melissa Hansen-Petrik, PhD, RD, LDN**, is a Clinical Assistant Professor and Director of the Didactic Program in Dietetics at the University of Tennessee in Knoxville. She teaches Clinical Nutrition I-II, for which this paper was initially written by **Nancy Childers** as a component of the Chancellor's Honors Program requirements. Melissa can be contacted at [phansen@utk.edu](mailto:phansen@utk.edu).

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## Art of Assessment

By: Patricia Novak, MPH, RD

Dietitians are well schooled in the science of assessment. We consider the A (anthropometry), the “B” (biochemistry), the “C” (clinical) and the “D” (dietary). The art of assessment, as applied to challenging populations such as those with intellectual developmental disabilities (IDD) or mental health issues (eating disorders, schizophrenia, addiction) requires greater emphasis. How do we accurately measure, interpret laboratory results, identify pertinent clinical features and evaluate the adequacy of the diet when traditional methods of assessment are insufficient?

**Anthropometry:** Measurements have limited value if inaccurate. New environments for individuals with IDD can be unsettling, especially if there is a negative association with the facility or process. Anxiety may be reduced by dimming lights, using quiet voices, and limiting the number of people in the room, meanwhile increasing measurement accuracy. A simple procedure, such as being weighed, may not be understood. Verbally explaining the process may not be productive as auditory/language processing or understanding may be altered or deficient. Be clear in your wording. For example, individuals with autism spectrum disorders (ASD) may be concrete thinkers, consequently, using metaphors may be confusing. Use pictures, dolls or your own body to demonstrate the process. Allowing the individual to weigh and measure objects or other people may make the process less threatening. Efficiency may impede the process as some individuals may require time to get comfortable in a new setting or process the information you visually or verbally shared. When possible, arrange appointments when there are fewer distractions and less activity. Always note measurement accuracy in the written report.

Neuromuscular function (atrophy, contractures) or structural anomalies (scoliosis, kyphosis) can interfere with linear measurements and alternatives exist (arm span, leg length) each with its own limitations. Consider what is most effective for your population. Clarify nutrition’s role in influencing linear gains when there is paralysis, lack of weight bearing or surgical/medical growth intervention (spine rods, growth hormone).

Comparing imprecise measurements to a standard lacks validity. For example, in the case of the BMI, the error is “squared” ( $BMI = \text{weight} / \text{height}^2$ ). Growth chart plotting should accurately reflect a child’s growth and progress. For children, the World Health Organization (WHO) charts are recommended as the growth *standard*, birth to five years of age. These were developed in ethnically and geographically diverse populations living in environments that support “optimal growth”. After five years of age, CDC growth charts are recommended; however, CDC growth charts do not reflect the wide ethnic mix and “optimally” nourished population compared to WHO charts. Disability specific growth charts (Down syndrome, Cerebral Palsy, Turner’s Syndrome) are merely *reference data*, not clinically applicable, providing a snapshot of how a group is gaining and growing without consideration of health, environment or appropriate growth.

For the IDD community, measurements of weight, including BMI, may not describe nutritional status well. For example, neuromuscular function or a history of prematurity can influence an individual’s fat and muscle distribution. Consequently, an individual may appear over- or underweight compared to established standards. Emphasizing weight gain may thwart the individual’s attempt at self-regulation of caloric intake and contribute to unnecessary weight gain. Therefore, caloric needs should not

be calculated based on weight or BMI alone. Fat stores, measured by skinfold measurements, and fat disposition, measured by multiple skinfold sites and/or girth measurements, can provide useful data to refine caloric recommendations. Increasing calories in an individual with elevated fat stores, no matter what their weight, amplifies the risk of hypertension, respiratory compromise, dyslipidemia, insulin resistance and gastrointestinal dysfunction, which is already elevated in this population.

Rapid weight gains or losses may be related to use of medications to control behavior, such as antipsychotics or ADHD medications and need to be carefully considered in the assessment analysis.

**Biochemical or other tests:** Many of the hair, blood, urine and stool tests available to consumers have little relevance to nutritional status. It is critical to determine if the result is useful or the most relevant method for assessing the physiologic function of a specific vitamin or mineral.

