



Pediatric Feeding and Dysphagia Newsletter

Dear Fellow Feeders:

Happy holidays! I wish everyone a happy and restful holiday season. I appreciate your patience with this issue, as always it's jam packed with info.

First we have an article on the 3 oz. H2O challenge to help screen suspected dysphagia and an excerpt from a new book on autism and feeding. We also highlight a series of new books for children to help them learn to eat better. We have a case, an editorial, and current research.

I want to say congratulations to the Center for Pediatric Feeding and Swallowing at St. Joseph's children's hospital in Paterson, NJ for an amazing 9 years!

I hope everyone will re-order for Volume 10 which we our busy planning for now. Please email with questions, content suggestions or ideas!

Thanks, Krisi Brackett

feedingnewsletter@gmail.com

Editorial: Getting Better Referrals...

I always advocate for feeding therapists to offer in-services for their referral sources. Whether it be pediatrician's practices, early interventionists, resident's and interns, or schools—I find they often wait to long to refer a child with a feeding problem. There are many times, a child comes to me with food refusal, extreme picky eating, irritability with meals etc., and the parents say I've been telling my doctor something is wrong but he said my child would grow out of it. Or you think to your self, if only I could have seen this child a year ago when it was an obvious GI problem, now it's become behavioral as well, it would have been easier to treat!

Put together a brochure or 15 minute talk and spend the time educating your referral sources! It will benefit the kids, the families, and you as a therapist. If readers are interested, I'll offer an article on what to say. Email and let me know your thoughts!



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Special Points of Interest:

- ☺ Current information
- ☺ New products
- ☺ Research and publications
- ☺ Education

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Use of the Three-Ounce Water Swallow Challenge as a Screening tool for Children with Suspected Oropharyngeal Dysphagia

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Accurate assessment of children who are risk for oropharyngeal dysphagia is vitally important because unrecognized prandial aspiration can lead to a number of serious medical complications, including failure to thrive, dehydration, oral aversion, and pneumonia (Martin et al., 1994; Langmore et al., 1998). Screening tools are often used by clinicians in an attempt to avoid unnecessary further testing, such as instrumental assessment of swallowing. In clinical practice, a screening test for oropharyngeal dysphagia has 3 goals: 1. To determine

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the likelihood that aspiration is present; 2. To determine the need for formal swallow evaluation; and 3. To determine when it is safe to recommend resumption of oral alimentation.

To be clinically useful, a screening test should provide good sensitivity for accurate identification of those individuals with a given risk factor such as aspiration, and high negative predictive value for accurate identification of those individuals who do not have a given risk factor.

ASHA guidelines (ASHA, 2004) indicate that a screening may include:

"Interview or questionnaire that addresses swallowing function. Observation of the signs and symptoms of oropharyngeal swallowing dysfunction. Observation of routine or planned feeding situation, if indicated. Formulation of appropriate recommendations, including the need for a full swallow function assessment. Communication of results and recommendations to the team responsible for the individual's care. (ASHA, 2004, p.11)"

The optimal means of screening individuals who are at risk for oropharyngeal dysphagia is controversial and evolving (Chong, Lieu, Sitoh, Meng, & Leow, 2003; DePippo, Holas, & Reding, 1992; Garon, Engle, & Ormiston, 1995; Gottlieb, Kipnis, Sister, Vardi, & Brill, 1996; Hind & Wiles, 1998; Lim et al., 2001; Mari et al., 1997; McCullough et al., 2005; Teramoto & Fukuchi, 2000; Tohara, Saitoh, Mays, Kuhlmeier, & Palmer, 2003; Wu, Chang, Wang, & Lin, 2004). A number of screening tests for oropharyngeal dysphagia have been proposed. These tools vary considerably with regards to their methodology, the individual completing the screening, and their specification of performance measures that indicate dysphagia. Screenings differ with respect to whether or not to administer a bolus, the volume of the bolus (volumes suggested range from 1 mL to 90 mL) to be delivered, or the bolus consistencies to be administered (ice chips, Jello, pudding, or water). Additionally, there is disagreement on which clinical indicators are suggestive of dysphagia. Among the suggested predictors of dysphagia, either alone or in combination, are the following: voice change, (i.e., wet, hoarse, or dysphonic; cough), (i.e., reflexive, volitional, strong or weak; gag reflex; dysarthria; facial weakness; tongue deviation; level of consciousness; laryngeal elevation; and a clinical estimate of presence of aspiration) (Daniels, Ballo, Mahoney, & Foundas, 2000; McCullough, Wertz, & Rosenbek, 2001).

