



# Pediatric Feeding and Dysphagia

## Dear Fellow Feeders,

Welcome to the new millennium! It's hard to believe that the year 2000 is finally here. I hope that we have all made the transition painlessly without crashing hard drives and losing power. Now we can relax and get back to our routine.

For those of you who attended the Dysphagia Research meeting in Vermont, I'm sure you were as stimulated as I was listening to the latest research being conducted in dysphagia, although pediatrics was under represented. I was able to make contact with 2 researchers from Tennessee doing work in our

area. Hopefully, with their permission, I will be able to highlight some of their findings here. Next year, the meeting will be held in Savannah, GA.

In January, I am heading to Nashville for the ASPEN (American Society of Parental and Enteral Nutrition) conference. I will be presenting a poster session based on a case study of a child whose GER improved remarkably with the intervention of a formula change. He was written up here as the case study from the July issue. This will be my first experience at ASPEN and I hear it is

an interesting meeting.

We are lucky to have 2 guest writers in this issue! Nancy Gray, RD who works in the Boone, NC Developmental evaluation center will be discussing her experiences with tube feeding. Also, Cis Manno, SLP writes about transitioning to textured foods. Cis is one of my mentors from Philadelphia. Enjoy!

Feel free to email or write me (address on last page) with comments, suggestions, or questions.  
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- Krisi

## The ABC's of an Effective Cough

Information was taken from the 1996 chapter, Facilitating Airway Clearance with Coughing Techniques, by Mary Massery and Donna Frownfelter's (see reference).

Cough can be reflexive or voluntary. The two mechanisms the lungs have of providing airway clear-

ance under normal circumstances are the mucous blanket in the airways and the cough. The cough is a complex mechanism. Mucus is transported against gravity by the mucous blanket and propelled out by the action of the cough. The cough is most effective at high expiratory flow rates and at high

volumes. It is of limited value beyond the 6th or 7th generation of airway branching (for patients with atelectasis or lower lobe pneumonia coughing alone will not clear secretions). Repeated coughing may cause irritation and possible narrowing of the airways or bronchospasm.

*(Continued on page 2)*

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### Special points of interest:

- ☺ Learn how to evaluate a cough
- ☺ A Dietician's experience with tube feeding
- ☺ The importance of breathing
- ☺ Managing GER
- ☺ Transitioning to textures

### Inside this issue:

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## The ABC's of a Cough

The authors suggest if a patient demonstrates retained secretions on x-ray, to encourage hydration, airway clearance mobilization techniques, and to carefully evaluate the cough.

There are four stages involved in producing an effective cough. Stage I: adequate inspiration involves inspiring enough air to provide the volume necessary for a forceful cough. Generally, this is 60% of the predicted vital capacity for that individual indicating adequate muscle strength. Stage II: glottal closure involves closing the glottis (vocal folds) to prepare for the abdominal and intercostal muscles to produce positive intrathoracic pressure distal to the glottis. Stage III: building intrathoracic and intraabdominal pressure is the active contraction of these muscles. Stage IV: glottal opening and expulsion is the opening of the glottis and forcefully expelling the air. The patient should be able to cough 3 - 6 times per expiratory effort.

How do you assess whether the patient's cough is effective? If the patient is old enough, ask them to demonstrate a cough. A patient should choose a posture that lends itself to trunk flexion (necessary for effective expulsion and airway protection). An effective cough should maximize the function of each individual stage; first a deep inspiratory effort paired with trunk extension, a momentary hold, and then a series of expiratory coughs on a single breath while the patient moves into trunk flexion.

Patient instruction includes the following guidelines. First, position for success. Assess whether the patient's posture allows for both trunk movements: flexion and extension. Evaluate how gravity is effecting the patient's muscle strength and function. Can the patient still protect their airway. Simple modifications include verbal cues, the use of

eye gaze, and postural changes.

If after basic modification the patient still cannot produce an effective cough, then the chapter illustrates in detail several assisted cough techniques and self-assisted techniques. The assisted techniques include the costophrenic assist, the heimlich-type assist or abdominal thrust, anterior chest compression assist and the counter-rotation assist. In addition five self-assisted strategies are explained.

