



# Pediatric Feeding and Dysphagia

## Dear Fellow Feeders;

Welcome to our next issue of the newsletter.

I hope everyone's holiday was festive and that you're ready for the new year. In this issue we feature articles on preterm feeding from Catherine Shaker, how to be creative with your continuing ed, and Sara Rosenfeld-Johnson dispels some oral motor myths regarding kids with Down syndrome, Cathy Fox intro-

duces us to the Acapella, a device to assist with secretion management and I would like to invite everyone to a free web chat on pediatric feeding!

As always, I welcome comments, questions, or suggestions – you can reach me at



**Pediatric Feeding and Dysphagia Newsletter**  
Hiro Publishing

Volume 3, Issue 3

January, 2003

## 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

## Preterm Infant Feeding: The Impact of Flow Rate

Catherine S. Shaker M.S./CCC, Pediatric Speech-Language Pathologist  
Senior Therapist—Pediatrics/NICU, St. Joseph Regional Medical Center  
Milwaukee, Wisconsin

Many preterm infants have complex medical and developmental issues that can delay the transition to nipple feeding. Indeed, feeding issues remain a key factor in determining the date of discharge, which in turn affects both the infant-family relationship and the cost of care.

Sucking, swallowing and breathing are complex processes even when considered separately. When an infant is fed, these processes must act together, working smoothly and efficiently, with highly accurate timing and coordination, to result in safe and efficient feeding. The immaturity of the central nervous system, reduced control of the muscles that support the trachea and the swallowing mechanism, as well as respiratory problems all predispose the preterm infant to airway compromise. As a result there is an increasing focus on what interventions can safely support the preterm infant during the feeding process.

Of all the factors to consider during feeding preterm infants, flow rate is one of the most critical. In many NICUs, high flow nipples ("preemie", red or blue) are routinely used with good intentions. Their potential to compromise coordination is often

not understood or recognized by caregivers. Indeed, the greatest obstacle to safe and successful feeding is a high flow rate that may flood the pharynx, triggering multiple swallows, leading to an interruption of breathing. You may ask then, "Why are high flow nipples often used with preemies?" My own experience when I began working with preemies nearly 20 years ago is a good place to begin.

It was 1985, and I had joined the NICU staff at St. Joseph Regional Medical Center as a full-time consultant. A Level III NICU, serving as a Regional Perinatal Center, it had 800 admissions per year, more than 65 beds, 15 neonatologists and over 200 neonatal nurses. A NICU on the cutting edge of new technology and approaches, they were pioneering providers of developmentally-supportive care, now a standard in the care of neonates. A goal for the NICU at the time was to upgrade their approach to nipple feeding. They recognized early on the importance of feeding success to a timely and happy homecoming.

As I began to work with the nurses, watching them feed infants, integrating my

*(Continued on page 2)*

## Inside this issue:

Preterm Infant Feeding	1-2
New Products/Web site	3
Case by Case	4-5
Continuing Ed	6-7
Q & A	7
Oral Myths of Down syndrome	8-9
Research	9-10

## Preterm Infant Feeding: The Impact of Flow Rate

Catherine S. Shaker M.S./CCC, Pediatric Speech-Language Pathologist, Senior Therapist—Pediatrics/NICU, St. Joseph Regional Medical Center, Milwaukee, Wisconsin

(Continued from page 1)

observations with my knowledge of infant swallowing and the unique development of preemies, one thing became clear to me: faster flow from preemie nipples was making feeding more challenging for these infants. The nurses, like their colleagues in other NICUs, were using preemie nipples supplied by the formula companies who provided special formulas for these infants. That's what they were given to use. And the preemies "got their feedings in" in a short amount of time (due to the fast flow), albeit with feeding related apneas (breath-holding events) and much of the contents of the bottle "drooled" out of their mouths on to their bibs. What the nurses often didn't fully grasp was the subtle, and often not so subtle, direct impact of the high flow nipple on breathing and swallowing. As I began to share my understanding of swallowing, breathing and airway protection, explaining the relationship of the feeding-related apneas to the high flow rate, and how high flow nipples easily overwhelm the infant, the nurses began to think, to reconsider, to consider the science behind the infant's behaviors. Since 1987, our NICU has not stocked preemie nipples. It was a decision made by the nurses. Let me explain the rationale that supported this change in thinking and change in practice.