Although dysphagia screening has received considerable attention, most research has focused on the adult population. A clinically validated dysphagia screening tool for children would allow clinicians to avoid exposing children to unnecessary radiation with videofluoroscopy or potential discomfort associated with flexible fiberoptic endoscopy.

The 3-Ounce Water Swallow Test

The 3-ounce water swallow challenge is a widely used method of screening individuals who are at risk for oropharyngeal dysphagia and aspiration (DePippo, Holas, & Reding, 1992). Individuals are given 3 ounces of water and asked to drink the entire amount without interruption. Criteria for test failure and referral for further dysphagia testing include failure to consume the entire 3 ounces, and coughing, choking, or wet vocal quality within 1 minute of test completion.

The ability of the 3-ounce water swallow challenge to detect aspiration during clinical screening has been reported (DePippo, Holas, & Reding, 1994, Garon, Engle, & Ormiston, 1995; Mari et al., 1997; McCullough, Wertz, & Rosenbek, 2001; Rosenbek, McCullough, & Wertz, 2004). However, no clear consensus on the test's usefulness has developed because of small sample sizes, resulting in inadequate statistical power, and varying methodologies. Additionally, these studies have focused primarily on adults, specifically individuals with neurological disease, (i.e., stroke, but sensitivity and specificity have varied considerably), (i.e., sensitivity as high as 0.86 and specificity as low as 0.50) (Rosenbek et al., 2004).

In an effort to expand the clinical utility of the 3-ounce water swallow challenge, we examined 3,000 patients with varying medical diagnoses who were referred for dysphagia evaluation at Yale-New Haven Hospital between January 1999 and December 2006 (Suiter & Leder, 2008). To determine if the 3-ounce water swallow challenge was useful as screening tool for children, we further analyzed data for children ranging

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Table 1. Participant Diagnostic Categories

| Diagnostic Category | Number of Participants |
|-----------------------------------|-------------------------------|
| Cardiothoracic Surgery | 2 |
| Head and Neck Surgery | 1 |
| Neurosurgery | 10 |
| General Medical | 8 |
| Pulmonary | 2 |
| Cancer | 2 |
| Left Stroke | 2 |
| Right Stroke | 1 |
| Traumatic Brain Injury | 10 |
| Progressive Neurological Disorder | 7 |
| Cervical Spinal Cord Injury | 3 |
| Acute Encephalopathy | 3 |
| Seizure Disorder | 1 |
| Other Neurological | 4 |

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from 2 years, 2 months of age to 18 years of age (mean age 13.4 years) (Suiter, Leder, & Karas, 2009). Fifty-six individuals from a wide variety of diagnostic categories participated (see Table 1).

We had 3 aims: 1. To determine if results of the 3-ounce water swallow challenge could be used to determine which individuals aspirate thin liquids; 2. To determine if individuals who failed the 3-ounce water swallow challenge were also deemed to be unsafe for any form of oral intake; and 3. To determine if results of the 3-ounce water swallow challenge alone could be used to make specific diet recommendations.

Endoscopic examinations of swallowing (FEES) were completed, using a standard FEES protocol. Participants were given 3 mL boluses of pudding and three 5 mL boluses of milk. All participants were allowed to swallow spontaneously (i.e., without verbal command to swallow). Immediately following completion of FEES, the same examiner administered the 3-ounce water swallow challenge. Each participant was given 3 ounces of water and asked to drink from a cup or straw without interruption. Criteria for test failure included inability to drink the entire amount and coughing or choking during or up to 1 minute after completion.