Most biochemical tests must be corroborated with clinical symptoms to be considered conclusive. This particularly applies to allergy testing, especially tests that lack standardization (IgG, LEAP, ALCAT). Medication, circulating antibodies, diet, hydration and cooperation during a blood draw can also influence results. Unexpected results should be considered within the clinical context and repeated if necessary. Targeted testing should occur in individuals at risk for specific disorders. This includes celiac disease, which occurs in 5-17% of individuals with Down syndrome, carnitine deficiency, mitochondrial disorders, and hyperlipidemia in adults with a history of prematurity. Other testing may be necessary in response to dietary change (assessing bone health on dairy free diet if dietary sources of calcium/vitamin D are limited).

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With all tests, blood, urine, stool or radiologic (modified barium swallow studies – MBSS, video fluoroscopy) consider what the test truly is identifying and how that informs the nutrition assessment. Many tests of GI function assess one point in time in a specific environment. Reflux may not be present on a 24-hour pH probe, but if all other clinical signs of reflux are present, chances are the individual has reflux but it did not occur during those 24 hours. A MBSS may show risk of or frank aspiration, yet the test may have been performed on a crying, writhing child. In this instance, the test reflects feeding in an abnormal setting rather than actual feeding capacity. Aspiration may have occurred on the test but be unlikely in a supportive feeding setting. Clinical signs of aspiration or distress should be assessed (respiratory infection, congestion or frequent fevers). This type of result can lead to

doubt due to the atypical test environment and to confusion regarding appropriate intake recommendations.

**Clinical:** Clinical assessment is a catch-all term for everything else about an individual that may influence or be influenced by nutritional status. Clinical assessment needs to include, and must go beyond, signs of vitamin and mineral deficiencies and consider how individual behaviors/characteristics reflect or impact nutrition status. Table 1 summarizes some of these behaviors and characteristics.

Many individuals with IDD or ASD have sensory processing or cognitive limitations, which can interfere with the ability to identify pain or discomfort. Pain may be the cause of undesirable behaviors such as aggression, tantrums and inattention. These behaviors might be a direct result of a food or a secondary effect of discomfort associated with allergies, reflux or constipation. Allergies and gastrointestinal issues are common in this population and should be investi-

gated within the assessment. History of eczema, formula intolerance, alternating constipation/diarrhea, frequent vomiting, and food refusal all can be signs of allergies. Consider the influence of drugs, especially proton pump inhibitors on overall nutritional status (iron or magnesium deficiency).

**Dietary:** It is difficult to obtain accurate dietary information when there are challenges in communication, perception and cognition. The individual should be encouraged to participate in the dietary assessment, as often as possible. The dietitian may need to contact the individual's support team (parents, care providers, teachers, aides, therapists, and residential advisors) to obtain additional information. Investigate if food is used for rewards or in vocational programs addressing marketing, cooking or ordering from (fast food) restaurants. Simple assessment tools using pertinent food pictures or photographs can be generated for use with low literacy populations. Other methods for dietary assessment include collecting market/restaurant receipts, obtaining school menus or even providing digital cameras to take pictures of meals. As no method of collecting dietary data is without error, consider the degree of accuracy that is necessary to achieve the individual's nutritional goals. Medical nutrition therapy for therapeutic diets will obviously need greater accuracy than wellness education. When addressing overall health, determining common foods, typical eating behaviors, meal schedule and usual portion size may be sufficient. As with all areas of assessment, multiple tools may be necessary. Flexibility and creativity on the part of the dietitian is essential.

The family/individual may choose or health care practitioner (traditional or alternative) may recommend restrictive diets or dietary supplements. Broadly consider the potential risks and benefits. Risks include excessive or unbalanced supplementation, financial costs and conflicts between various therapies. Dietary risks include nutrient

**Table 1.**

Behaviors/Characteristics	Consider
Frequent respiratory infection, otitis, pneumonia	Reflux Aspiration of oral intake or reflux Otitis and rhinitis may indicate allergies Asthma may be related to reflux
Poor sleep, frequent waking	Reflux, constipation or apnea May increase risk of obesity
Skin	Poor elasticity, dry, flaky may indicate dehydration Rash, eczema may indicate allergies, intolerances or Celiac (specific rash pattern for Celiac)
Oral	Caries related to high sugar diet, continued bottle use, reflux Enamel erosion related to Celiac, rumination, reflux Frequent bad breath may indicate caries, rumination, constipation or reflux Drooling increases fluid need, sudden onset may indicate Eosinophilic Esophagitis (EE) Oral fissures may indicate Celiac
Throat: swallow, voice	Hoarse voice may indicate reflux "Hard" swallows outside of eating may indicate reflux Difficulty swallowing may indicate EE, reflux or dysphagia "Wet" or gurgling voice during or after eating/drinking may indicate risk of aspiration, Dysphagia
Food refusal	Constipation (even with frequent stools if stools are hard, small or pellet-like), dysphagia, motor issues, sensory processing issues, reflux, allergies