The implementation of these techniques with patients who are having difficulty managing their secretions can prove invaluable. Not only will the patient feel more comfortable, but improved secretion management will help put that patient one step closer to successful

swallowing. This text is informative, easy to understand, applicable and accessible to all disciplines.

Massery, M. & Frownfelter D. (1996) Facilitating Airway Clearance with Coughing Techniques, in Frownfelter, D. and Dean, E (Eds.) Principles and Practice of Cardiopulmonary Physical Therapy. St. Louis: Mosby- Yearbook , Inc.



## Tube Feeding and the Child with Cerebral Palsy: Three Lessons by Nancy Gray, MS,RD, LDN

My nutrition counseling has been forever changed by two Bradleys. Both have spastic quadriplegia, dysphagia, and failure to thrive profiles despite consuming mass quantities of food and calories. Both are also children who win you over completely with enthusiasm for life. The last thing anyone wants to suggest is to feed them through a tube.

*Lesson Number One: If a child with cerebral palsy can drink efficiently but can't eat well, consider simulating tube feeding without using a tube.*

Bradley #1 taught me my first lesson. After two feeding assessments and regular oral motor therapy, it was still taking him 45-60 minutes to finish a meal and he was not gaining any weight. In fact, he was losing weight. His mom was doing everything I had suggested: adding

calorie boosters to his foods and trying to keep his effort of eating minimally by using only smooth textured foods and giving him Pediasure between meals. In addition, he had been hospitalized for pneumonia twice in two months and his mother had noticed that about 15 minutes into a meal of solids, he would start to get congested. A modified barium swallow done several months before had shown no aspiration although his soft palate had shown decreased motility. He was not evaluated for gastroesophageal reflux.

So, the dreaded "T" word came up. Tube feedings seemed to be the only way Bradley could get the calories he needed with reduced risk of pneumonia. Mom was desperate and willing to consider anything, but she asked one question: "Since Bradley drinks well and doesn't get con-

## Tube Feeding Continued

gested from his Pediasure, can't we just give him Pediasure by mouth several times per day?

Five or six cans of Pediasure were given to him by mouth each day. His mother continued to offer him small amounts of food three times per day to maintain his oral motor skills and prevent hypersensitivity, but these feedings were small and limited to 5 or 10 minutes at the most. Sure enough in 9 days, Bradley gained 16 ounces, almost 8 times the expected rate of gain for his age and the best rate of gain he had seen in a year.

One nice thing about this approach is that it can be temporary. In just over a year, Bradley was eating solids well enough to discontinue the Pediasure. He had been healthy and well nourished long enough to develop his oral motor skills so that he could finish a meal in under 15 minutes. Although initially he was not happy to give up his Pediasure, Bradley is now eating "normal" foods and no longer needs any dietary supplements.

*Lesson Number Two: Resistance to tube feedings is not always futile.*

Bradley #2 was in school when I met him. His local physician had referred him to me because he was severely under weight. At the time he was 6 1/2 years old and weighed only 28 lbs., the average weight of a two year old. This was despite a reported intake of almost 1.6 times his estimated needs. Lunch took him about 35 minutes, but a lot of this time was due to his socialization and distractibility, not difficulty chewing and swallowing. He also drank efficiently from a cup held by someone else. So we added even more calories to his foods and in 2 months, he had lost weight. In 4 months, he had lost even more weight.

Again, tube feedings seemed to be the only answer. However, Bradley's parents were more than resistant, they simply said "no", no discussion. So, having learned *Lesson Number One*, I suggested Pediasure by mouth 5-6 times per day. This met with resistance on the part of everyone- parents, teachers, and therapists. The reason: Bradley loves to eat. It would be cruel to take that completely away from him. The compromise that we all hammered out had three parts: 1. No more than 10 minutes chewing and swallowing per meal, 2. Blenderized, well mashed or finely chopped foods only, 3. Pediasure or ensure pudding at snack times and as back-up for meals not eaten.