Using results of the FEES examination as the criterion standard, a 2 x 2 contingency table was then used to evaluate the results of the 3-ounce water swallow challenge. Participants who failed the water swallow test and aspirated on FEES were given a true positive rating, whereas participants who passed the water swallow test and did not aspirate on FEES were given a true negative rating. Participants who failed the water swallow test but did not aspirate on FEES were given a false positive rating, whereas participants who passed the water swallow test but aspirated on FEES were given a false negative rating. Sensitivity, ability of the test to identify those individuals who were aspirating, and specificity, ability of the test to rule out individuals who were not aspirating, were determined. Additionally, positive predictive value, negative predictive value, positive likelihood ratio, and negative likelihood ratio were computed.

Twenty-two of 56 (39.3%) of participants passed, and 34 of 56 (60.7%) failed the 3-ounce water swallow Results indicated that the 3 ounce water swallow test was sensitive for the identification of aspira-

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tion of thin liquids. All of the participants who passed the 3-ounce water swallow challenge also did not aspirate thin liquids during FEES. However, specificity was low, 51%. Despite failure on the 3 ounce water challenge, 21 of 34 (61.8%) participants were able to tolerate thin liquids based on FEES results. Additionally, 7 of 34 (20.6%) participants who failed the water challenge were deemed safe for modified liquid intake (i.e., thickened liquids).

With regard to diet recommendations, sensitivity was also high (100%). However, specificity was low (44%). Of the 34 participants who failed the 3-ounce water challenge, 28 (82.4%) were deemed safe for an oral diet based on FEES results. Taking FEES results, dentition, and cognitive status (Leder, Suiter, & Lisitano Warner, 2009) into account, 19 of 22 who passed the 3-ounce water challenge were deemed safe for a regular diet, 3 were deemed safe for a mechanical diet, and 1 was cleared for a pureed diet. None of the individuals who passed the 3-ounce water swallow challenge were subsequently made nil by mouth (not allowed to eat).

Results indicated that the 3 ounce water swallow test was sensitive for the identification of aspiration of thin liquids. All of the participants who aspirated on FEES also failed the 3-ounce water swallow challenge. The 3-ounce water swallow challenge also had a high negative predictive value (100%), meaning that participants who passed the 3 ounce water test also did not aspirate on FEES. Therefore, we concluded that the 3 ounce water swallow test was a good predictor of an individual's ability to tolerate thin liquids safely. However, specificity was quite low (51%) and the false positive rate high (48.8%). Because of its low specificity and high false positive rate, nearly 50% of individuals screened with the 3 ounce water swallow test would be unnecessarily referred for instrumental swallow assessment. Thus, the 3 ounce water swallow challenge fails in one respect as a screening tool because it over-refers for additional testing. Although conservative, over-referral for testing is not in and of itself a negative, as it allows greater objective identification of aspiration and the potential to determine diet recommendations and promote safe eating.

With regard to the second aim of our study, "To determine if individuals who failed the 3-ounce water swallow challenge were also deemed to be unsafe for any form of oral intake;" sensitivity was high (100%), and specificity was quite low (44%). Although passing the 3-ounce water swallow test appears to be a good predictor of ability to tolerate an oral diet safely, over 82% of patients who failed the 3-ounce challenge were deemed safe for some form of oral intake based on FEES. Thus, failure on the 3-ounce water swallow challenge did not accurately reflect true oral feeding status.

Most importantly, in order to determine if specific diet recommendations could be made based on results of the 3-ounce water swallow challenge alone, a cross tabulation examining diet recommendations and 3-ounce water test results was completed. Over half of participants who passed the 3 ounce test were deemed safe for either a regular (35%) or soft (6%) diet. Additionally, 35% of participants who passed the 3 ounce test were deemed safe for a pureed diet, and 9% were deemed safe for a clear liquid diet. Thus, for the first time with objective data it was determined that if the 3-ounce water swallow challenge was passed, patients can have an oral diet without further diagnostic dysphagia testing.

