



# Pediatric Feeding and Dysphagia

## Dear Fellow Feeders;

Hello, and welcome to our 3rd season! I want to sincerely thank our returning subscribers and extend a warm welcome to new ones. Feedback on April's survey was positive and it appears that informative articles are what readers prefer. We will still offer a variety of format's such as question/answer, case study and current research because they also scored high on the list.

The website, [www.feedingnews.com](http://www.feedingnews.com) is finally up and running. At this point, it contains subscription information, availability of back issues, and will eventually have sample

articles. I hope to add additional information in a subscribers only section in the future.

This year we welcome Cathy Fox MS OTR/L as an additional content editor. Her expertise in the area of feeding and swallowing disorders will be an invaluable resource to the newsletter and it's readers. Thanks Cathy!

This issue contains a smorgasbord of stuff. Read about the international foundation for functional GI disorders on page 3. I recently discovered this hidden gem and have received so much useful information since joining! Additional info includes an

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## Special Points of Interest:

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

Editorial assistance provided by Elizabeth Crais Ph.D. CCC SLP, Division of Speech and Hearing Sciences, UNC-Chapel Hill and Cathy Fox MS OTR/L, Private Practice, Frederick, MD

## Survey Results of Intensive Feeding Programs Across the Country by Laura Maddox, MS, SLP-CFY, [lmaddox@email.unc.edu](mailto:lmaddox@email.unc.edu)

To date, little research regarding the general characteristics, assessment procedures, and treatment practices of intensive feeding and swallowing programs has been available to pediatric dysphagia practitioners. The objective of this project was to identify intensive feeding and swallowing programs throughout the country and to gather information from them regarding the population of children typically receiving treatment at these programs, composition of team members, assessment and treatment procedures used, and family involvement in service-provision.

Seventeen intensive feeding and swallowing programs were identified throughout the country.

- Twelve of these were located in the Eastern United States.
- One was located in Texas
- Three in Ohio
- One in North Dakota.
- No established intensive feeding and swallowing centers were identified in the Western U.S., though 3 facilities indicated they were in the organizational stages of instituting a program.

Each of the identified programs was contacted and asked to complete a brief, 30-question survey. Of the 17 centers that were contacted, 16 returned surveys, resulting in a return rate of 94%. However, one survey was incomplete and was excluded from the final compilation of data. Thus, 15 of 17 identified centers contributed to the final data set (88%).

Survey participants were asked to indicate the models of service delivery available for children participating in their intensive programs:

- Five centers (33%) indicated that they provided inpatient services only
- Three (20%) provided day treatment only
- Seven centers (47%) indicated that they provided both inpatient and day treatment options.
- All of the programs provided outpatient dysphagia treatment

Mean length of treatment:

- 29 days (standard deviation=13.5), though this varied significantly from program to program.

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# Survey Results of Intensive Feeding Programs Across the Country by Laura Maddox, MS, SLP-CFY, lmaddox@email.unc.edu

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## Payment/Cost of treatment:

- 73% of the programs surveyed indicated that treatment costs exceeded \$5000.
- Private insurance was the primary source of funding reported (n=15, 100%), with Medicaid being only slightly less common (n=14, 93%).
- Other payment sources included private payment, foundations, scholarships, parent fund raising, and school systems. The mean length of time from referral to treatment was 11 weeks (SD=8), but ranged from as little as 1 week to over 6 months.

## Populations of children served by intensive feeding and swallowing centers:

- All programs surveyed indicated that they worked with a broad range of children in various populations with different varieties of feeding and swallowing problems.
- Several different reasons for referral were identified, including food refusal, lack of weight gain, food selectivity, maladaptive mealtime behaviors, vomiting, oro-pharyngeal dysfunction, poor respiratory support, g-tube dependence, aspiration, and gross motor/positioning problems.
- The three most commonly received referrals were food refusal (n=15, 100%), lack of weight gain (n=14, 93%), and food selectivity (n=14, 93%).

## Common diagnoses associated with feeding and swallowing problems:

- Three diagnoses were identified as the most commonly seen comorbid conditions: (1) gastroesophageal reflux, (2) failure to thrive, and (3) developmental delay.
- All of these conditions have been identified in the literature as being associated with significant feeding and swallowing difficulties (Eicher, 1997; Herman, 1991; Hyman, 1994; Kessler, 1999; Pronnicki, 1995).