Gradually Bradley began to put on weight. In ten months, he gained 9 pounds., twice the expected rate of gain for his age. By the middle of the next school year he was back to eating just about whatever he wanted and still gaining weight. Once again, a creative alternative to tube feeding produced the desired results in a relatively short period of time.

*Lesson Number Three: Sometimes tube feedings really are the only answer.*

Lest I get complacent that tube feedings can easily be replaced with creative oral alternatives, the memory of Joanna reminds me that, for some children, tube feedings are truly the only answer. Joanna was 7 1/2 years old when our feeding team experienced the discomfort of watching her eat. Her oral motor skills were disorganized and non-functional. For the majority of the feeding her eyes were watery and she gagged frequently. Occasionally she vomited. Her doctors managed GI issues. She had no lip closure, her swallows were delayed and inconsistent and most liquids were lost out of the corners of her mouth.

Unlike Bradley #2, Joanna hated eating and made every effort to avoid

bites of food. As a result she was emaciated, but her physician did not see this as a problem in a child with cerebral palsy, so neither did her mother. Her mother was very sensitive to Joanna's feeding cues, so often didn't feed her more than a few bites. Still, she was resistant to tube feedings.

Finally, Joanna's new step-father insisted and a naso-gastric tube was placed. As is often the case, Joanna gained 30 lbs. in 2 years! Although her health and disposition have been helped, her significant oral motor involvement and her profoundly impaired cognitive abilities will probably keep her from ever being able to eat all of what she needs by mouth. Perhaps if she had been tube fed from an earlier age, she would have been better nourished, stronger, and more able to enjoy eating by mouth.

Everyone knows that tube feeding can produce weight gain and improve health in a child with cerebral palsy, but there are costs. In some cases, simulating tube feed can produce the benefits without the discomfort of nasogastric tubes or surgery and site care of gastrostomy tubes. In other cases, tube feeding is the only real choice. In either case, the child's comfort and enjoyment of mealtimes and the ability of the chosen route to provide adequate nutrition should be considered first. Once these two components have been addressed, the child will be in a better place for further development of oral motor skills, if possible.

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## Case by Case...

This case has been a true learning experience for me. Anna is a four month old infant who I first met at about 2 weeks of age. She was admitted from an outside hospital for questionable neonatal seizures. Multiple medical tests were inconclusive.

A consult was initiated to assess swallowing function and the possibility of oral feeding. Initial evaluation revealed a full term infant with normal structures, however, there were absent rooting and suckle reflexes and saliva pooling in her oral cavity. Stimulation of the tongue, gums and posterior oral cavity failed to elicit tongue movement, a gag reflex, or a swallow. It was recommended that Anna remain NPO (nothing per oral or by mouth) with nasogastric feedings (NG) as primary nutrition. Her mother was hoping to breast feed at some point and kept up her milk supply by pumping. Therefore, Anna received all breast milk for nutrition via NG tube.

Over the next few weeks, Anna was successfully weaned off medication without subsequent seizures. It was clear that Anna had neurological impairment but no clear diagnosis was determined. Oral-pharyngeal deficits had not improved. A modified barium swallow study revealed swallow attempts but the inability to complete the swallow with pooling in the pyriform sinuses and subsequent silent aspiration.

In an effort to prepare for home, a g-tube was placed with a nissen fundoplication (precautionary if she should reflux). There were no complications with her surgery. She was also placed on Robinul, a medication to help dry up her saliva. She was then discharged at 1 month of age with follow-up weekly dysphagia therapy.

Initially in therapy, Anna presented

as an infant with chronic congestion, thick saliva pooling in her mouth with drooling, frequent arching of her head, neck, and trunk, upward eye gaze, weak short vocalizations, tight fistled hands, and breathing with accessory muscles. Her parents had continued daily oral motor stimulation with her. Exercises consisted of central grooving on her tongue, stretching on her cheeks and upper lip, and provided small tastes of breast milk during tube feedings.

Anna was receiving bolus feeds without any clinical signs of intolerance and was growing well except for a slightly small head. She was followed weekly by the dietician for weight and height checks.