Results of this study have expanded the clinical usefulness of the 3-ounce water swallow test. If the 3-ounce water challenge is passed, not only thin liquids but other food consistencies can be recommended confidently and without further instrumental dysphagia testing. However, it is important to note that patient-specific factors, including medical condition and mental status must be taken into account when administering and interpreting the results of the 3-ounce water swallow challenge. For instance, individuals with stroke or traumatic brain injury may have difficulty self-feeding or following directions. Dependence on others for feeding has been identified as a significant risk factor for the development of aspiration pneumonia (Langmore et al., 1998). Additionally, inability to follow commands has been identified as a risk factor for not only liquid aspiration, but also aspiration of pureed material and inability to tolerate an oral diet (Leder, Suiter, & Lisitano Warner, 2009). Thus, clinical judgment should be used to determine those individuals to whom clinicians should administer the 3-ounce water swallow and in making specific diet recommendations based upon results of the 3- ounce water challenge.

It is also important to note that this research was based on speech-language pathologists administer-

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ing the swallow screening. A recent study in which nurses were trained to administer the 3 ounce water test as part of a dysphagia screening protocol revealed that nurses administered the 3 ounce water swallow test correctly in nearly 87% of trials (Cichero, Heaton, & Bassett, 2009). Additionally, the judge who administered the 3 ounce challenge also completed the endoscopic examination. Thus, he was not blinded to results of testing. Further research in which blinding of results occurs is necessary. Finally, although the participants in this study ranged in age from 2-18, most of them were 10 years of age or older. Further research using the 3 ounce water swallow challenge with younger children (ages 2-10) is needed.

Conclusions

It is imperative that appropriate evidence-based dysphagia screening protocols be used that either make direct feeding recommendations or referral for objective diagnostic testing. Future research, currently underway, will monitor the success of these oral feeding recommendations. Results, to date, have been promising, i.e., 100% of 350 participants who passed the 3-ounce water swallow challenge were successful with oral ingestion of liquids during the 24 hour monitoring period (Leder & Suiter, 2008).

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9 years and still counting...



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Most parents of autistic children are concerned about what they perceive as their child's "pickiness" about food and negative mealtime behaviors. They describe their child as having a poor appetite, preferring to drink rather than eat, refusing new foods, accepting a very limited variety of foods, craving carbohydrates, and having a need for sameness and rituals around eating. For many families, meal-time is a battle ground where their child with autism refuses to eat, gags, throws food, or may have a major tantrum. Parents try everything from forced feeding, bribing, pleading, distracting their child during mealtime with T.V., and following him around the house offering bites of food throughout the day. Usually, none of these techniques work consistently, and parents are left feeling frustrated, overwhelmed, and defeated.

Unfortunately, many healthcare practitioners don't understand problem feeding and are unable to help parents resolve them, which only add to the frustration. Worse yet, parents are often misinformed and told not to worry because their child will "outgrow his picky eating stage" or "when your child gets hungry enough he will eat". Both these statements are not true regarding children experiencing feeding problems and most children with autism do have feeding problems as opposed to simply being picky eaters.

PICKY EATERS VS. PROBLEM FEEDERS

In order to help a child overcome issues with food, you first need to determine whether he is a picky eater or a problem feeder.

Characteristics of a Picky Eater

Picky eating is a normal part of childhood development. Approximately 50% of children aged 18 to 23 months are identified as picky eaters.

Picky eaters tend to:

- Eat fewer than 30 foods.
- Eat at least one food from almost every type of food texture.
- Eat the same favorite food every day and will burn-out and discontinue eating the food. Then they will start eating their favorite food again after about a 2-week break.
- Tolerate new foods on their plate and willing to touch or taste the food.
- Eat a new food after they've been exposed to it 10 or more times.

Picky eaters tend to consume enough calories and continue to gain weight and grow without any problems. Managing picky eaters is fairly easy:

- Offer child a variety of foods each day.
- Provide consistent meal and snack times.
- Create a pleasant mealtime environment.
- Limit juice to 4 to 6 ounces per day.

Limit snacks to 2 - 3 per day.

Excerpt from a New Book! Part 1:

Autism and Feeding Problems by: Elizabeth Strickland, RD, LD

These basic strategies are usually all you need to help the picky eater eventually expand his diet to include a wider variety of foods.