## The composition of the various teams:

- 19 different disciplines were represented.
- Team members represented in over 50% of the teams included, occupational therapists, speech-language pathologists, psychologists, nutritionists and/or dietitians, gastroenterologists, family members, social workers, trained feeders, and developmental and/or standard pediatricians.

## The assessment practices used by the intensive programs showed a noticeable uniformity:

- 100% of the programs included a review of the child's medical history, a diet inventory, and assessment of the family's concerns, priorities, and social support networks in the evaluation process.
- Over 80% of programs included assessments of mealtime behaviors, oral motor skills, swallowing skills, physical well-being, nutritional intake, interactions between the child and caregiver, and use of the modified barium swallow study.
- More than 50% of programs investigated sensory integration skills, adaptive utensil selection, gastroesophageal reflux, and language skills.

## Reported treatment goals also showed a marked similarity:

- 100% of the programs surveyed indicated that increasing oral food acceptance and decreasing dependence on g-tube feedings were common goals for children in their programs.
- Over 85% of the programs indicated that increasing weight gain and the variety of foods accepted were also typical objectives for the children they treat.
- Over 50% of the respondents indicated that feedings lasted from 15 to 30 minutes.
- Forty percent of the programs surveyed reported feeding sessions of 31 to 45 minutes.
- The average number of feeding sessions per day was 4 (standard deviation=1).
- Far more variability was noted in the number of feeding sessions conducted throughout the day, with 40% of centers providing 4 per day, 33% conducting 3 per day, 20% providing 5 per day, and 13% conducting more than 5 feeding sessions per day.
- The average duration of feeding sessions was 31 minutes (standard deviation=12).

## Programs were also asked to identify who was responsible for both planning feeding sessions and for feeding the child :

- Most often, psychologists, speech-language pathologists, and occupational therapists shared the role of planning, though many other disciplines were identified as well.
- Several different individuals were identified as filling the role of feeder. The most common among these were caregivers, speech-language pathologists, trained feeders, occupational therapists, and psychologists.

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# Survey Results of Intensive Feeding Programs Across the Country by

Laura Maddox, MS, SLP-CFY, [lmaddox@email.unc.edu](mailto:lmaddox@email.unc.edu)

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The role of the family/caregiver during intensive treatment varied:

- Though parents often served in the roles of historians and demonstrators during assessment, less than half of the programs surveyed indicated that parents were given the opportunity to administer assessment tasks.
- Only four programs allowed the parents to function as feeders from the beginning of treatment
- 11 programs allowed them to feed the child only after stable food acceptance had been established.

Treatment efficacy:

- A majority of the programs surveyed indicated between 91% and 100% of the children improved upon completion of treatment
- All of the centers had established follow-up procedures, including telephone interviews, outpatient therapy, referrals to other professionals, re-evaluation appointments, and parent checklists.

The results of this study clearly indicate that intensive feeding and swallowing treatment is a valid option for many children with feeding problems. However, several considerations should be taken into account when helping a family choose the best program for their child and family. It is important that professionals actively attempt to learn about the overall philosophies adopted by the program and how those influence team composition and function, assessment, treatment, and family participation in service delivery in order to find the most appropriate intensive setting for both the child and his/her family.

In addition, continued research about these feeding and swallowing treatment centers is crucial in maintaining current programs and increasing the number of centers throughout the nation. During telephone conversations and personal interviews, many practitioners revealed that one of the major obstacles in operating these programs is obtaining funding from payment sources such as private insurance and Medicaid in order to cover the costs of operation. Further research and exposure is important in order to raise the awareness of private and federally governed medical funding groups as to the importance and value of programs such as those who participated in this survey. Increasing consciousness about the significance of these programs and the need that exists throughout the country may provide impetus for those facilities that are making efforts to establish intensive programs, especially in areas that are currently under served.

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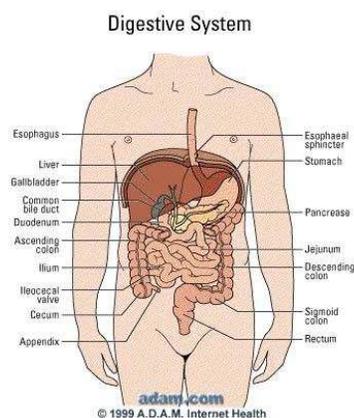
## International Foundation for Functional Gastrointestinal Disorders

IFFGD, the International Foundation for Functional Gastrointestinal Disorders is a nonprofit education and research organization. Their mission is to inform, assist and support people of all ages affected by gastrointestinal disorders. These disorders affect millions of people of all ages worldwide, and include many of our patients with feeding disorders.