We continued the oral motor therapy for approximately another month with little change. We added weekly physical therapy to assist with the extension patterns. During speech therapy, lemon glycerin swabs and sugar free lollipops were used to elicit a response as well as deep pharyngeal stimulation. Anna showed occasional tongue and lip movements but no clear suck. A fiberoptic endoscopic evaluation of swallowing (FEES) was performed to obtain more information. This revealed thick clear secretions pooling in her pharynx and an inability to clear them. Anna was taken off Robinul and switched to a Scopolamine patch for secretion management which helped to thin them but there was still pooling and congestion.

At this point, I requested another opinion and was lucky enough to have one of my mentors, an occupational therapist from Philadelphia look at her. She told me to take a few steps back; to stay out of her mouth for awhile and help her with secretion management. She showed me an aggressive approach with frequent chest physical therapy (PT) 4 to 5 times per day, lateral

stretching to give Anna some reserves for breathing and supported semi-prone positioning for sleeping to support optimal breathing. We also put her on continuous feeds to decrease any extra pressure a bolus might put on her stomach. Anna had been working so hard to breath she couldn't do anything else.

In two weeks, she started to improve. First, we saw a dramatic reduction in secretions and congestion. She began to cough them up and orally expectorate them independently. Next, we noticed the upward eye gaze and hyperextension posture disappearing. She began growing on less calories per kilogram. Anna also began to vocalize. She finally had her secretions under control enough to take time to make sounds.

She was eventually taken off of the patch and is able to manage her secretions with continued chest PT. She is mouthing toys and now brings her tongue out to explore objects as well as puckering of her lips. She is meeting her developmental milestones and her hands have relaxed. We are still waiting for her to begin swallowing and have re-initiated our oral therapy program.

For her parents, it has been hard not having a diagnosis but we are all encouraged by the progress Anna has made over the last 2 months. She continues to make steady gains toward future oral intake.

For me, I have learned an important lesson to assess breathing and secretion management first. After successful breathing comes coordination of the swallow.

# Transitioning to Chewable Foods by Cis Manno, MS CCC/SLP

Children who have feeding and/or swallowing difficulties due to a variety of issues and have missed the natural learning period for acquiring chewing have a more challenging time attaining it. These skills may not have occurred naturally due to medical issues (anatomical problems, respiratory issues, cardiac, GI issues, etc.), lack of opportunity or practice, and motor impairment.

Learning the act of chewing may then have to be broken down into preparing the oral cavity sensorially, accepting the higher textured food, manipulating and preparing the bolus of food in the oral cavity and transporting it to the pharynx. Such assistance may include providing a variety of non-edible textures in the oral cavity to provide sensory experiences such as rubber toys, NUK brushes, vibration, and Theratubing, etc. Providing these experiences prepares the oral cavity without asking the child to manipulate food and swallow.

While the child is engaging in these sensory experiences the motor pattern for chewing can be taught using pureed foods during daily meals. Using a spoon that comfortably fits in the oral cavity (small maroon spoon or infant spoon for toddlers), pureed foods can be introduced laterally over the molar surfaces so that the tongue can sweep over to gather the food for transport. It is important that when presenting the spoon that the child continues to face forward while the spoon is being placed laterally so that the tongue does the work of moving laterally to obtain the food. The tongue will then have to do more than just transport the food centrally through the oral cavity, but shift from side to side.

Foods can then be introduced in cheesecloth to the lateral surfaces

providing sensory experiences and taste without having to manipulate them and swallow. Only the increased saliva will need to be swallowed. This can include gummy-type candy, licorice or bubble gum.

Once the child is able to accept and tolerate this, foods that easily melt in the oral cavity (e.g., cheese curls) can be introduced. It is imperative that clinicians be certain that a child is able to safely handle the food items introduced to develop chewing skills. When the child has become proficient with tongue lateralization and munching skills, carefully selected food items such as Fruit Loops or Apple Jacks can be placed midline on the tongue. The child is then asked to move the cereal to one side of the mouth, back to the middle of the tongue, and then to the other side of the mouth.

