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Feeding the Late Pre-Term Infant: Assessment and Intervention

Faculty Disclosure

Tricia Armstrong, MA, CLC, CCC-SLP has disclosed no actual or potential conflicts of interest in relation to this educational activity.

During this presentation, the speaker will not be discussing the use of any commercial or investigational product not approved for any purpose by the FDA.

Feeding the Late Pre-Term Infant: Assessment and Intervention

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A lecture discussing techniques and products for effectively feeding late pre-term infants.

Accreditation

Children’s Hospitals and Clinics of Minnesota is accredited as a provider of continuing nursing education by the American Nurses Credentialing Commission on Accreditation.

Children’s Hospitals and Clinics of Minnesota designates this educational activity for 1.0 continuing education hour.

Objectives

The learner will:

- identify oral reflexes in the newborn
- identify feeding readiness and stop cues
- explain the difference in liquid flow rate and its effect on feeding
I. Reflexes

A. Oral Reflexes
1. Root
2. Gag
3. Suck
4. Phasic bite
5. Palomental
6. Transverse tongue

B. Feeding Reflexes
1. Instinctive (1st month of life only)
2. Reflexive (1 month to 3-5 months)
3. Volitional (3-5 months and up)

II. Clinical Assessment

A. Medical history
1. Number of weeks gestation (if <36 expect issues)
2. Physical abnormalities (cleft lip/palate, TE fistula, etc)
3. Neurological issues
4. Syndromes/Chromosome abnormalities (CHARGE, Down syndrome, etc)
5. Cardiac issues (tetralogy of fallot, hypoplastic heart, PDA, etc)

B. Feeding history
1. Current corrected age
2. Current form of nutrition (oral or non-oral)
3. Feeding schedule (every 3 hours, ad lib, etc)
4. Initiation of feeding (corrected age, breast, bottle, etc)
5. Liquid (breastmilk, formula, fortification, etc)
6. What is being used (breast, bottle, specific nipple, etc)

C. Parent “plan” and expectations
1. Breast, bottle, both
2. Specific bottling system

D. Feeding Readiness Cues
1. Physiologic Signs
   - Color (stable pink over entire body)
   - Breathing (regular breaths of 40 to 60 per minute)
   - Visceral (stable digestion with burping, regular elimination patterns)
2. Motor Signs
   - Well rounded slightly bent arms
   - Smooth movements of arms and legs
   - Uses own body to organize self (hands/feet together, hands to face, mouthing/sucking of hands, non-nutritive suck)

E. Stop Signs
1. Color
   - Changes on part or whole of body to pale, red, dusky, or mottled
2. Breathing
   - Ragged/uneven breathing intervals, >60 breaths/minute OR <40 breaths/minute, pauses of >2 seconds, gasps/yawns/coughs

3. State
   - Level of state
     Deep sleep → active sleep → drowsy → quiet → alert → hyperalert → hypoalert → fussy → crying
   - Smooth transition between states
   - Appropriate for situation
   - Stable & predictable cycles
   - Ability to control incoming stimuli

   Adapted from FIRST~ 1996 Browne, MacLeod, Smith-Sharp
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3. Visceral Signs
   - spitting/throwing up, gagging/hiccups, excessive drooling, bowel movement/gas/diarrhea

4. Motor
   - flatness of face/arms/legs/trunk, tight or extended arms/legs/toes/fingers, arching of neck/back, excessive tucking of body, jerky movements, frantic/flailing movements

5. State
   - diffuse states which are difficult to define, rapid changes, wrong state at wrong time, unpredictable cycles, at mercy of stimuli

   Adapted from FIRST-1996 Browne, MacLeod, Smith-Sharp

E. Presentation of Liquid
1. Lip/tongue seal
2. Bolus extraction
3. Bolus management

F. Respiratory Pacing Skills
1. Full term=suck:swallow:breathe
2. Premature=no set pattern, not learned in utero until ~36 wks
3. If more than 4-5 sucks before a swallow will have problems