Characteristics of Problem Feeders

Problem feeding is not a normal part of childhood development and is much more complicated than a picky eater. Problem feeders tend to eat a very poor diet, may have vitamin and mineral deficiencies, consume inadequate amounts of calories and protein, and may be severe enough to impact his ability to gain normal weight and height.

Problem feeders:

Eat fewer than 20 foods.

Eat fewer foods over time until they accept only 5 - 10 foods.

Refuse to eat foods from entire categories of textures.

Will eat the same food every day, but will burn out and stop eating the food; unlike picky eaters, they won't eat the food again after a 2 week break.

Won't tolerate a new food on their plate and are unwilling to even touch or taste the food.

Cry and or throw a tantrum when offered a new food.

Have a need for sameness and rituals around mealtime.

Are very inflexible about particular foods.

Are unwilling to eat a new food after the typical 10 exposures.

If the child has a feeding problem, he will need long-term, extensive feeding therapy from a multidisciplinary feeding team to help resolve his feeding issues.

THE CAUSES OF FEEDING PROBLEMS

Once you have determined the child is a problem feeder, the next step is to determine why. The key to improving the child's feeding problem is to identify each and every contributing factor so effective treatment strategies can be implemented. Identifying contributing factors takes a multidisciplinary approach involving a Physician, Registered Dietitian, Speech-Language Pathologist, Occupational Therapist, and Behavioral Specialist.

Contributing factors include:

- Medical conditions
- Nutritional problems
- Oral-Motor dysfunction
- Sensory integration dysfunction
- Environmental factors
- Behavioral problems

Medical conditions

Gastrointestinal problems are a major contributing factor to feeding problems. Gastroesophageal Reflux Disease (GERD), Eosinophilic Gastrointestinal Disorders (EGID), and chronic constipation are examples of common gastrointestinal problems that can result in physical pain. This pain is paired with food; the child learns to avoid the pain by refusing to eat. Refusal to eat is the child's way to communi-

cate that it hurts to eat.

Gastroesophageal Reflux Disease (GERD) is when acid in the stomach backs up into the esophagus causing esophagitis (inflammation in the esophagus) resulting in a burning sensation in the chest. Aspiration may also occur with GERD where the child inhales stomach contents into his lungs damaging the lining of the lungs. GERD often occurs when the lower esophageal sphincter (valve separating the esophagus and stomach) does not close properly allowing acid to back up into the esophagus. Even after the GERD has been identified and treated, these children may still continue to refuse to eat because of the association between eating and physical pain.

Eosinophilic Gastrointestinal Disorders (EGID) are a chronic and complex group of disorders characterized by having excessive amounts of eosinophils, a type of white blood cell, in one or more specific places in the digestive system. If the child has Eosinophilic Esophagitis (EE), he has high amounts of eosinophils in his esophagus. If he has Eosinophilic Gastroenteritis (EG), his stomach and small intestines are affected; and if he has Eosinophilic Colitis (EC), the problem is in his colon. The most common symptoms of EGID include the following:

| | | |
|-------------------------|---|---------------------|
| Nausea or vomiting | Diarrhea | Failure to thrive |
| Abdominal or chest pain | Reflux that does not respond to usual treatment | |
| Dysphagia | Food impactions | Gastroparesis |
| Poor appetite | Bloating | Anemia |
| Blood in the stool | Malnutrition | Difficulty sleeping |

If the child has EGID, it can cause significant pain, which can result in severe feeding problems. EGID can be diagnosed only through an upper endoscopy, colonoscopy, and biopsy. Once the presence of EE, EG, and or EC is confirmed, food allergy testing is typically ordered. Since reactions to foods can not always be identified with food allergy testing, the child will also be put on an elimination/challenge diet to help identify problematic foods. The foods that are most likely causing the child's problem, such as cow's milk, soy, eggs, wheat, peanuts, nuts, fish, and shellfish will be eliminated from the diet. Then they'll be reintroduced one at a time to test the child's tolerance. A Registered Dietitian will assist with implementing the elimination/challenge diet.

