NICU Nutrition

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Objectives

- Review Donor Breast Milk guidelines and application of usage in the NICU
- Discuss difference between powder and liquid fortifiers
- Review the practices of medications delivery with feeds
- Discharge feeding guidelines
Donor Breast Milk Guidelines

- <34 week
- <2.0 kg Infant
- GI Anomalies
- Attending preferences
  - Feeding Protocol 1500 gm and/or up 34 weeks Gestational Age
Donor Breast Milk

**What is evidence and research:**

- **AAP Guidelines:**
  - <1500 gm infant
  - Up to 4 weeks or till corrected age 32 week, whichever comes first

- **Growth:**
  - With fortification lower protein and micronutrient delivery
Human Milk Fortifiers

- **Powder Fortifiers**
  - Contribute to osmotic load
  - Provide increase amount of vitamins/minerals to meet needs of preterm infants
    - Increase calories, protein, fat, and carbohydrate of breast milk.
    - Concern for microbial contamination since not sterile
Human Milk Fortifiers

- **Liquid Fortifiers:**
  - Add to osmotic load
  - Displace the breast milk
  - Sterile Product
  - Increase both macro/micro nutrients when mixed with breast milk
- **Mead-Johnson versus ABOTT/ROSS Liquid Fortifier:**
  - Acidify product: poor growth, increase acidosis, diaper dermatitis, and high bun
  - HPC: extensively hydrolyzed, limited research on high risk infants
Human Milk Fortifier

- **Prolacta**
  - Term Human milk enriched with vitamins and minerals
  - Displacement of breast milk
  - Cost
  - Research:
    - Decrease NEC in the NICU Units which had high NEC rate, but result is slower weight gain and growth, and increase length of stay
Modular Components

- **Liquid Protein versus Beneprotein**
  - **Beneprotein**: not indicated to be used for children under 1 year of age
  - **Liquid Protein**:
    - Extensive hydrolyzed protein
    - Costly
    - Contribute to osmotic load
    - Increase waste unless multiple infants are receiving it
    - Addition to fortified breast milk provides achieves 4 gm/kg of protein to support lean body mass growth
    - Can be added once enteral feed volume at 80 ml/kg and TPN is being wean down
Modular Components

- **MCT oil: Medium Chain Triglyceride**
  - Binds to the feeding tube
  - Increase GI distress
  - Infant formulas already high in MCT
  - Requires physician prescription if sent home it

- **Duocal**
  - Provide additional calories from both carbohydrate and fat
  - Powder: increase risk for contamination and microbial growth
Preterm Formulas

- Premature Enfamil 20 cals/oz, 24 cals/oz, 24 cals/oz High Protein, and 30 cals/oz
  - Do not require addition of Liquid Protein
- Similac and pEnfamil: intake of 150 ml/kg will not require additional iron supplementation
- 30 calories/oz formula can be mixed with 24 cals/oz fortified Breast Milk or formula to achieve 26 cals/oz, 27 cals/oz, and 28 cals/oz
Medications with Feeds

- **Goals:** Advance feed in step wise approach till goal feed is established
  - Fortify feed to 22 cals/oz once enteral total fluid goal 100 ml/kg
  - Increase volume Day #2 on BM 22 cals/oz
  - Fortify to 24 cals/oz
  - Increase volume Day #2 on BM 24 cals/oz

- **Goal feeds for most infants:** 150-160 ml/kg of 24 cals/oz breast milk or formula
Medications with Feeds

- Once at goal feed:
  - Consider converting IV medications, one at time to oral medications
  - Do not start oral electrolyte supplements same day as converting IV medications
  - Divide dose of medications and electrolyte supplements throughout out day with each feed
  - Wait to start multi-vitamins and iron
Discharge Feeding Guidelines

- **Very Low Birth Weight Infant:**
  - Breast Milk/Breast Feeding Alternating Neosure or Enfacare for 2-3 months post discharge (52 weeks) till growth is evaluated by Pediatrician
  - CLD/BPD and infant with fluid restriction and/or EUGR may need 27 cals/oz Neosure/Enfacare or Breast Milk
  - Benefit from transition to Neosure/Enfacare till corrected 9 months for both physiological and neuro-developmental outcome at 2 years of age
  - May need additional iron and vitamin supplement (specifically Vitamin D) at time of discharge
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Discharge Feeding Guidelines

- **Infant at birth 2.5kg:**
  - Can be discharge home exclusively breast feeding and breast milk
  - If formula supplementation is required, can be on term infant formula
  - Will need polyvisol or D-visol for additional 400 IU Vitamin D/per day for bone growth.
Weekly note is written in each patient

Complete the Nursing Admission Assessment

- Place a nutrition consult for all high risk infants
- Request for consult when starting 27 calories/oz feeds are ordered
- Request for consult when mixing clarification for feeding orders
- Majority of formulas and liquid protein comes from central supply exception of specialty formulas, Neocate, and Elecare comes Nutrition Department
Thank You

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