When high flow rate nipples were first created by formula companies, their goal was to "reduce stress" for the preterm infant. The assumption was that the small premature infant was weak, and experienced stress related to sucking effort. High flow nipples were designed to deliver the flow more easily—so less sucking effort was expended. What the formula companies didn't know:

- Most premies do not have a weak suck. In fact their sucks are often too strong and predispose them to getting too much fluid with each suck
- Higher flow challenges swallowing and breathing

Let's talk first about swallowing. Higher or faster flow results in overfilling of the preemie's mouth. This leads to what is often referred to by nurses as "drooling". This loss of bolus control orally appears to be an attempt by the immature infant to guard his airway—by purposefully expelling the formula out of the front of his mouth, the infant avoids the other option—having excess fluid flood the back of his throat. This can be thought of as overfilling of the infant's pharynx, which can lead to coughing, choking, airway obstruction, laryngeal penetration or silent aspiration. It is difficult for the preterm infant to keep up with the larger volume delivered by the high flow nipple. This challenges his ability to collect the bolus and direct it away

from the airway during swallowing. The infant can easily lose control of the excess fluid, which can spill toward the airway or into the nasopharynx. We know that during the swallow, precise airway opening and closing is critical for airway protection. A preterm infant, who often has increased work of breathing during feeding, will have increased difficulty timing swallowing and breathing. Also, large boluses from high flow nipples often require multiple swallows to clear the pharynx. During these multiple swallows, the infant must wait to breathe, or hold his breath, until the pharynx is cleared of fluid.

Besides actual "breath-holding" events, high flow rate decreases the time available overall for breathing. With a high flow rate nipple, the infant needs to spend more time swallowing so there is less time available for breathing. This decreases ventilation (breathing) which can set off a series of reactions that can result in bradycardia or "slowing of the heart rate" (Matthew, 1991; Shivpuri, 1983). Meier (1994, 1996) concluded that high flow interferes with the infant's ability to breathe when he needs to and at the depth with which he needs to. Lau (1997) found that when flow rate was restricted for preemies (versus using a high flow rate), the infants actually ate more. Based on Matthew's and Meier's findings, this may be because feeding with a more controllable flow rate was less challenging from a cardiopulmonary perspective.

If feeding provides too big a challenge to cardiopulmonary reserves, causing destabilization (oxygen desaturation, apnea or bradycardia), it will have a cascading effect on the control of the pharynx, larynx and esophagus. The consequence of this deterioration is the potential for penetration of fluids into the airway or aspiration of fluids into the lungs. Because of their impact on cardiopulmonary reserves, high flow nipples can pose a significant risk throughout feeding.

### References:

Mathew, OP. 1991. Science of bottle feeding. Journal of Pediatrics: 119:4, 511-519.

Meier, PP. 1994. Feeding the Preterm Infant. Presented at tenth anniversary national meeting of the National Association of Neonatal Nurses, Sept 7– 11. Chicago, IL.

Meier, PP. 1996. "Suck-breathe patterning during breast and bottle feeding for preterm infants. In Major Controversies in Infant Nutrition, edited by Timothy J. David. London: Royal Society of Medicine Press Ltd.

Shaker, CS. 1999. Nipple Feeding Preterm Infants: A Developmentally Supportive Approach. Neonatal Network: 18:3, 15-22.

Shivpuri, CR et al. 1983. Decreased ventilation in preterm infants during Oral feeding. Journal of Pediatrics: 103:2,