Chronic constipation is typically described as infrequent, hard and painful bowel movements. With chronic constipation, the child may develop megacolon (large intestines gets stretched out of shape) so the child passes very large bowel movements. The large bowel movements may also result in anal fissures (tears at the anal opening) which are extremely painful. Chronic constipation can also lead to encopresis (leakage of stool). Encopresis occurs when the large intestine gets stretched larger and larger, liquid stool from the small intestine leaks around the more formed stool in the colon, and passes through the colon into the child's underwear. Because of the pain associated with bowel movements this can lead to behavioral problems such as the child refuses to go to the toilet or holds their stool. Parents often describe their children as grazers eating small amounts of food throughout the day rather than sitting down to eat a meal. When they do sit down to eat a meal, they tend to eat just a

few bites and complain they are full. Children suffering with chronic constipation tend to have cramps, abdominal pain, bloating, nausea, vomiting, irritability, behavioral problems, poor appetite, and food refusal.

The child may be referred to a Pediatric Gastroenterologist to rule-out gastrointestinal problems. The Gastroenterologist may consider certain tests to identify possible gastrointestinal problems such as an upper GI X-ray, gastric-emptying study, upper GI endoscopy, or a pH probe. I strongly encourage parents to discuss with their child's Physician the possible role that gastrointestinal problems may be playing in their child's feeding problem and to aggressively identify and treat these problems. It is also important for the child to be seen by a Registered Dietitian to assess dietary factors contributing to the gastrointestinal problems such as lack of fluid and fiber intake, medication effects, problematic foods, excess juice intake, and nutrient deficiencies.

Food allergies, sensitivities, and intolerances can result in numerous intestinal symptoms such as reflux, nausea, vomiting, abdominal pain, abdominal distension, gaseousness, loose stools, diarrhea, and chronic constipation. These symptoms can make the child feel very uncomfortable and the child will learn that eating makes them feel bad and will often refuse food, gradually limit the number of foods they are willing to eat, and have tantrums and behavioral problems at mealtime. It is necessary to rule-out food allergies, sensitivities, and intolerances as a possible contributing factor to the child's feeding problem. It is important to identify the offending foods and eliminate them from the child's diet.

Medication side effects can impact the child and may contribute to his feeding problem. Antidepressants (anafranil, luvox, prozac, paxil, zoloft, lexapro), antipsychotics (clozaril, risperdal, zyprexa), and stimulants (ritalin, adderall, dexedrine) are the most commonly used medications for children with autism and related disorders. These medications are used to treat depression, obsessive compulsivity, aggression, tantrums, hyperactivity, and attention deficits. The most common side effects include decreased or increased appetite, decreased or increased weight, nausea, vomiting, dry mouth, altered taste, abdominal pain, loose stools, diarrhea, and constipation.

The child may also have other conditions requiring medication such as a sleep disorder, seizures, allergies, or digestive problems. If the child is taking a medication or combination of medications, it is important for a Registered Dietitian to review the medication's potential side effects, drug-nutrient interactions, impact on appetite, impact on weight and height, and how medication may be contributing to his feeding problem. A medication prescribed by a physician should never be stopped or weaned without first discussing with the child's physician and parent/family.

Previous invasive interventions around the mouth such as intubation, tracheostomy, or a nasogastric feeding tube can interrupt the developmental foundation that is so critical to form normal eating behaviors and can result in ongoing feeding problems.

Dental issues such as caries, sore swollen gums, and mouth sores can contribute to a feeding problem. The child will avoid eating because of the pain that is associated with eating food. These children often will limit their diet to soft, smooth foods and refuse crunchy, spicy, or hot foods. If the child is not already being seen by a dentist on a regular basis, it is important to schedule a dental exam so the dentist can rule-out dental issues.

* This chapter will be continued in the next newsletter, January 2010.

Elizabeth Strickland, MS, RD, LD is a Registered Dietitian with special interest in integrative and holistic medicine, whole foods, dietary supplements, and natural healing treatment methods. Elizabeth practices integrative nutrition therapy to help treat autism, Asperger's, ADHD, PDD, ADD, sensory processing disorders, learning disabilities, and other related disorders. She has over 25 years of experience ranging from providing individual nutrition therapy and presenting nutrition seminars to professionals and parents. To contact Elizabeth, email her at ASDpuzzle@aol.com or refer to her website at www.ASDpuzzle.com.