IFFGD increases awareness about the disorders among the public and they work closely with an international group of healthcare professionals and the pharmaceutical industries. This cooperative effort puts IFFGD at the forefront of GI disorders care and research.

**Activities of the organization include:** conferences and symposia for healthcare professionals and families to share the latest research and ideas regarding treatment strategies, *Digestive Health in children* is a quarterly publication of IFFGD focusing on providing accurate reliable healthcare information on pediatric GI disorders, educational materials such as brochures and fact sheets are available to professionals and families, fighting for increased funding for research is a priority, the IFFGD parent-to-parent networking program both educates and bolsters morale of individuals and family members involved with pediatric GI disorders, Ask the doc website provides support for parents with children affected, the IFFGD Family Assistance program offers assistance to parents who need to travel unusual distances with their child for intervention, and the Bear wishes is a program aimed at improving the spirits of hospitalized children affected by GI disorders by providing a teddy bear to hug.

Membership fees: Family \$35.00, Professional \$60.00. Check out this wonderful organization at [www.iffgd.org](http://www.iffgd.org) or [www.aboutkidsgo.org](http://www.aboutkidsgo.org). The newsletter and brochures alone are worth the \$60.00 investment!





## Case by Case:

**Background:** 2 month old former full-term infant in the NICU with history of repaired congenital left diaphragmatic hernia, left hypoplastic lung, receiving oxygen via nasal canula. Meds included Zantac and Reglan for suspected GER. Speech was consulted for refusal to bottle feed and poor weight gain.

**Initial exam:** Revealed an infant with a large pectus with sternal and lower retractions and increased respiratory rate (75-80 bpm). Attempts at non-nutritive suck were poor. **Feeding:** Mother was attempting breast feeding while the nursing staff was trying to bottle feed. Bulk of nutrition was coming from an NG tube.

**Intervention:** The baby was positioned on her back and was working to breathe (evident by pectus, chest retractions and high RR). At this point, speech felt that her RR was too high to safely feed. She was repositioned in semi-prone with her left side down (hypoplastic lung side) to maximize support for her breathing. This position allows for opening of her right chest and diaphragm but does not require that the babies respiratory muscles move upward against gravity. In 10 minutes, her RR decreased to 45 bpm and she became interested in sucking. She was then fed in this position and took 32 cc easily and with a good suck/swallow coordination.

**Progress:** Feeding progress was slow with inconsistent intake, therefore the decision to place a g-tube was made. GER Testing prior to the g-tube included a negative pH probe and UGI series. While in surgery, the doctors noticed significant esophagitis and placed a nissen fundoplication also. After surgery, this baby began to eat really well! It appears poor support for breathing and inadequately treated GER were causing her to be uncomfortable and unable to eat!

**Final thoughts:** Positioning for respiratory support is a passive way to support a baby's function especially for feeding. Babies primarily breathe with their belly. The semi-prone position works well for many infants because they don't have to work against gravity. Also, we should not underestimate the GI tract's influence on feeding. This baby was showing signs of discomfort and refusal but was not adequately treated medically which might have prevented a nissen fundoplication. Interesting that the pH probe was read as normal. The reason for this? It only reads acidic reflux in the esophagus. It does not pick up alkaline reflux or bile reflux which can be irritating as well.

### **What is a diaphragmatic hernia?**

The diaphragm is a broad muscle that creates negative and positive pressure needed to contract and expand the lungs. The diaphragm forms at 8 weeks of gestation. This occurs by merging of two membranes to close off the open area between the chest and the abdomen. If it does not close completely, a defect, called a diaphragmatic hernia, is created. The term "hernia" refers both to the hole in the diaphragm muscle and the protrusion of the abdominal organs into the chest.

The stomach, small and large bowel and other organs, such as kidney and liver can herniate up into the chest. Hernias on the left tend to allow many of the abdominal organs into the chest. On the right, the liver covers the hole and there is less chance of bowel or other organs entering the chest.

The biggest problem caused by the herniation of the bowel is that the lung on the affected side and even the lung on the opposite side cannot grow to its full capacity. The extent of the lung deficiency becomes apparent at birth when the umbilical cord is clamped and the infant must oxygenate its blood by breathing. This is called a hypoplastic (nonexpanding) lung. Surgery is required to return the abdominal organs to the abdomen and to repair the diaphragm. There is no surgery at present to repair the lung insufficiency.