G. Aspiration
1. Coughing/choking
2. Hiccups
3. Eye watering or widening or reddening
4. Breath holding/desaturation
5. Bradycardia/tachypnea
6. Wheezing/congestion/wet vocal quality
7. Cervical auscultation

III. Intervention

A. Provide appropriate input to regulate:
   1. Physiologic
      - watch color, kangaroo care to regulate breathing/hold close to feeder, monitor pre/during breath rate, be aware of hiccups/reflux/etc
   2. Motor
      - swaddle with arms to face, provide non-nutritive suck on finger/pacifier, hold close to feeder’s body, maintain eye contact
   3. State
      - watch baby’s state and feed when quiet alert, calm if greater state, if lower state wait until signs of readiness could be only minutes

B. Control the flow rate
1. Slow flow nipples
   a. Allows increased control of bolus
   b. Increases time to protect the airway
   c. Best for breastfeeding babies
   d. You cannot buy rubber/latex nipples in stores
      so babies who use “standard” brown nipples; parents cannot buy outside of hospital

2. Bottles
   a. Bigger bottle=slower flow
   b. Vacuum free bottles=slower flow

3. Side lying
   a. Allows liquid to pool in the cheek instead of the back of the throat
   b. Allows increased time to swallow/protect airway
C. External Pacing
1. watch baby
2. count the sucks to breath rhythm
3. If greater than 5 sucks break seal (tip milk out of nipple, nipple in cheek, remove bottle), wait for breath, put nipple in and repeat
4. If breastfeeding, allow up to 10 sucks and then break seal with finger or pull from breast
4. consistent external pacing will increase speed for baby to do independently
5. can help prevent episodes of trace aspiration which can increase feeding problems

D. Thickened Liquids: done after documented aspiration of thin/safe swallow of thickened on VFS
1. Rice cereal
   a. Use only with formula
   b. Adds up to 9 calories per oz
   c. Consistent thickness throughout feeding
   d. Inexpensive and provided by WIC
   e. Easy to obtain by families
   f. constipating

2. Simply Thick
   a. Only thickening agent that will thicken breastmilk
   b. Can continue use of breastmilk despite aspiration
   c. Not formally tested with preemies
   d. Cost ($40 per 100pk=400oz)
   e. Adds volume without adding calories so serves to “dilute” breastmilk-use with caution and nutrition guidance
   f. Unique viscosity which results in aspiration of this consistency with some infants but not with rice cereal, should be assessed during VFS if mom is breastfeeding

3. Thick and Easy (aka Thick-It or Thicken Up)
   a. Mixes differently with different formulas
   b. Mixes differently with different temperatures
   c. Thickens as is stands beyond desired consistency
   d. Decreased calories compared to rice
   e. Special order item by pharmacy
   f. Not covered by WIC or health insurance

4. Follow up
   a. Repeat VFS in 10-14 weeks
   b. Separate assessment at breast (not all babies who aspirate have same issues at breast)
   c. Do not recommend changing bottling plan before repeat VFS

IV. Videofluoroscopic Swallow Study (VFS)
A. Thin liquids (assessed 1st using current plan)
B. Honey thick liquids
   1. Rice cereal (1 tbsp rice cereal per 1oz formula)
   2. Simply Thick (1 packet per 4oz fortified breastmilk)
   3. Thick and Easy (recipe varies)
C. Upper GI (UGI)
   1. Used to assess for reflux and structural abnormalities not aspiration
   2. Done in correlation with VFS (same study in St Paul only)
   3. Not only or ideal test to assess for reflux
V. Lessons for Practice

A. Consistency
   1. Babies do best with a consistent plan
   2. Avoid any changes to plan more often than every 2-3 days

B. Documentation
   1. Safest for baby
   2. Best practice

C. Communication
   1. Consistent terminology and rating both written and verbal
   2. Accurate reports to MD's and NNP's
   3. Empower parents

Myths

- 34-36 week babies feed the same as a full term baby
- The slower the flow, the slower they eat
- The baby “falls asleep” while eating
- It is not a good idea for a breastfeeding baby to suck on anything but the breast

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