Dysphagia vs. Prematurity:
Controversies in Neonatal Sucking and Swallowing

Presented by: Marjorie Meyer Palmer, M.A., Speech Pathologist
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Prematurity:

Difficulty with the coordination of pharyngeal swallow and respiration due to immaturity that may result in one or more of the following:

-pharyngeal pooling
-oxygen desaturation
-spells of apnea
-coughing, choking
-color changes
- stridorous sounds with feeding
-aspiration

Dysphagia:

Swallowing disorder with difficulty that can arise in any or all stages of swallow: oral, pharyngeal, esophageal

Oral phase:

- poor bolus collection
- inadequate bolus transport

Pharyngeal phase:

- naso-pharyngeal reflux
- laryngeal penetration
- aspiration

Esophageal phase:

- dysmotility
- retrograde movement

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What you should know about the Nutritive Suck

- swallowing emerges in utero at 13 weeks gestation
- sucking emerges in utero at 18 weeks gestation
- coordination of suck and swallow develops at 32 to 34 weeks gestation or PCA
- coordination of suck, swallow, and breathing occurs at 37 weeks gestation or later
- deglutition apnea episodes reduce as infants mature
- maturation is related to developmental age (gestation) rather than feeding experience
- episodes of deglutition apnea remained more frequent in preterm infants reaching term compared to term infants
- there is a decrease in ventilation during sucking which improves with maturation
- sucking activity is a reflection of increased neurologic maturation in preterm infants
- preterm infants often have difficulty in coordinating the demands of suckle feeding and ventilation
- optimal suckle feeding should logically occur when a regular relationship/coordination exists between pharyngeal swallow and respiration
- non-nutritive sucking has no effect on nutritive suck

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Dysphagia in Infancy

Major causes of impaired suck/swallow in the neonatal period:*

*cerebral – encephalopathies with bilateral cerebral involvement, congenital isolated pharyngeal dysfunction

*nuclear – hypoxic-ischemic encephalopathy, Chiari type 2, Mobius syndrome

*nerve – familial dysautonomia (Riley-Day syndrome), bilateral laryngeal paralysis

*neuromuscular junction – myasthenia gravis, infantile botulism

*muscle – congenital muscular dystrophy, congenital myotonic dystrophy, mitochondrial myopathy

*structural – tracheo-esophageal fistula (TEF), aortic arch, cleft lip and/or palate, macroglossia, micrognathia

*JJ Volpe, Neurology of the Newborn, 2008, page 143.

When Dysphagia is suspected:

- proceed cautiously with oral feeds
- limit bolus delivery size
- allow frequent and adequate breaks for respiration
- allow time for esophageal clearance
- choose feeding position carefully
- goal for the MBS: 5 ml by mouth to start oral feeding

Modified Barium Swallow (MBS) Study with Videofluoroscopy

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Purpose: To demonstrate the infant's ability to successfully take nutrition orally

Pre-requisite for examiner: Knowledge of neonatal sucking and an understanding of the significance of respiration for successful feeding in the infant

Results: To provide recommendations regarding the specifics of successful feeding: position, utensil, flow rate, volume intake, and method.

When to Refer:

*Therapeutic intervention has failed to correct the feeding problem: nipple change, position change, regulation of suck/swallow/breathe, external pacing, change in formula consistency
*Infant continues to be unable to take an age appropriate volume
*There are persistent pulmonary issues
*There is chronic regurgitation, obstructive apnea, etc.

Suggested Protocol:

I. Position: a) side-lying; b) Tumble Forms Feeder Seat; c) held by caregiver
II. Utensil: a) nipple; b) clinic dropper; c) spoon; d) cup
III. Volume Intake: a) 5 ml; b) 10 ml) c) number of swallows recorded
IV. Method: a) regulation; b) external pacing; c) thickening

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Reference List:

Bu'Lock, F., Woolridge, MW, and Baum, JD, "Development of Co-ordination of Sucking, Swallowing, and Breathing: Ultrasound Study of Term and Preterm Infants," **Developmental Medicine and Child Neurology**, 32, 1990, p. 669-678.

Gewolb, IH, and Vice, FL, "Maturational changes in the rhythms, patterning, and coordination of respiration and swallow during feeding in preterm and term infants," **Developmental Medicine and Child Neurology**, vol. 48, no. 7, July 2006, p. 589-594.

Hanlon, MB, Tripp, JH., et.al., "Deglutition apnoea as indicator of maturation of suckle feeding in bottle-fed preterm infants," **Developmental Medicine and Child Neurology,** 39, 1997, p. 534-542.

Medoff-Cooper, B., McGrath, JM, Bilker, W., "Nutritive sucking and neurobehavioral development in preterm infants 34 weeks PCA to term," Am. **J. Maternal Child Nursing**, 25 (2), March 2000, p. 64-70.

Newman, LA., Cleveland, RH, et.al., "Videofluoroscopic analysis of the infant swallow," **Investigative Radiology**, vol. 26, October 1991, p. 870-873.

Palmer, MM, "Identification and management of the transitional suck pattern in premature infants," **Journal of Perinatal and Neonatal Nursing**, 7(1), 1993, p. 66-75.

Palmer, MM, and VandenBerg, KA, "A closer look at neonatal sucking," **Neonatal Network**, Vol. 17, No. 2, March 1998, p. 77-79.

Salib, SA, Aubert, D., et. al., "Cricopharyngeal achalasia-a cause of major dysphagia in the newborn," **Eur. J. Pediatric Surgery**, 9(6), December 1999, p. 406-408.