See [www.cherubs-cdh.org](http://www.cherubs-cdh.org) for more details.

# Feeding and Early Intervention – Counting the Costs

By Andrea Guglielmo MA, CCC–SLP and Amy J. Washko MA, CCC–SLP

What are the physical, emotional and educational “costs” when a school–based therapist is the first professional to identify and manage a feeding/swallowing disorder? How can we best avoid this delay? As full–time school–based therapists and part–time early interventionists working with children with multiple handicaps, we believe that the key is aggressive early intervention. Being therapists of this “dual” nature, we are very familiar with the impact of adequate versus inadequate feeding and dysphagia management during the birth–to–three years.

When working with the population who has multiple disabilities, in both early intervention and within the schools, we have found that parents are so often overwhelmed by their young child’s physical or cognitive disabilities, that they may not be able to fully grasp the global negative impact of the feeding disorder. In comparison to their child’s daily medical needs, a feeding disorder can appear inconsequential, when in fact, it may be contributing to early behavioral problems, poor state maintenance, low physical endurance, muscle weakness, sensory deficits and poor cognitive functioning. Often, in dealing with children with unresolved feeding issues, school–based therapists can find themselves with so many important areas to address in the IEP: feeding, speech, language, augmentative communication, etc., that it can become difficult to provide successful therapy in any one arena. Along with these issues, the child may be malnourished, dehydrated, or so preoccupied with discomfort from gastro–esophageal reflux that they can’t pay attention, which further undermines attempts at remediation in any area. Once students enter our school program, at the age of three, we find ourselves spending an inordinate amount of time trying to “undo” the impact of absent or inadequate feeding therapy, in more than just the realms of oral mo–

tor dysfunction. What is most frustrating, is to find that a child was receiving early intervention services, and that the feeding goals were not adequately managed, or were overshadowed by speech and language goals.

*Early and aggressive* management of feeding/swallowing disorders, especially in children with multiple medical issues, would help families understand the global impact of these types of problems on a child’s development. Equally as important is emphasis on the family as an integral part of the team process. This in turn, would hopefully encourage them to actively pursue necessary courses of recommended treatment before further educational demands are placed on the child. When the time comes to transition the child to school, a solid foundation of feeding skills; management of GI or other medical issues; options for hydration and nutrition; early identification of aspiration and parent education would already be in place, assuring the child every possible advantage to be successful in school. The school–based therapist would then be able to address all skill areas, instead of just starting the process of assessment and management of feeding dysfunction. Often, we have found that children entering our program at age three have had little or no feeding intervention, which really influences the school therapist in two ways. One they now have to initiate the intervention process and second the family or caregivers are already lost to that process and may be less accessible.

How can therapists provide the most effective and efficient services to children and families with feeding needs? There are, we feel, as early intervention providers ourselves, several steps that all therapists must take in order to provide successful feeding therapy to preschool children and their families. These include self–education, multidisciplinary team education, timely assessment, parent education, aggressive treatment and referral when necessary. Re–

*(Continued on page 6)*

## Button Up! Information provided by Lynne Farber, Pediatric Surgery Nurse, UNC Hospitals

We're talking g-tube buttons. What is the difference between a MIC-KEY and a bard? Why would you choose one over the other? Have you ever wondered about such things? Basically, there are two types of buttons – those that are positioned with balloons filled with water and those with soft silicone domes to hold them in place.

**Balloon type buttons:** The MIC-KEY is an example of a balloon type. These buttons are relatively painless to place. They are inserted into the stoma and a syringe filled with water is connected to the button to fill the balloon up which is on the inside of the stomach (like an earring). These buttons can be changed by the parents, which give them independence at home. Kids can pull these out fairly easily. Although this is not that common it can happen.

**Soft silicone dome type buttons:** The Bard is an example of a soft silicone dome type and these can only be changed by a pediatric surgery clinician. They sit flusher to the skin, which make it an option for some children, especially teenagers wearing tighter clothes. They are placed with an obturator which stretches the dome making it as small as possible. It is then inserted through the stoma and released allowing the dome to regain its shape. At UNC Hospitals, children getting this placed are asked to take tylenol, and a numbing cream is used to lessen the discomfort or it's done in the operating room if the child is having another procedure. Actual placement takes a few minutes and they should be changed yearly or sooner if the child out grows it.