For more detailed information on nutrition and feeding interventions for autism, refer to Elizabeth's book, *"Eating for Autism ... The 10 - Step Nutrition Plan to Help Treat Autism, Asperger's, or ADHD"*. It is available at www.amazon.com and any major bookstore. Book website: www.Eating-For-Autism.com.

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Ryan Fights the Green Monsters

Roneet and the Fairy Princess Who Helped Conquer Her Fears of the Green Monsters

What's the Scoop on Poop

Michael and the Birthday Party

By: Dianne Lazer, MA, CCC-SLP/COM, Lic.
Celia Padron, MD, FAAP.,
and Rose Payne, CHHC

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The Green Monster series of

books is designed to help educate parents and young children about eating a healthy diet and reduce the number of medical and learning issues often associated with "picky eaters". These children often eat an over abundance of processed grains, juices and dairy throughout the day and present with an array of often avoidable clinical symptoms we see in our practices everyday. These symptoms include chronic congestion, ear infections, eczema, constipation, food selectivity and behavioral and emotional dysregulation issues to name a few.

The books are written in a story format to be read to children ranging in age from 3-8+ years old. The characters in the books are meant to be used as teaching tools and explain the reasons why some foods are good or not so good to eat. The **Ryan and Roneet books** include a four page perforated coloring book that features the main characters in the book and allows the children (and their parents) the opportunity to review the story in a kid-friendly manner. These pages are then used to start a special Green Monster Healthy Eating Recipe Workbook of their own. The workbook is used in therapy to document their choices for what foods they want to try first and slowly work toward 4-5 healthy meal choices per meal and snacks to eat throughout the week. Pictures are taken of all the healthy new foods they learn to eat and placed in the recipe book to document their improvements and serve as visual reminders of their progress and how much further they need to go until therapy is completed.

The Scoop on Poop book focuses on the importance of regular bowel movements, which has been very helpful for many young patients struggling with chronic constipation and includes a behavior management game and chart for home practice as well. And finally, the **Michael and the Birthday Party** book explains the food/mood connection of eating processed foods high in sugar and the negative results that may occur in the child's everyday life.

So far, only the *Ryan Fights the Green Monsters* and *The Scoop on Poop* books are printed. We are hoping to go to print next month on the *Roneet* and *Michael*

(Continued on page 13)

(Continued from page 12)

books. Also coming soon is *The Green Monster Healthy Recipe Book* that contains many child friendly recipes that give healthy alternatives for those just starting therapy. Sections include dairy and gluten free meals and fast and easy meals and snacks ideas. This book is especially designed to help relieve the stress and often overwhelming feeling parents (and clinicians) often experience when they hear their children need to eliminate dairy and/or gluten from their diets. This book will also include *The Green Monster Healthy Eating Chart* that clearly shows how to put together a healthy meal.

Also being produced is *The Green Monster Therapy Board Game* that will go along with the Roneet and Ryan books.

For more information, please visit www.betterspeech.com and double click on the book covers for a short description of each book or go to our information page to send in an order. In addition, please contact us if you have any questions about the materials or if you would like to work with us to further develop these therapy resources.

Dianne Lazer, MA, CCC-SLP/COM, Lic. Speech-Language Pathologist/Certified Orofacial Myologist

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Case by Case.....John: A teenager with food getting stuck referred for a MBSS (modified barium swallow study).

History: 16 year old with history of gastroesophageal reflux as a child, surgery for reflux (nissen fundoplication) done at age 8, and frequent complaints of food getting stuck in throat area. Both the patient and his mother reported that John could only eat small amounts at a time and needed to lay down during meals. He has recently had several severe choking episodes. There is no pulmonary history, however, he has severe diarrhea and frequent headaches.