In order to chew, the child has to learn to lateralize across the midline of the tongue while stabilizing one side of the tongue and using the other side of the tongue to transfer the food. The child begins to learn to use the tongue to spread, roll and shift food between the biting surfaces to break it down in preparation for transport. Foods that tend to break apart without chewing inside the mouth (graham crackers, butter crackers, etc.) but melt easily may be used to practice the entire chewing sequence. A child who is able to chew soft foods efficiently can be gradually introduced to hard foods that require greater chewing effort. In time the child learns to bite pieces of food and move the pieces to the molar surfaces, at which point the therapist no longer needs to place the food.

Most children learn to chew gradually initially with soft textured foods (e.g. pasta, soft cookies, and soft vegetables), then with more difficult textures (e.g. hard cookies, meats, and raw

vegetables). However, children with sensory deficits or low muscle tone seem to do better when presented first with crunchy foods, such as crackers. It seems that crunchy foods provide heightened sensory information that enables the child to know where the food is in the oral cavity so that they can collect it, form a bolus, and then swallow.

More information for transitioning to higher textured foods can be gathered from the following sources:

Alper, B.S. & Manno, C.J. (1996). Dysphagia in infants and children with oral-motor deficits: assessment and management. *Seminars in Speech & Language*, 17 (4), 283-310.

Gisel, E.G. (1991). Effect of food texture on the development of chewing of children between 6 months and 2 years of age. *Developmental Medicine and Child Neurology*, 33, 69-79.

Morris, S.E. & Klein, M.D. (1987). *Pre-Feeding skills: A comprehensive resource for feeding development*. Tucson, AZ: Therapy Skill Builders.

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Catherine Shaker, MS SLP/CCC, St. Joseph's Hospital, Milwaukee, Wisconsin and Sue Thorry, PhD., University of North Carolina are currently working on an assessment tool to evaluate feeding in premature infants. The tool will be designed to identify children by observing behaviors and assessing high risk factors. It is still in the testing phases and will not require high tech equipment to use. More info later.

# Medical Management of Gastroesophageal Reflux

According to Hyman, "in infants with gastroesophageal odynophagia or heartburn and refusal to eat, the treatment is to ensure consistent painless rewarding meals." (p.106) Depending on the clinician, a trial of medication may come before or after testing. Pharmacologic strategies to manage reflux include improvement of upper gastrointestinal motility, reduction of gastric acid secretion, healing of damaged tissue, or protection of the mucosa against injury. Presented here are the most common medications prescribed for GER.

More serious symptoms of GER such as apnea, dysphagia, choking, failure to thrive, feeding problems, and hematemesis require medical management (Putnam, 1997). Typical medications fall into three categories; antacids, acid suppressants, and prokinetics.

Acid irritation of mucosal tissue in the GI tract can produce symptoms of GER. Acid can be neutralized by antacids such as magnesium hydroxide, aluminum hydroxide, calcium carbonate. Many brands are available; Maalox (R), Mylanta (R), and Tums (R). These are used most effectively for temporary relief of mild symptoms rather than as primary therapy (Putnam, 1997).

Two classes of medication are used to suppress gastric acid; histamine2 receptor antagonists (H2 blockers) and proton pump inhibitors. They work by temporarily reducing acid at various receptor sites in the stomach. They provide short term relief and must be taken several times per day. Examples of H2 blockers include Zantac, Tagamet, Pepsid, and Axid. These are approved for pediatric use. Because some acid is produced at non-histamine pathways, H2 blockers do not completely stop acid production. Side effects can include confusion and cholestasis (bile duct obstruction).

The proton pump inhibitors, omeprazole (prilosec) and lansoprazole (prevedid), inhibit the enzyme that is the final step of acid production. They come in a granule form and must be swallowed not chewed

(therefore they can not be crushed). Currently, they are not available in liquid although pharmacies are able to provide a bicarbonate suspension so that they may be administered via g-tube. These are well tolerated but use is still limited in the pediatric population.

Prokinetic agents oppose reflux by increasing lower esophageal sphincter pressure, improving gastric emptying, and limiting esophageal acid exposure time (Putnam, 1997). There are several brands used, although Cisipride tends to be the drug of choice because it does not cross the blood brain barrier and does not produce neurologic side effects.