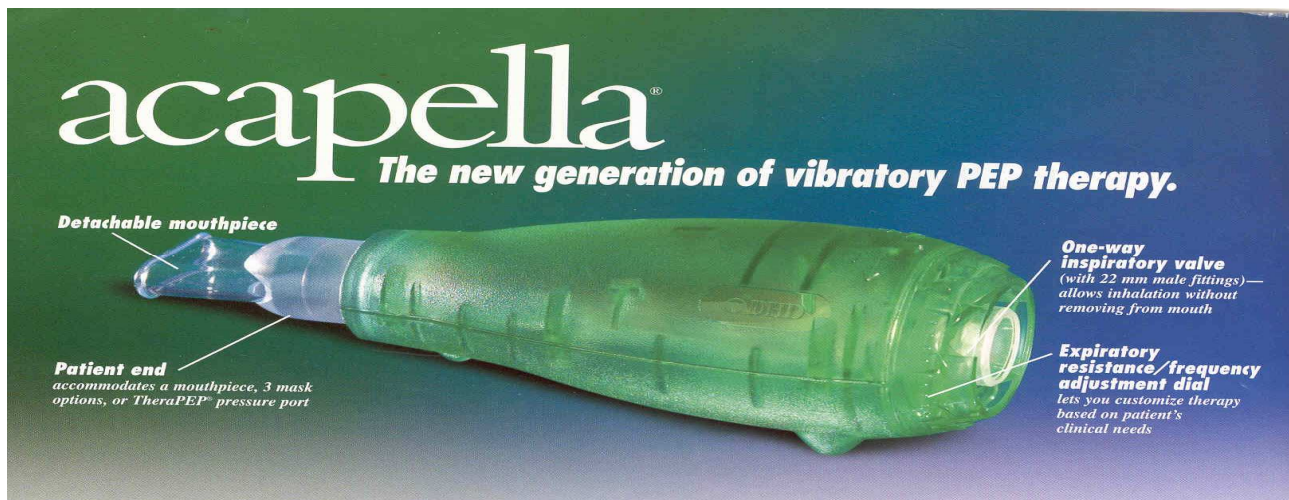
# Recommendations:

## Acapella – Vibratory PEP Therapy System (This is one of Cathy Fox's Recommendations!)

Secretion clearance is a major concern for many adults and children. CPT or chest percussion therapy is the standard technique used to mobilize secretions. This requires a lot of one on one time and should involve patient position changes to be most effective. Oscillatory positive expiratory pressure devices have been shown to be effective in secretion removal and bronchial hygiene but were heavy and position dependent. DHD Healthcare now has the Acapella Vibratory PEP Therapy System. It facilitates opening of airways in patients with lung diseases with secretory problems (COPD, asthma, Cystic Fibrosis).

- Light weight
- Not position sensitive
- Self administered therapy even in pediatrics
- Easily Adjustable for frequency and flow resistance
- Easier to tolerate than CPT and takes less time
- Easily used with nebulizer treatments with better results
- Very easy for kids to do and is fun too.

More information can be found at DHD Healthcare 800- 847-8000 or go to <http://www.dhd.com/>



## [www.telability.org](http://www.telability.org)

TelAbility is an interdisciplinary website that uses telecommunications to improve the lives of children with disabilities. TelAbility provides family centered care to children with disabilities across North Carolina and offers education, training, and peer support for people who care for them by offering a monthly newsletter, article reviews, case studies, printable handouts and website info - all written for parents and available in Spanish. Telability provides monthly chats (4 - 6 per year on feeding and nutrition topics). Please join us on January 22 at 9 pm and January 24 at 12:00 pm for a discussion on feeding. Log on to [www.telability.org](http://www.telability.org), it's free! (all you have to do is register)

Krisi Brackett MS SLP consults for the site on a variety of feeding topics.



# Case by Case:



## Case Presentation: Is the problem food allergies, constipation or both?

Cathy Fox, M.S., OTR/L, Pediatric feeding and swallowing specialist. Private Practice, Frederick, Md.  
cfxot@aol.com

Common sense tells us that when a system is full, eliminating some from the bottom will allow you to put more in up top. Unfortunately this premise is often over looked when it comes to children who have constipation that interferes with eating. Constipation may have a number of causes which need to be identified and treated so that factors that all interfering factors can be eliminated.

Background: A is a 3 year, 2 month old boy with Trisomy 21, who was referred for evaluation of choking during meals by his early intervention team. He is healthy except for constipation, rhinitis treated with Zyrtec, suspected food allergies which have not been worked up and 2 episodes of pneumonia.

A's feeding problems started at 6 months of age when he was switched from breast milk to Enfamil. He had increased irritability and constipation. He was switched to a soy based formula with a slight decrease in his symptoms. Bowel movements did not occur daily but when it did, straining was less. Constipation management has included prune juice, glycerine suppositories, Metamucil, diet manipulation, Colace and Latulose. Several of these regimens had immediate results but failed to change his bowel pattern. A had a significant volume limitation of 4-6 oz. with liquids and solids. His total fluid intake is limited to approximately 10 ounces per day. He also had choking episode during and outside of meals which were worse and more frequent when constipated. His current diet consists of soymilk, and juice from a large spouted cup and soft chewable solid. Variety is limited.