**MIC-KEY Button**



**Bard Button**

There are other brands of buttons on the market but the MIC-KEY and the Bard appear to be the most commonly used. Parents should always carry a spare button with them because if it comes out, the hole will close within a few hours. Most families should have received instruction to replace the button immediately or it will delay reinsertion. Having a button does not preclude any type of activity. Kids can roll on them, take a bath or swim with them, and lie on their bellies.

### **What does it mean if the button leaks and what do you do?**

First, check the balloon (if it is a MIC-KEY), and replace water if necessary. The child's clinician will tell them how much water should be put into the balloon.

For example, if it usually holds 5 cc and there is 4cc, just add 1 cc of water. Protect the skin around the leaking stoma with a barrier cream like zinc oxide to protect the skin from the acidic drainage. If the tube is a Bard, call your clinician or doctor if the leaking persists.

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## **Feeding and Early Intervention – Counting the Costs**

By Andrea Guglielmo MA, CCC-SLP and Amy J. Washko MA, CCC-SLP

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ferral to an intensive program should be considered an option when the problems are complex. It is absolutely necessary to have the family or primary caregivers not only part of the team but actively participating in all aspects of the feeding process. When working with children with multiple medical issues, it is especially important for the early interventionist to have knowledge of local GI specialists, nutritionists or feeding teams that can provide support and further medical management when necessary. Even being armed with feeding programs that are not local will provide families with resources beyond what the in-home therapist is able to

# The “Who, What and Why” of Growth Charts

## Sharon Wallace, RD, CSP, CNSD, LDN

Growth charts are an integral part of an infant’s or child’s medical and nutritional evaluation. They tell us if a child is growing appropriately and can identify potential medical and nutritional problems that can sometimes be corrected if detected early enough. The Center for Disease Control has released new growth charts based on updated data from the original charts, however, they have just recently received increased attention as the recommended chart for plotting all children.



Below are some common questions asked when referring to the CDC growth charts.

### “Why do we need new ones?”

- ❖ The original chart sample consisted of primarily white, formula-fed, middle class infants from one section of Ohio; the updated charts have a much broader national representation of all cultures, socioeconomic backgrounds and both formula and breastfed babies are included in the sample. (Breastfed babies tend to follow different growth trends than formula-fed ones, especially in the first 6-9 months of life.)
- ❖ The data for the original National Center for Health Statistics (NCHS) charts consisted of data from 1929-1975. Growth trends and birth weights have markedly changed from this timeframe.

### What is “new” about the CDC growth charts?

- ❖ The growth charts now extend to 20 years of age versus 18 years.
- ❖ **Body Mass Index (BMI)** has been established for children as a screening tool for obesity. As childhood obesity is becoming a national epidemic and 1 in 5 children and adolescents are now overweight or obese, this is a critical tool for practitioners to follow.
- ❖ The inclusion of an 85<sup>th</sup> percentile, which identifies a child or teen to be at risk of becoming overweight.
- ❖ A 3<sup>rd</sup> and 97<sup>th</sup> percentile is available, which can be useful for practitioners following children with special health care needs who tend to follow altered trends of growth.



Note that many condition-specific growth charts are available for children with special health care needs (Downs’ Syndrome, Spastic Quadriplegic CP, Turner Syndrome among many others), as they tend to follow different growth trends. These should be used in conjunction with the CDC growth charts to provide the best overall “picture” of a child’s growth pattern.

Information on the CDC growth charts, modules and tools to calculate and interpret Body Mass Index (BMI) and the option to download these growth charts can be found at [www.cdc.gov/growthcharts](http://www.cdc.gov/growthcharts).

## **Q & A: Our discussion of videofluoroscopic swallowing studies continues with Dr. Joan Arvedson, Children's Hospital of Buffalo**

**Please comment on decision making for altering a child's diet, especially thickening liquids, when trace aspiration is seen on VFSS but the child has no significant history of pulmonary problems.**

There are so many complicating factors in this situation that I hardly know where to begin. First, we don't know if this trace aspiration, even if it is without observable response, is something that will occur frequently enough during regular meal times to cause pulmonary problems. It must be remembered that we all aspirate at times, and the lungs have some capacity to absorb or withstand the consequences of intermittent trace aspiration. However, we (the collective group of scientists and clinicians) don't know how much aspiration of what material can occur before there is pulmonary compromise. Clinicians must keep in mind that thickened material, particularly in young infants, may be more problematic if it is aspirated than the thin formula or breast milk. Thickened formula is often recommended for treatment of infants with gastroesophageal reflux disease or extraesophageal reflux disease GERD/EERD. This therapy may actually worsen the problem if gastric emptying is slow. Some infants cough more with thickened formula. We don't know if that added rice cereal has any negative effect on the digestive systems of young infants, and I'm sure we all know of premature infants as well as term infants for whom thickened feeds are used regularly.