*continued on page 8*

## Art of Assessment

*continued from page 6*

insufficiency, social isolation, weight loss, and food refusal (either during the diet or with reintroduction of foods). Diets and supplements may be a benefit and consider if a time limited monitored supplement/dietary trial is warranted, especially if desired by the family or individual.

## Unique Considerations

**Environment:** Determine access to local resources for physical activities such as accessible playgrounds/gyms or Special Olympics, local supports for funding for food or treatment and health professionals that specialize in the care of individuals with IDD/ASD. Determine if the eating environment is limiting intake especially for individuals with motor planning, sensory processing or anxiety issues. Consider lighting, smells, noise, presence of crowds and supportive seating. Assessment needs to consider all living and school/vocational environments.

**Development:** Developmental progress (social-emotional, communication, motor) may be inconsistent or irregular. The individual's ability to communicate their needs, feed themselves, prepare foods and participate in the social aspects of eating need to be evaluated. These abilities may be variable depending on environment, etiology/expression of the individual's diagnosis and life stage. Chronologic age may cause decline rather than progress with regressive disorders, such as Rhatt's syndrome, or introduce additional challenges (seizures with ASD, Alzheimer's with DS). Medications for behavior or seizures may sedate or cause confusion.

**Relationships:** Individuals with IDD, ASD or mental health challenges, rely on others for assistance with activities of daily living such as mobility, food procurement/preparation, eating or toileting. Determine who is responsible for food decision-making especially if there is concern regarding insufficient or excessive weight gain.

Relationships around eating/feeding may be influenced by history of poor/excessive gain, food avoidance or force-feeding. Assuring that the dietitian and care providers know and consider individual preferences and eating/feeding skills will lead to greater success in reaching nutrition goals.

**Collaboration in Assessment:** The objective of assessment is to describe the individual's nutritional environment so that barriers to health can be dismantled. Assessment needs to be individualized to identify the unique barriers that are experienced by individuals with developmental or mental challenges. It is the responsibility of the dietitian to adapt assessment methods, for describing an individual's nutrition status in order for the assessment to be relevant.

## About the Author

Patricia Novak, MPH, RD is a dietitian at Pasadena Child Development Associates in Pasadena, CA. at patty@pasadenachilddevelopment.org. She has worked with children with special needs for over 25 years. Patricia served as nominating committee chair for BHN and is a workgroup member in the development of Standards of Practice and Standards of Professional Performance for dietitians in intellectual and developmental disabilities nutrition practice.

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## Evidence-Based Guidelines for Mental, Neurological, and Substance Use Disorders in Low- and Middle-Income Countries: Summary of WHO Recommendations

Dua T, Barbui C, Clark N, Fleischmann A, Poznyak V, et al. *PLoS Med* 2011;8(11): e1001122.

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<http://www.plosmedicine.org/article/info%3Adoi%2F10.1371%2Fjournal.pmed.1001122;jsessionid=F7DFF1D2CA85804CA7BB4F79606C37AD>

Mental, neurological, and substance use (MNS) disorders are highly prevalent and are responsible for 14% of the global burden of disease expressed in disability adjusted life years. The resources that have been provided in countries to tackle the huge burden are insufficient, inequitably distributed, and inefficiently used, which results in a large majority of people with these disorders receiving no care at all. Even when available, treatment and care often is neither evidence-based nor of high quality. The result is a large treatment gap, with more than 75% in many low- and middle income countries (LAMIC).

In order to reduce the gap, the World Health Organization (WHO) launched the Mental Health Gap Action Program (mhGAP) to scale up services for people with MNS disorders, by making available an optimal mix of services comprised of informal community care, primary care services, community mental health services and specialized inpatient facilities. One essential component of mhGAP is to develop management recommendations (guidelines) for MNS disorders identified as conditions of high priority. The priority conditions included are depression, psychosis, bipolar disorders, epilepsy, developmental and behavioral disorders in children and adolescents, dementia, alcohol use disorders, drug use disorders, and self-harm/suicide. The priority conditions were selected because they represent a large burden in terms of mortality, morbidity, or disability, have high economic costs, and are often associated with violations of human rights.