Cisipride (Propulsid), a serotonin receptor antagonist, increases acetylcholine release from intrinsic neurons of the myenteric plexus onto smooth muscle cells of the gut. It reduces GER symptoms in 60-80% of patients (Putnam, 1997). Side effects include cramps, diarrhea, drowsiness, and headache. These should not be used with antibiotics. Recently, it has been linked with heart arrhythmias. The child must have an EKG first to assess the QT interval.

Metoclopramide (Reglan) is a dopamine receptor antagonist. There are reports that central nervous system side effects may develop including irritability, sedation, or dystonic reactions (rare). Erythromycin is a macrolide antibiotic that also is a potent receptor agonist. Small amounts can stimulate gastric anal contractions. Bethanocool, a muscarinic agonist also provides prokinetic effects,

however, because it does not work directly on GI smooth muscle tissue it has low therapeutic value. Side effects include cramping and diarrhea.

It is felt that the combination of acid suppressing medication and a prokinetic agent achieves better control over GER. Anti-reflux therapy should be continued for at least 4- 8 weeks. At which time, a proton pump inhibitor might be used if symptoms persist.

According to Putnam (1997), relief of symptoms is usually prompt. Prokinetic agents work within a few days to limit regurgitation. Heartburn should also resolve quickly but esophagitis and esophageal dysmotility may take longer to resolve completely.

Hyman, Paul E. Gastroesophageal reflux: one reason why baby won't eat. *The Journal of Pediatrics* 1994; 125: S103- 109.

Putnam, Phillip E. Gastroesophageal reflux Disease and Dysphagia in Children. *Seminars in Speech and Language* 1997; 18: 25-37.



# On the Research Front

## Is laryngeal penetration normal?

Laryngeal penetration (LP) is the abnormal passage of food into the laryngeal vestibule, but not below the vocal cords. It may occur before, during or after the pharyngeal phase of swallowing. This is differentiated from aspiration when material passes below the vocal cords into the trachea. LP, occurring during the pharyngeal phase, is termed isolated LP (ILP). Studies done on adults have shown a relationship between ILP and a high risk of aspiration. It is often related to neurological impairment of the pharyngeal musculature.

The authors routinely observed ILP on upper GI studies in infants with no risk for aspiration. Their objective was to determine whether ILP is a benign process in infants and therefore not a predictor of aspiration as it is known to be in adults.

Two radiologists retrospectively reviewed videotaped upper GI studies over a two year period on patients less than two years of age. The authors felt that while numerous studies have defined normal swallowing function in infants and children, little has been reported on the presence and significance of ILP in this age group. The results of this study confirmed the author's observation that ILP is a benign finding attributable to the immaturity of the infant swallowing mechanism.

A normal group of 34 children without clinical or physical signs of swallowing dysfunction was reviewed. A total of 33 of the 34 (97%) normal patients showed LP. None of the patients aspirated. Therefore, ILP does not appear

to be a predictor of aspiration in infants and young children.

The authors conclude by stating that if normal infants have ILP, and if the neurologically impaired infant who has a high risk for aspiration demonstrates ILP, it may be on the basis of an immature swallowing mechanism rather than neurologic abnormality. This has implications for appropriate treatment recommendations.

Delzell, P.B., Kraus, R.A., Gaisie, G. & Lerner, G.E.. (1999) Laryngeal penetration: a predictor of aspiration in infants? *Pediatr Radiol* 29: 762-765.

## The Effects of Consistent Food Presentation

The purpose of this study was to determine what implications consistent presentation of food, delivered by an assistive feeding device, at an optimal position, would have for the maintenance of food intake, duration of meals, and efficiency of eating. Twenty children (7-17 years in age) with severe neurological impairment and associated eating difficulties were studied. The effects of the intervention were compared by examination of diaries recording the sizes and composition of meals consumed and by growth and weight measurements.

The authors state that children with severe motor disabilities and oral motor dysfunction often thrive poorly and are dependent feeders. Inconsistent feeding techniques by caregivers in terms of spoon positioning and strategies can be frustrating and reduce opportunities for independence. They suggest that children should be given more opportunities to be proactive during meals times, and that assistive technology could help with that aim.