Examination: A is well nourished and mobile in all planes. His posture is notable for slightly decreased tone, mild weakness in the abdominals with an elliptical rib cage shape and flaring of the lower ribs. He has exaggerated thoracic extension and a neutral head and neck alignment. Trunk rotation is limited and he uses hip flexion and lateral trunk flexion instead. Transitional movement patterns occurs using linear patterns and he has a waddling gate. He has difficulty with balance and transitions from uneven surfaces.

His oral structures and cranial nerves are intact. He breathes through his mouth and thus maintains an open posture. His tonsils are 2+ but not touching in midline or red. Dentition is age appropriate. The tongue rests flat in midline and is appropriate for the size of his oral cavity. Tongue tip elevation is absent. Lateral movements are limited but augmented by increased jaw shift. Tongue base limitations are notable during sound production and the use of the suckle transport pattern. He was able to lateralize a small piece of solid food placed on the left and could chew food placed on the right. A suckle transport pattern is used for transport after only 2-3 chews. Most food is swallowed whole. He frequently makes a choking sound and points to his throat, though he has never lost consciousness due to choking. His parents have learned to anticipate this and modified his diet to prevent it. He also uses liquid in between bites to clear things out. His swallow was intact and well coordinated with his breathing. He would point to the back of his throat if a piece got too far back on his tongue. He was not able to retrieve it and had to swallow them whole.



## Impressions:

Type of feeding problem: The choking episodes are suspected to be supra-esophageal dysphagia secondary to underlying GI issues and immature oral motor problems are related to the pharyngeal sensations from the reflux.

# Case by Case:

Factors that interfere with his feeding success include:

## Medical

- Constipation - possibly related to food allergies (milk/soy/wheat)
- Gastroesophageal reflux and dysmotility in the GI track
- Large tonsils which may be a result of the reflux but also add to a mass like sensation.

## Motor (Gross & Oropharyngeal):

- Lack trunk rotation which is a necessary motor component for the development of mature tongue lateralization and control.
- Immature oral motor pattern with limited tongue base mobility
- Suckle transport with liquids and solids.

## Learned Patterns:

- Lots of distraction required at meals
- Parental behaviors shaped by A's choking noises even if they are not true choking events

## Intervention:

1. Refer to GI for evaluation and treatment of constipation, food allergies, and reflux
2. Trial of replacing soymilk with rice milk and eliminate food with milk or soy to see if there is a subjective change in constipation and reflux.
3. Ask pediatrician to add an antacid for acid coverage and to help with his constipation
4. Change feeding technique from midline placement to holding food over the molar surface and having A bite small pieces off. Use the Infatrainer cup and eliminate the spouted cups to reduce and eventually eliminate the suckle transport pattern and increase the single bolus transport pattern.
5. Eliminate any response to him pointing to his throat but continue to help him clear it if need.
6. Provide lots of positive reinforcement for chewing and swallowing.
7. Motor therapy to increase trunk rotation

## Progress: (two weeks later)

- All choking episodes have stopped.
- A is having an easily passed stool every day
- A is chewing independently on the right and left molar surfaces for at least 7-9 chews per bite
- A is drinking from a regular glass consistently using a single bolus transport pattern
- Meal intake has increased to at least 6-8 ounces per meal and better intake at dinner which was his difficult meal.
- Increased trunk rotation used in transitional movement patterns with a narrower gait and no waddle.

## (one month later)

- Increased appetite and oral intake
- Consistent stooling daily
- No choking episodes
- Increased variety of food
- Advancing to self feeding



## Continuing ED – How to stay current and where to go to learn.

by Krisi Brackett MS SLP/CCC, Kbracket@unch.unc.edu

The number one request I received in the survey we conducted last summer was “what conferences do you recommend for continuing ed?” I have struggled with how to answer this – because of the distribution of the newsletter, I didn’t want to list conferences that many could not attend. Secondly, I am writing from my experience and am aware that there are probably wonderful speakers and conferences that I have not attended and therefore will not recommend. With that in mind, here goes.... These are some speakers, mentors, and therapists who have helped shape my intervention over the years.