Evidence suggests that explicit, evidence-based, cost-effective packages of interventions can improve the processes and outcomes of health care when appropriately

implemented. A package approach is being considered for a wide variety of health challenges such as the packages of interventions for family planning, safe abortion care, and maternal, newborn, and child health. The recent grand challenges in global mental health underline the fact that all interventions should be evidence-based to provide program planners, clinicians, and policy-makers with effective care packages. While examples of evidence-based packages of care for MNS disorders exist that focus mainly on delivery mechanisms, they did not systematically synthesize and appraise the evidence base for interventions.

Implementation of mhGAP at the primary care level implies the establishment of structured collaboration with mental health specialists, schools, social and rehabilitation services. The program is currently being pilot tested in several countries. The evaluation of these demonstration projects will contribute to increase the evidence on outcomes of youth mental health care provision at primary care settings through collaborative care models.

### Please join the BHN EC for our annual awards presentation and program at a Reception Breakfast!

**Monday, October 8, 2012 from 7:00-9:00AM  
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*When Nutrition Counseling Isn't Enough: The Dietitian as a Bridge to Mental Health Care.*

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## In Search of Evidence . . .

### A Review of Current Nutrition Topics & Related Resources in Behavioral Health

By Ruth Lyse-Wallace, PhD, RD

1. Stefanidis A, AA Verty1, AM. Allen et al. **The Role of Thermogenesis in Antipsychotic Drug-induced Weight Gain.** *Obesity.* 2009; 17(1):16-24. (Free online access to full article) <http://www.nature.com/oby/journal/v17/n1/index.html>, and Ginter, E. and V. Simko. **Brown fat tissue - a potential target to combat obesity.** *Bratisl Lek Listy.* 2012;113(1):52-6. <http://www.ncbi.nlm.nih.gov/pubmed/22380505>

Antipsychotic drugs lead to significant weight gain, which is widely presumed to be driven by hyperphagia; however, the contribution from decreased energy expenditure has not been fully explored. These authors report research on rats, but include background material questioning previous assumptions re: brown adipose tissue (BAT) in humans and the suggested application of new knowledge to help explain weight gain accompanying use of Olanzapine. It has been shown that brown adipose tissue uncouples ATP from mitochondria, producing heat rather than triglyceride storage. In rats, Olanzapine (6 mg/kg/day orally) caused a transient increase in food intake, but a maintained increase in body weight.

Authors comment that dogma re: BAT is less relevant to energy balance in humans than rodents and other animals; a notion based on fairly coarse analyses showing that interscapular BAT depots disappear after infancy in humans (18–20), the inference being that BAT does not exist in significant quantities elsewhere in the body in later life. In fact, BAT persists in the neck, mediostinum, and perirenal regions forming a “thermogenic jacket”

Uncoupling protein 1 (UCP1), which is only present in BAT, has been found to be expressed in both infant and adult humans. Moreover, anatomical studies demonstrate that during the first decade of human life active BAT is widespread throughout the body and that there is a higher UCP1 content in peri-renal adipose tissue in children 18 months to 15 years than in infants. It has also been demonstrated recently that, in addition to a more widespread distribution of BAT in adult humans, brown adipocytes may be interspersed with white adipocytes in intraperitoneal adipose tissue in a ratio approaching 1:100.

*Polymorphisms which impact on the effectiveness of BAT in humans have been linked to obesity.* Two prevalent allelic variations namely the replacement of tryptophan by arginine at position 64 of the  $\beta 3$  adrenoceptor (Trp64Arg) and the A G variant of the UCP1 gene have been linked to

- 1) a lowered energy expenditure,
- 2) an increased capacity to gain weight,
- 3) elevated levels of visceral adiposity and diabetes,
- 4) impeded ability to lose weight on a low-calorie diet, and
- 5) a reduced postprandial energy expenditure.

Taken together, these data would indicate that BAT, UCP1, and thermogenesis may be integral components of the energy balance equation in humans. Melatonin and arginine have been proposed as possible interventional tools.