Thickened liquids are often recommended for older children with neurologic based swallowing problems. If they aspirate during VFSS, they are more likely to do so before swallows of very thin liquid related to incoordination and/or reduced muscle strength that results in poor bolus control and delayed onset of pharyngeal phase. However, restriction of diet textures is not likely to make a major improvement in and of itself. Clinicians need to be cognizant of possible constipation becoming chronic with thickened feeds. Constipation will have a direct negative impact on hunger. The child is likely to take in fewer total calories and fluid volumes will be reduced. Those factors add to an already complex set of medical, health, and developmental issues. Decisions about changes in diet that restrict textures should not be made lightly, and they should not be made unilaterally, but in the context of a team approach.

### **What are the criteria for a repeat VFSS?**

Criteria are essentially the same as for the initial study. If there is a need to define pharyngeal physiology related to safety for oral feeding, the VFSS should yield useful information for decision making. The study should not be repeated just to see how a child is doing in order to "upgrade the diet." Close health, nutrition, and oral sensorimotor monitoring should be appropriate for many children as they gain overall strength, coordination, and oral sensorimotor skills. One should think very carefully before subjecting a child to a radiographic study so that parents, physicians, and non-physician specialists agree that this information is necessary in order for management decisions to be made in the child's best interests. The clinical examination and observations during intervention and monitoring, are important pieces of the puzzle, along with VFSS as just one of those pieces, albeit an important one, but not to the exclusion of other information.

Discussed in:

Arvedson, J.C., & Brodsky, L. (2002). *Pediatric swallowing and feeding: Assessment and management*. (2<sup>nd</sup> Ed.). Albany, NY: Singular Publishing Group, a division of Thomson Learning, Inc.

# On the Research Front

**Mizuno, K., Inoue, M, and Takeuchi, T. (2000) The effects of body position on sucking behavior in sick neonates. Eur J Pediatr 159: 827-831.**

Some infants show better oxygenation in the prone position compared with the supine position while they are bottle fed. This study's purpose was to look at the effects of body position on the oral feeding performance: sucking pressure, frequency, efficiency, and ventilation.

14 infants with oxygen desaturations during feeding were used in this study. The babies were fed in either supine or prone positions. Oxygen saturation was monitored with a pulse oximeter, sucking pressure was measured with a catheter in the nipple, and the ventilation was measured with a pneumotachograph.

Results indicated that the prone position showed better oxygenation, and larger tidal volume although minute ventilation was the same in both positions. Sucking pressure and frequency were higher and the duration of each suck was shorter in prone.

The author's hypothesize several reasons for the improvement in prone. First, they state that preemie's often

feed better with a restricted milk flow (or pacing) to give them a chance to stop and breathe. The milk flow and sucking frequency are thought to be in a negative linear relationship, less milk flow leads to frequent sucking. In this study, babies in prone had a higher sucking frequency, thus milk flow is less in prone than in supine. The other possibility for improvement in prone is the improved patency of the upper airway. Gravity could cause the tongue and soft palate to fall back into the airway in the supine position which may cause problems for some infants.. In infants, the most easily collapsed region is the oropharynx. And finally, prone positioning resulted in better oxygenation, possibly related to improved ventilation-perfusion mismatch, decrease of asynchronous chest wall movement and increase in the functional residual capacity.

**Mercado-Deane, M, Burton, E., Harlow, S., Glover, A., Deane, D., Guill, M., & Hudson, V. (2001) Swallowing dysfunction in infants less than 1 year of age. Pediatr Radiol, 31: 423-428.**

*(Continued on page 10)*

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## **Button Up!** Information provided by Lynne Farber, Pediatric Surgery Nurse, UNC Hospitals

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**Pictures taken from:**<http://personal.nbnet.nb.ca/normap/gtube.htm>

### **How do you know when they're too small?**

You should be able to turn the device easily, or fit a dime between the device and the abdomen. The child's clinician or doctor at the clinic can easily measure this.