Feeding is a complex process. Therefore, it is important to look at feeding from a broad prospective and educate yourself in all aspects of the problems facing the feeding population (ie, diagnostic or treatment of GI, respiratory, gross motor, oral motor, and behavior issues). This way your intervention will be more balanced and success more likely. I should also mention that I did my early training with a feeding team that consisted of Dr. Peggy Eicher (now medical director at St. Joseph’s Hospital, Paterson, NJ), Cathy Fox, MS OT/R (now in private practice, Frederick, MD and consultant for the newsletter), Cis Manno, MS SLP/CCC (now in private practice, Yardley, PA), and psychologist Mary Lou Kerwin, PhD (now at Rowen College, NJ). These professionals have shaped my intervention with feeding patients and continue to influence me to this day. In fact, when I initially set out to learn about feeding I opted to pay the feeding team a sum of money and spent a week observing rather than going to a conference. I am quite certain I learned more hands on techniques that week than at any conference. I have kept in touch with this core group and use them as resources when I need advice. At times, I have opted for bringing them to my staff instead of going to a conference. Be creative when thinking of continuing ed!

### Recommendations:

**The Pediatric Feeding Conference at St. Joseph’s Hospital** in Paterson, NJ. St. Joe’s has started having an annual pediatric feeding conference every April. This is a great resource and a very comprehensive conference on the cutting edge of pediatric feeding disorders! ([www.feedingcenter.org](http://www.feedingcenter.org))

**The Dysphagia Research Society Meeting.** This is an annual conference every October that focuses on the latest research in dysphagia. It’s primarily adult focused but well worth the trip. After all most pediatric research filters down from the adult sector. It is very up to date information. (<http://white.shs.uiuc.edu:8080/drs/> or go to yahoo and type in dysphagia research society)

**If You Can’t Breathe You Can’t Function**, Mary Massery, MS PT. This conference and her series of talks focuses on ribcage mechanics, mobilization and improving breathing patterns. These courses are hands on, practical information that is easy to follow and teaches invaluable techniques for improving breathing. ([www.mmassery.com](http://www.mmassery.com))

**Pediatric Neurodevelopmental Treatment Association.** This is an 8 week course that focuses on how to facilitate normal movement patterns in children with cerebral palsy. This certification course is not practical for everyone because of the length but it was crucial for me to learn to handle, move and position kids. ([www.ndta.org](http://www.ndta.org))

**Cathy Fox, M.S., OTR/L and Cis Manno, M.S., CCC.** These are my mentors! They teach a variety of courses that focus on a part or all of the components involved in pediatric feeding and swallowing problems. Length of course varies based on topic and audience.

**Suzanne Evans Morris.** Suzanne teaches a variety of very comprehensive courses on intervention with feeding problems. ([www.new-vis.com](http://www.new-vis.com))

**Catherine Shaker.** Catherine teaches courses on intervening with premature infants and working in the NICU.

**Others I have not attended:** Rona Alexander has a series of talks on a variety of topics including ribcage mobility, swallowing, and feeding techniques, Myofascial release courses can be helpful for opening up the chest, Debra Beckman ([www.beckmanoralmotor.com](http://www.beckmanoralmotor.com)) and Sara Rosenfeld Johnson ([www.oromotorsp.com](http://www.oromotorsp.com)) separately feature workshops on oral motor skills and intervention.

Remember:

*(Continued on page 7)*

## Continuing ED...

*(Continued from page 6)*

1. Be creative with your continuing ed! Most of all have fun learning and continue to be inspired!
2. Educate yourself in all aspects of the feeding process (mainly oral and gross motor/positioning, swallowing, GI issues, nutrition, behavior, sensory issues).
3. Use your local resources and find colleagues – observe some GI tests, ask pediatric gastroenterologist if you can observe or spend a short amount of time asking questions, talk with a dietician and learn about formulas, or speak with an allergist... the possibilities are endless!
4. Visit a pediatric hospital or feeding team (you may have to pay a consulting fee but this can be cheaper than a conference), bring a professional to your staff or sponsor a talk. For example, I recently spoke at Seton Hall (if you use a hospital or University, they will have auditorium size rooms to access for free), they paid me a set amount, charged a fee for the talk, used a free room and actually made money while learning!
5. Start a local monthly pediatric dysphagia group and review articles, discuss cases and bring in local speakers.