Prior to MBSS: Discussion with John and his Mother revealed that the feeling of food getting stuck is with solids only. His need to take small bites, frequent breaks, and even lay down with meals is occurring daily. After listening to the history, I felt I needed to talk with the referring doctor because I did not think a MBSS was the right exam for John. Solid food dysphagia is often indicative of a GI problem and I had doubts that a MBSS would identify the problem. His doctor explained that John reported that food is getting stuck in his throat and wanted his pharynx evaluated. I asked if we could also do a barium swallow which would evaluate the esophageal transit phase. His doctor and the radiologist agreed. Barium swallows are typically done with thin liquid barium only (without a speech pathologist). We also requested that John swallow a barium pill.

Barium Swallow Study and MBSS results: As to be expected, John showed a normal oral-pharyngeal transit with liquids. During the barium swallow study, John was asked to swallow a barium tablet. With the pill, oral and pharyngeal phase was normal, however, the pill got stuck in the upper esophagus. John could tell it was not moving down. During the MBSS, John showed normal oral function (good bolus formation, control, and transfer), good timing of swallow initiation, and a coordinated pharyngeal transit. However, after the bolus (thin and thick liquid, puree, and a solid) passed through the upper esophageal sphincter there was an immediate retrograde movement of the bolus back into the pharynx. The radiologist was able to follow the bolus which showed a narrowing in the upper esophagus which was impeding normal transit and causing the retrograde movement. John was able to re-swallow several times to move the bolus through the esophagus. However, this finding was reported to his doctor who is arranging for further evaluation of John's esophagus.

On the Research Front:

Cook, Robin C. & Blinman, Thane A. The Case of the Wretched Retcher. *ICAN: Infant, Child, & Adolescent Nutrition*, Vol. 1, No. 2, 94-97 (2009)

DOI: 10.1177/1941406409332670

Fundoplication is an effective treatment for severe GERD because it provides a mechanical solution. However, manifestations of feeding intolerance postfundoplasty include dysphagia, gastric dysfunction, retching, gagging, intestinal dysfunction, and gas bloat syndrome. These difficulties are exacerbated by feeding plans that disregard the mechanical constraints imposed by the operation, particularly limited gastric volume, decreased gastric compliance, diminished ability to burp, sensitivity to osmolarity, and formula composition. These complications are preventable and treatable by informed construction of feeding plans that limit boluses (around 15 mL/kg/bolus), promote proper motility, manage intraluminal air, and limit polypharmacy. This case presentation describes a post-fundoplasty infant with severe retching and intolerance treated according to these principles.

Smith LP, Otto SE, Wagner KA, Chewaproug L, Jacobs IN, Zur KB. Management of oral feeding in children undergoing airway reconstruction. *Laryngoscope*. 2009 May;119(5):967-73.

The author's goal was to systematically evaluate perioperative management of oral feeding in children undergoing airway reconstruction. They concluded that safe oral alimentation early in the post-operative period is possible with a rigorous multidisciplinary approach. To minimize complications, postoperative oral feeding should be initiated in conjunction with a speech-language pathologist.

Levy Y, Levy A, Zangen T, Kornfeld L, Dalal I, Samuel E, Boaz M, Ben David N, Dunitz M, Levine A. Diagnostic clues for identification of nonorganic vs organic causes of food refusal and poor feeding. *J Pediatr Gastroenterol Nutr*. 2009 Mar;48(3):355-62. PMID: 19274791

Food refusal, poor feeding, and somatic symptoms such as vomiting, gagging, irritability and failure to thrive (FTT) are commonly found in both infantile feeding disorders (IFD) and common treatable medical conditions. The author's attempted to identify parental and infantile behavior patterns or symptoms that could help distinguish between organic or behavioral causes for these symptoms. Results indicated that poor intake, poor weight gain, or vomiting did not discriminate between organic and nonorganic causes. Factors indicating the presence of a behavioral cause included food refusal, food fixation, abnormal parental feeding practices, onset after a specific trigger, and presence of anticipatory gagging. Integration of a few structured questions regarding infant behaviour, parental feeding practices, infant symptoms, and triggers for the onset of symptoms may help clinicians distinguish between organic and nonorganic causes for food refusal or low intake FTT.

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