**Can they be placed in the wrong part of the stomach, on a nerve or too close to the pylorus?** If you are placing a foley into the stomach, they might put it in too far or block the pylorus. This is why a caregiver must be taught how to safely place this tube in the hospital before discharge. It would be very unusual for a MIC-KEY or Bard to block the pylorus.

**What is the time frame to getting a button. Once the g-tube is placed, how long before you start using it?** We place buttons either in the operating room or 3 weeks after surgery (after the site is healed).

### **Do you always start with continuous feeds?**

No, some children resume their bolus feeds. It is usually easier for the child to tolerate a continuous feeding right after surgery, as there is less risk of a rapid, large volume being infused.

### **When does the site heal?**

It depends on the health or nutritional status of the child, but usually three weeks is adequate.

### **When is the button placed? Does it take additional healing time?**

The button is placed either in the operating room on day one or three-four weeks later. The site is fairly healed at that point if the child is receiving adequate nutrition.

### **If the child learns to successfully eat by mouth and is not using the tube, how long do you wait before pulling a tube? (This may vary on diagnosis)**

We prefer that the tube remains in three months after the last enteral feeding. The family's pediatrician should concur with the decision.

More information can be found at: [www.bardinterventional.com/gastro.htm](http://www.bardinterventional.com/gastro.htm) and [KCHEALTHCARE.COM](http://KCHEALTHCARE.COM)

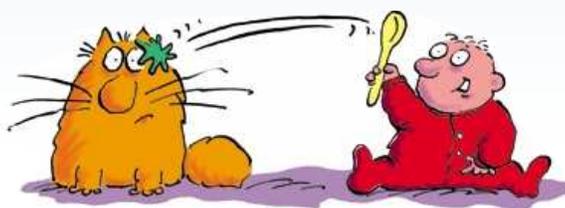
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Professionals!**

Questions, comments, submissions, and suggestions are all welcome. Please be vocal, the hope is that this forum will be educational and will help to connect us as professionals working together.

[www.feedingnews.com](http://www.feedingnews.com)



## **On the Research Front: Mercado-Deane, M, Burton, E., Harlow, S., Glover, A., Deane, D., Guill, M., & Hudson, V. (2001) Swallowing dysfunction in infants less than 1 year of age. *Pediatr Radiol*, 31: 423-428.**

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This prospective study was conducted to assess the incidence of swallowing dysfunction in infants with respiratory and vomiting symptoms. 472 full term infants less than 1 year of age who had suspected GER or respiratory symptoms but no other apparent abnormalities underwent an UGI. During the UGI procedure swallowing function was observed. Following the UGI, infants received a chest x-ray.

Results indicated that the incidence of swallowing dysfunction is significant in premature and former premature infants, as well as those with BPD, CHD, and neurologic abnormalities. In the general population referred for evaluation of respiratory or vomiting symptoms, 63 (13%) had swallowing dysfunction: 44 had tracheal aspiration (TA) and 19 had laryngeal penetration (LP). GER was found in 79% of infants with TA and 68% with LP. The MBSS confirmed swallowing dysfunction in all patients shown to have TA or LP by UGI.

The authors conclude that careful evaluation of swallowing dysfunction during an UGI can identify swallowing dysfunction. Episodes of tracheal aspiration may be fleeting and overlooked if swallowing is not assessed carefully. A MBSS can confirm the observation of swallowing dysfunction found during an UGI and assist in planning appropriate dietary therapy to minimize aspiration during feeding.

Response to aspiration is age dependent. The neonate responds preferentially by cessation of respiration and airway closure, until clearance of aspirated material has occurred. A study by Miller et al. (Miller, HC, Proug, GO, Behrle, FC (1952) Variations in the gag, cough, and swallow reflexes and tone of the cords as determined by direct laryngoscopy in newborn infants. *Yale J Biol Med* 24:284-291.) demonstrated that when saline was squirted onto the vocal cords, a cough occurred in 20% of term infants, and in only 25% of premature infants. Therefore, cough cannot be used as a reliable clinical sign in this age group. Cough can be absent due to immaturity or desensitization from frequent aspiration. As the infant matures, the cough will become the predominant mechanism for airway protection.

Swallowing dysfunction can occur in normal infants without underlying chronic illness and respiratory symptoms may appear. GER often co-occurs with swallowing dysfunction but treatment for GER alone might not correct the problem. In this study, finding penetration on an UGI often indicated a more serious swallowing problem; out of 16 patients