## Q&A: (from a reader)

I just evaluated a 30 month old who has been diagnosed with sensory issues, has low weight (in fact his mother reported that he fell off the growth chart), was diagnosed failure to thrive and continues to eat very little. She describes him as a "picky eater", who rarely eats foods other than junk (i.e., chips, cookies, crackers and recently he began sucking suckers, although he does not eat the sucker). He is receiving OT, but an SLP from another facility reported that he did not need speech therapy. I know that he has oral hypersensitivity. He refuses foods, in fact mom said that he closes his eyes and turns his head away from foods. He sits at the dinner table with the rest of the family, but does not try to eat. He has been recommended for a psych eval. I will not be the ongoing therapist, but I want to make sure that I make all appropriate recommendations. I recommend a nutritional consult, video swallow, psych eval and ST treatment. Can you give me some direction? What should the parent do when the child won't eat?  
Thanks again, Petrina Jackson

*Petrina,*

*This sounds like a complicated child and I would like to give a generic answer on how to approach this type of child with a complicated feeding disorder. First, I would investigate underlying **medical and GI issues**, specifically GER, motility problems, stooling patterns and possible allergy. Oral*

*hypersensitivity, food refusal, and picky eating are usually related to underlying GI issues so I would treat that first. A nutrition consult may also be helpful to assess caloric needs, catch up growth and nutrient needs.*

*Next I would move onto to **therapeutic concerns**; postural alignment/motor patterns, sensory issues, and the type of oral motor pattern that being used. He may need some oral motor therapy for chewing, trunk rotational work, or therapy to improve head and neck posture. All protective patterns kids get into.*

*Last but not least, I would start **the behavioral** piece with the initiation of a structured reinforcement program for acceptance of bites of food. This requires a daily commitment from the family and a lot of consistency which not every family can complete. This part of the program will address the learned refusal pattern of food, however, prior to this, every effort should be made to ensure that the child's gut is comfortable and he is not in any pain.*

*I would like to add that there is a certain amount of trial and error involved in the intervention with the manipulation of medication, motor progress, and breaking down learned behavior patterns. Many kids progress faster and easier in day treatment feeding programs which is always a good option but not accessible to all.*

*As you can see – feeding intervention requires a team approach or a therapist who can access all the pieces for the child. Good luck!*

*Krisi Brackett MS SLP/CCC*

## The Oral-Motor Myths of Down Syndrome

By Sara Rosenfeld-Johnson, M.S.,CCC/SLP, Published in ADVANCE Magazine August 4, 1997

There is a visual impression that each of us holds in our mind when we think of a child or adult with Down Syndrome. As a Speech Pathologist in private practice for twenty-five years and as a continuing education instructor for speech and language pathology classes on Oral Motor Therapy, I have learned that this impression is a powerful teaching aid. When I teach, I ask the participants to tell me what they consider to be the characteristics of a Down Syndrome child, or any low-tone child from an oral-motor point of view; without fail, I get the same responses. Their portrayals have become so predictable I have come to refer to them as the "Myths of Down Syndrome". This is what these professionals see: a high narrow palatal vault, (Myth #1), tongue protrusion (#2), mild to moderate conductive hearing loss (#3), chronic upper respiratory infections (#4), mouth breathing (#5), habitual open mouth posture (#6), and finally, the impression that the child's tongue is too big for its mouth (#7).

These seven structural/functional disorders have been plausibly associated with Down Syndrome, so why label them myths? Because the children my associates and I have worked with over the past fifteen years no longer exhibit these characteristics. The therapeutic community has inadvertently allowed these myths to flourish because we didn't recognize that they could be prevented. These abnormalities emerge in most children by the time they enter early-intervention programs. What has been missing in our treatment which has allowed them to develop? How do we pursue prevention?

A quick review of some oral motor development basics. Children are born with two cranial soft spots. One on the top of the skull at midline and the other under the skull at the midline. Soft spots facilitate the birth process, allowing plates in the skull to overlap, easing the infant's downward progress. After birth, the plates return to original position, eventually joining between 12 and 18 months of age. When the plates meet at the top of the skull, they take the shape of the brain's contour, giving us a round-headed shape. In the Down's population, this closing of plates may not occur until 24 months of age.

The identical closing of plates occurs under the brain in the plates of the hard palate. Just as the brain lends shape to the top of the head, the tongue shapes the palate. During the closing of the palate, if the tongue is not resting habitually inside the mouth, there is nothing to inhibit plate movement toward midline. The result: myth #1, a high, narrow palatal vault.

Can this be prevented? Let's return to the infant at birth. What is not commonly known is that even children with severe low tone at birth, including Down Syndrome, are nose breathers. They maintain their tongues in their mouth and upon examination their tongues are not abnormally large. Orally, these children look pretty much like any other infant with the exception that they have a weak suckle. This critical observation draws us to the connection between feeding muscles and muscles of speech.