2. Bret S. Stetka, MD, Editorial Director, Medscape. **Brain Food: Fending Off Mental and Neurologic Illness With Diet** <http://www.medscape.com/features/slideshow/brain-food?src=mp&spon=17>

This slide show covers the Mediterranean diet, types of fats, fish oil, polyphenols in berries, red meat, alcohol, caffeine, chocolate and foods associated with depression. It has nice photos, succinct paragraphs, and links to references and other material. RD’s might consider it for education programs and a resource for additional material.

3. Bowman, GL, LC Silbert, D Howieson, et al. **Nutrient biomarker patterns, cognitive function, and MRI measures of brain aging.** *Neurology* 2012; 78(4): 241-9. Epub 2011 Dec 28. <http://www.ncbi.nlm.nih.gov/pubmed/22205763>

Nutrient Biomarker Patterns (NBP) were associated with more favorable cognitive and MRI measures: One high in plasma vitamins B (B1, B2, B6, folate, and B12), C, D, and E; Another high in plasma marine  $\omega$ -3 fatty acids; A third pattern characterized by high trans fat associated with less favorable cognitive function and less total cerebral brain volume. Depression attenuated the relationship between the marine  $\omega$ -3 pattern and white matter hyperintensity volume.

4. Findling, Robert L. **The Best Screen for Alcohol Abuse in Teens?** Medscape 3-9-2012 <http://www.medscape.com/viewarticle/759823?src=mp&spon=38> (Findling’s ref: Chung T, Smith GT, Donovan JE, et al. **Drinking frequency as a brief screen for adolescent alcohol problems.** *Pediatrics.* 2012;129:205-212.

An exploration of 3 potential screening items (frequency, amount, and frequency of heavy drinking) found that **frequency of drinking is a sensitive and specific indicator of alcohol-related problems in teens.**

5. Rayman, MP. **Selenium and human health.** *Lancet.* 2012 Feb 28. <http://www.ncbi.nlm.nih.gov/pubmed/22381456>

Selenium is incorporated into selenoproteins that have a range of effects, from antioxidant and anti-inflammatory effects to the production of active thyroid hormone. Low selenium status has been associated with increased risk of mortality, poor immune function, and cognitive decline. Higher selenium status or selenium supplementation has antiviral effects, is essential for successful male and female reproduction, and reduces the risk of autoimmune thyroid disease. Supplementation will confer benefit only if intake of a nutrient is inadequate. Supplementation of people who already have adequate intake with additional selenium might increase their risk of type-2 diabetes: a U-shaped link with Se status. Those with adequate-to-high selenium status should not take selenium supplements.



Marley Peale Braun, MS

## Student Corner: Mindful Eating to Improve Health & Well Being

By Marley Peale Braun, MS, CN

### Eating on Autopilot

Are you reading this article while eating? If you are, you may be eating on autopilot and consuming more calories than you think. Now that you have finished your meal, do you feel satisfied? If you don't, distractions may have caused you to miss important internal cues of satiety and pleasure. College students and professionals alike value productivity, and it's common to multi-task in order to get things done. Even leisure activities can involve doing several things at once. In an effort to promote nutrition education and healthy eating habits on campus, one college has chosen to champion mindful practices. A Registered Dietitian at Dickinson College uses the concept of mindful eating to teach students how to identify and respond to genuine hunger cues and also eating behaviors that may stem from stress or anxiety (1).

### Mindful eating

Mindfulness is derived from ancient Buddhist principles that promote physical, spiritual, and emotional wellness. This approach brings non-judgmental awareness and attentiveness to physical sensations, feelings, and environmental influences. When practiced while eating, it may help to reduce caloric consumption, increase satiety and pleasure, and foster a positive relationship with food.

### Clinical support for mindfulness

Researchers explored the concept of mindless eating at the movies. They found that if moviegoers were given a large size of free popcorn as opposed to a medium size, they consumed significantly more, even if the popcorn was stale. This research indicates that the combination of large dishes and lack of focus may lead to a disregard for palatability and pleasure as well as overconsumption of calories

(2). Another study found that a mindfulness-based therapy resulted in binge eaters enjoying their food more than with a typical psychoeducational treatment. The mindfulness-based therapy also resulted in a reduction of negative feelings related to dietary control (3).

### Suggestions for practicing mindful eating

Eating mindfully can take commitment. Begin by practicing with one or two meals every week. Designate a space in which to eat like a dining room table or outside on a quiet park bench. Make sure the area is free of distractions such as computers and cell phones. Remember to eat slowly and chew thoroughly. It may help to say a blessing prior to eating or to take a break in between bites to establish an appropriate flow. Engage all of the senses by focusing on smell, color, texture, taste, and even how the food sounds while being consumed. Slowing down may prove to be difficult, but when consistently practiced over time, mindful eating habits can be established.