Several devices based on industrial robotic arms have been developed for

use by people with disabilities. With a robotic feeder, the choice of food taken from the plate and the timing of food presentation can be under the users control. The spoon can be held at a predetermined height and distance, giving the child an opportunity to coordinate forward movement of the trunk or head toward the spoon. This could allow for greater control over the rate of eating.

Few studies have investigated the effectiveness of oral skills training and of assistive feeding technology. The use of mechanical feeding devices such as the Winsford Feeder and the Neater Eater appears to be haphazard. There is little evidence to determine if devices can be effective.

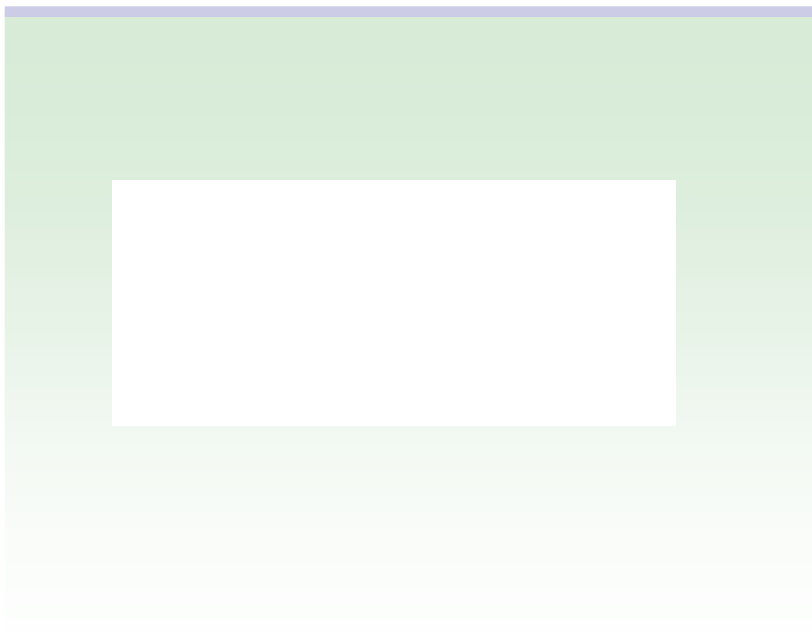
During this study, food was presented by the device in midline, horizontally, and was brought to a position just in front of the mouth, allowing the child to remove the bolus. Body weight, feeding efficiency, and speed was also assessed.

Results indicate that food intake and established rate of

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## The Effects of Consistent Food Presentation

weight gain can be maintained overall. Methods of consistent food presentation do not compromise the ability to thrive but provide opportunities for oral motor skills practice. Measures of food intake and loss derived from the food diaries showed the efficiency of eating was reduced because the meal time was increased requiring more energy.

Children with severe oral motor dysfunction seem less likely to benefit from consistent presentation than those who are highly dependent. Advantages of able users in terms of independence and possibly self esteem may outweigh increased meal duration and reduced eating efficiency. The authors will be analyzing additional data from their study not presented here.

Pinnington, L. & Hegarty, J. Effects of consistent food presentation on efficiency of eating and nutritive value of food consumed by children with severe neurological impairment. *Dysphagia*, 4: 17- 26. 1999.

### FYI...

If you're working with a child who is tube fed, an easy way to check to see if an acid blocker is working effectively is to check gastric pH. If the child is not on an antacid or H2 blocker, the stomach should be acidic, a pH reading of 1. But those on medication to reduce acid, should have more alkaline readings of stomach fluid, such as 4 and above.

Use regular pH paper, bought at a pharmacy. Ideally, you want to check several times per day but especially between doses of medication when it should still be working. Take a drop of stomach fluid and place on the paper. Match the color to the corresponding chart that comes with the paper. We like to see a reading between 4 and 6.

Remember, you want to test stomach fluid, not formula. Most formulas are not acidic and will effect the reading. If you test after a medication dose it will be a high, before the next dose low, so test in the middle.

If you're on acid blockers and coming out acidic, talk to the physician about re-evaluating the dose or type of medicine.

Next issue coming in April 2000!