In quick order, a cascade of events unfolds for these babies with weak suckle. Many mothers tell me they genuinely wanted to breast feed their newborn but were unable because the child had a weak suckle and/or the mother did not produce sufficient milk. Absent a medical problem, the difficulty is often that the child's suckle was not strong enough to stimulate the mammary glands into producing adequate milk flow.

In this scenario mothers are traditionally encouraged by physicians to use a bottle. Bottle feeding is fine, when done therapeutically, but mothers should be given meaningful choices. Further, when bottle feeding is suggested for these infants, the hole in the nipple is often cross-cut or enlarged to make it easier for the infant to suckle. The child is held in the mother's bent elbow and the bottle is held on a diagonal, nipple down. Visualize this - the milk flows easily into the infant's mouth, but what stops the flow, allowing the child to swallow? Tongue protrusion; myth #2. Excessive tongue protrusion is a learned behavior that creates a physical manifestation.

Keep visualizing this infant with low tone/muscle strength. There is a sphincter muscle at the base of the Eustachian tube whose function is to allow air to enter the middle ear. If weak muscle tone reduces the effectiveness of this sphincter muscle, then in the described feeding position, milk is able to enter the middle ear. The result: chronic otitis media; a primary causative factor in conductive hearing loss; myth #3

Fluid build-up in the middle ear, and the resulting infection, circumfuses throughout mucous membranes of the respiratory system and frequently becomes the originator of chronic upper respiratory infections; myth #4. The nasal cavity becomes blocked, the child transfers from nose breathing to mouth breathing and we have myth #5. The jaw drops to accommodate the mouth breathing, encouraging a chronic open mouth posture; myth #6. Because the tongue is no longer maintained within the closed mouth, the palatal arches have nothing to stop their movement towards midline and we end up with a high, narrow palatal vault, making full circle back to myth #1. The child's tongue remains flaccid in the open mouth posture, at rest. Lack of a properly retracted tongue position is myth #7. This enlarged appearance of the tongue is therefore not genetically coded, but rather the result of a series of care-provider related responses to the very real problem of weak suckle.

Understanding this scenario provides insight into the characteristics seen in these children when speech and lan-

*(Continued on page 9)*



## The Oral-Motor Myths of Down Syndrome

By Sara Rosenfeld-Johnson, M.S.,CCC/SLP, Published in ADVANCE Magazine August 4, 1997

(Continued from page 8)

gauge therapists begin to work on correcting their multiple articulation disorders. Addressing the oral muscles/structure from birth offers a more effective, preventative therapy than the wait-and-see approach taken today. These physical features are not predetermined. Our therapeutic goal should be to normalize the oral-motor system through feeding beginning in infancy.

In infancy, nutrition is of primary concern. Our job is to balance nutrition, successful feeding and therapy. Goal one is to change the position in which the child is being fed. Mouths must always be lower than ears to prevent milk flow into Eustachian tubes. The bottle position is altered to introduce the nipple from below the mouth, vertically encouraging a slight chin tuck. In this position the child draws the milk up the nipple predominately with tongue retraction. This position and retractive action prevents milk from flowing freely into the child's mouth. The child no longer needs strong tongue protrusion to enable swallowing. It is also important not to make the hole in the nipple larger.

Can children with weak suckle draw the milk into their mouths in this position? Yes, if you don't use standard glass bottles. Bottles with the disposable liners, in either 4-ounce or 8-ounce sizes, can be filled with either pumped breastmilk or any variety of formula, and the air can be forced out causing a vacuum. This type of bottle can then be fed to the child in an upright position. If the child has trouble drawing the milk up because of weak suckle, you can facilitate the draw by pushing gently on the liner. When I have used this technique with even the most severely impaired children, it has been successful. After a week or so you will be able to push less as the muscles will begin to get stronger. Facilitation is generally eliminated within 3-6 weeks.

Breastfeeding mothers follow the same principles. Hold the child in a position where its mouth is lower than its ears. Stimulate the mammary glands while the child is suckling to increase milk flow. This also enables the mother's milk to come in stronger. As the child's suckle strength increases, the need for gland stimulation will be eliminated.

A simple change in the position relationship of the child's mouth to the bottle/breast can improve long-term oral-motor skill levels. That one change prevents a series of abnormal compensatory patterns to develop. It is so significant that I have incorporated feeding intervention into the treatment of all my clients with oral-motor issues regardless of age or diagnosis. Even my third-grade "regular" kids who are seeing me for an inter-dental lisp work on developing muscle strength and tongue retraction through feeding.