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### About the Author

Marley Peale Braun received her MS in nutrition from Bastyr University in 2011 and her BA in psychology from the University of Virginia in 2001. Marley is currently a dietetic intern with Sea Mar Community Health Center in Seattle, WA and Student Assistant Editor for the Behavioral Health Nutrition DPG newsletter.

## In the BHN Pipeline!

**Book Title:** *Eat to Your Good Health: Exchange Lists and Meal Planning for Eating Disorders* (iUniverse, 2011)

Author: Amy E. Galena, MSH, RD, LD/N

Eating disorder dietitian Amy Galena effectively delivers guidelines that can be utilized by all dietitians to provide consistent meal planning therapy. This guide lays ground-work

for standardized meal planning for eating disorders. It includes a collection of streamlined treatment tools used in her practice to provide nutrition education and eating plans specifically tailored for eating disorder clients, their families, and their dietitians. The book comprises modified exchanges lists, sample menus, educational tools, and unique food journaling documents appropriate for clients

with eating disorders. Readers will also find a comprehensive list of online resources to support clients, family members, and clinicians as well as a list of recommended readings. Visit Galena's site [www.beenutritious.com](http://www.beenutritious.com) to learn more. *Eat to Your Good Health* is available at <http://bookstore.iuniverse.com/Products/SKU-000479405/Eat-to-Your-Good-Health.aspx>.

**Reviewed by Milton Stokes, MPH, RD, CDN**

## Legislative Update • Summer 2012

Cinde Rutkowski, MA, RD, FADA  
BHN Public Policy Liaison

Hopefully, your summer is going well and the many phone calls, voice-mails and emails from candidates and their campaigns are not too intrusive. Use these opportunities to share our Food and Nutrition messages which typically are heard best during the campaign.

Remember – VOTE on Tuesday, November 6th.

I was honored to be one of the 350+ attendees at the Academy's 2012 Public Policy Workshop April 15-17. Highlights of the three days included:

- A talk by Secretary of Agriculture, Tom Vilsack, who reviewed the role of the USDA and the RD in ensuring that consumers have access to affordable, nutritious foods. Secretary Vilsack also emphasized that "the time to make the greatest impact on food, nutrition and health is now."
- The presentation, "Matching the Message to Consumer Trends" by Academy Board Member, Joe Derochowski, MBA, which reinforced the need for Dietitians to be aware of their audience and what

else they are hearing regarding Food and Nutrition. He also noted that "There has never been a better time to be a Registered Dietitian."

- Panel discussions on the marketing of food to children, the status and intent of the Farm Bill, childhood obesity and the *Let's Move!* Initiative developed by First Lady Michelle Obama.
- Announcement of the Legislative and Public Policy Committee's new Policy Priorities that focus on two major areas—Consumer and Community Issues and Professional Issues. These priorities are in alignment with the Academy's priorities of enhancing Academy members' value in policy initiatives and the improvement of the nutritional health of Americans.
- Hill visits with our Senators, Representatives and/or their staffs to communicate the Academy's Policy Priorities that we actively had learned about in the preceding two days.

The highlight of my time at this year's Public Policy Workshop was chatting with Senator Debbie

Stabenow, Chairwoman of the Senate Committee on Agriculture, Nutrition, and Forestry, during her *Good Morning Michigan* reception. Senator Stabenow is a vocal supporter of Food and Nutrition issues and the Registered Dietitian. The Academy has recognized Senator Stabenow for her leadership in Senate passage of the 2012 Farm Bill.

On June 21st, the United States Senate passed the *Agriculture Reform, Food and Jobs Act of 2012* (S. 3240), often referred to as the "Farm Bill". This bill includes significant reforms in agricultural policy which ends direct payments to farmers, streamlines and consolidates programs, and reduces the deficit by \$23 billion while strengthening top priorities that help farmers, ranchers and small business owners continue to grow our economy and funds key nutrition programs that empower Americans to make healthy food choices. Academy leadership encourages us to contact our members of the House of Representatives to pass "an effective and fair Farm Bill."

Have a safe and fun summer!

### Take Your Passion for Behavioral Health Nutrition to the Next Level: Become an Officer for BHN!

With one simple commitment, you can grow your skills for communication, advocacy and leadership on a national level. Connect with amazing colleagues while making a real impact in promoting the dietitian's role in behavioral health.

#### Officer nominations needed for the following 2013 positions:

Chair-Elect • Treasurer • Nominating Committee

If you would like to volunteer or nominate a fellow BHN member, please contact Minh-Hai Tran, MS, RD, CSSD, Nominating Chair at [mh@MindfulNutritionSeattle.com](mailto:mh@MindfulNutritionSeattle.com).

**Deadline for officer nominations is October 1, 2012.**

## Prenatal Tobacco, Marijuana, Stimulant, and Opiate Exposure: Outcomes and Practice Implications

Minnes S, Lang A, Singer L.

**Source:** Mandel School of Applied Social Sciences Case Western Reserve University, Cleveland, Ohio 44106, USA. [sonia.minnes@case.edu](mailto:sonia.minnes@case.edu)

**Full text article available on PubMed Central, courtesy of Addict Sci Clin Pract.** 2011 Jul;6(1):57-70. <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3188826/>

### Abstract

Abuse of drugs by pregnant women both in the United States and worldwide has raised many questions regarding the effects of prenatal drug exposure on the developing

fetus and subsequent child outcomes. Studies using the neurobehavioral teratology model have been undertaken to determine specific prenatal drug effects on cognitive and behavioral development. Here we summarize the findings of studies that have investigated the developmental effects of prenatal exposure to tobacco, marijuana, stimulants, and opiates. These studies consider the timing and amount of prenatal exposure; other drug exposures; maternal characteristics; and other health, nutritional, and environmental factors. We review treatment options for pregnant, substance-dependent women and therapeutic interventions for exposed children.

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- Intellectual and Developmental Disabilities
- Eating Disorders
- Mental Illness
- Addictions

**Goals:** 1. The public recognizes, trusts, and chooses our members as the experts in behavioral health nutrition.  
2. Members and prospective members view BHN as essential to their professional success.

**Academy of Nutrition and Dietetics website:** <http://www.eatright.org>

**BHN website:** <http://bhndpg.org>

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#### RESOURCE PROFESSIONALS

##### Addictions

*Renee Hoffinger, RD*  
Florida 352-374-4478  
[hofuman@bellsouth.net](mailto:hofuman@bellsouth.net)

##### Eating Disorders

*Karen Wetherall, MS, RD, LDN*  
Tennessee 865-974-6256  
[kbalnick@utk.edu](mailto:kbalnick@utk.edu)

##### Intellectual and Developmental Disabilities

*Lester Rosenzweig, MS, RD, CDN*  
New York 518-229-1542  
[lesterr@arcschenectady.org](mailto:lesterr@arcschenectady.org)

##### Mental Illness

*Tegan Medico, MS, MPH, RD, LDN*  
Tennessee 484-264-8021  
[timedico@gmail.com](mailto:timedico@gmail.com)

#### STUDENT LIAISON

*David Wiss*  
California 310-403-1874  
[David.Wiss.65@my.csun.edu](mailto:David.Wiss.65@my.csun.edu)

A complete list of BHN Executive Committee members and volunteers is available at [www.bhndpg.org](http://www.bhndpg.org).

## BHN PUBLICATIONS

### The Adult with Intellectual and Developmental Disabilities

This resource tool is designed to provide an overview of nutrition in individuals with intellectual and developmental disabilities. The resource guide is contained on one CD-ROM as a 209 page PDF file.

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### Psychiatric Nutrition Therapy

This resource guide is intended for anyone working in the 4 practice areas within Behavioral Health Nutrition: mental illness, eating disorders, addictions, and those with intellectual and developmental disabilities who also require psychiatric care. The resource guide is contained on one CD-ROM as a 170-page PDF file.



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### Nutrition & Addictions

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### NEW! Academy of Nutrition and Dietetics Pocket Guide to Children with Special Health Care and Nutritional Needs

This pocket guide was developed through collaboration of the Behavioral Health Nutrition and Pediatric Nutrition dietetic practice groups of the Academy. This updated version contains the essentials to nutrition management in a comprehensive interdisciplinary approach to medical management of CSHCN. Up to date scientific evidence has been translated by the authors and editors into tables and practice guidelines for dietetic professionals.



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