If Speech and Language Pathologists accept the premise that normal speech is superimposed on normal oral structures and functions, then the call to provide early therapeutic feeding intervention takes on an importance that we must both acknowledge and affect.

Copyright © 1997 Sara Rosenfeld-Johnson, M.S., CCC/SLP Innovative Therapists International

3420 N. Dodge Blvd., Suite G ,Tucson, AZ 85716, Tel: (888) 529-2879 <http://shop.azstarnet.com/cgi-bin/iti.storefront> (or type in innovative therapists international into yahoo) Email: [oroitioffice@ultrasw.com](mailto:oroitioffice@ultrasw.com)

---

## On the Research Front...

### Hussain, MD, Sunny and DiLorenzo, MD, Carlo, Motility disorders, *Pediatric Gastroenterology and Nutrition*, (2002), Feb, 49, 27-51

This article provides a nice summary of current diagnostic and therapeutic techniques for a variety of pediatric motility disorders. Motility disorders are common and may affect any area of the digestive tract. These problems can cause many symptoms including vomiting, dysphagia, chest pain, choking, gagging, and poor appetite. The past decade has brought many changes in the understanding and treatment of these disorders. The following types of motility problems are discussed:

- esophageal disorders: (cricopharyngeal dysfunction, achalasia)
- gastroesophageal reflux disease
- spastic disorders
- rumination syndrome
- stomach disorders: (gastroparesis, dumping syndrome, dysmotility after a nissen fundoplication, and cyclic vomiting syndrome

- small intestine disorders (chronic intestinal pseudo obstruction and diarrhea)
- disorders of the colon (constipation, Hirschprung's disease, poor motility).

Also mentioned are new evaluation techniques such as electrogastronomy, electric impedance, and topographic manometry. New medical management is also covered.

This article provides a very thorough write up of the various kinds of motility disorders and the diagnostic and treatment tools used to intervene. I also liked that they included new techniques and new medicines being used to treat these problems.

### Fucile, MS OTR, Sandra, Gisel, PhD OTR, E., & Lau, Chantal, PhD. Oral stimulation accelerates the transition from tube to oral feeding in preterm infants. *The Journal of Pediatrics*, (2002), 141, 2, 230-236.

This study looked at whether oral stimulation before the introduction of oral feeds enhances the oral feeding performance of preterm infants born between 26 and 29 weeks gestation. 32 preterm infants were evaluated; half receiving 15 minutes

(Continued on page 10)

© all rights reserved.

Hiro Publishing  
607-B North Greensboro Street  
Carrboro, NC 27510

**Special for Feeding Therapists and  
Professionals!**

Questions, comments, sub-  
missions, 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 to-  
gether.

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

---

## On the Research Front:

*(Continued from page 9)*

of oral stim and the other half receiving a sham stimulation program once per day for 10 consecutive days. Results indicated that the group receiving oral stimulation reached independent oral feeding significantly earlier than the control group and overall intake and rate of milk transfer was better. There was no difference in hospital length of stay. A detailed description of the oral motor program used is provided and could be easily replicated.

**Carruth, PhD RD, Betty Ruth & Skinner, PhD RD, Jean. Feeding behaviors and other motor development in health children (2-24 months). *Journal of the American College of Nutrition*, (2002), 21, 2, 88-96.**

This study monitored 98 infant's gross, fine and oral motor development patterns related to feeding from 2 – 24 months. Mothers were interviewed periodically over the specified time period. Results indicated a wide age range within which healthy children achieved the 33 behaviors identified in the study. Results also describe developmental interrelationships that support the process from moving from being fed to self feeding. Behaviors identified fall into 3 categories of gross motor development, fine motor development, and oral development all related to feeding behavior.

Examples of the 33 behaviors include in the oral motor section, the mean age of a child opening the mouth for a spoon is 4.46 months, bringing top lip down on the spoon to remove food is 7.73 months, eating food with lumps without gagging is 8.7 months, and chewing food that produces juice is 15.28 months. Fine motor examples include, the mean age of a child self feeding a cookie is 7.70 months, brings side of spoon to mouth is 14.37 months, and picks up, dips and brings food to mouth is 16.42 months. Gross motor mean ages were reported as lays on tummy and holds up head at 1.45 months, crawls on hands and knees as 8 months, walks at 11.93 months, and runs without falling as 15.19 months. This is an important and exciting study because of our lack of normative data in pediatric feeding.

---