Feeding VLBW Infants

East Bay Newborn Specialists Guideline

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Target Population

Very low birth weight or preterm infants (< 33 weeks gestation)

Background

Early initiation of enteral nutrition is advocated as a supplement to parenteral nutrition in the ICN. The advantages of early enteral feeds in this patient population include: shorter time to reach full enteral feeds, less time under phototherapy, lower incidence of cholestasis, less feeding intolerance, with no increased incidence of NEC.

It has long been known that starvation induces atrophy of the GI tract, and studies in both humans and animals have shown that direct contact of gut tissues to human milk increases intestinal mass and enhances DNA synthesis rates. The majority of the direct trophic effects induced by human milk appear to be mediated by growth factors such as epidermal growth factor, trophic pepetides, and insulin. Early enteral feeding also enhances maturation of the motor responses of the small intestine of the preterm infant. More recent studies have also shown that nutritional strategies instituted very early in life may have a lifelong impact on both mental and motor outcomes.

Guidelines by Birth Weight and Gestation Age

In all cases, feeds to begin within 1-2 days of birth in clinically stable preemies

Birth weight 500-1250g:

- Start with 10-20 ml/kg/d x 3-5 days
- Then advance feeds by 10-20 ml/kg/d

Birth weight 1250g through gestational age 32 wks:

- Start at 20-30 ml/kg/d
- Then advance feeds by 20-30 ml/kg/d

For all weights:

- Change to 22 kcal/oz when enteral feeds reach 80 ml/kg/d
- Change to 24 cal/oz when enteral feeds reach 100 ml/kg/d
- D/C IL at 100-120 ml/kg/d
- D/C HA and PICC at 120 ml/kg/d

Relative contraindications:

Decisions about beginning/advancing feeds may need to take into account the following:

- Birth depression/asphyxia
- Symptomatic PDA is a contraindication to advancing feeds. Prophylactic indocin is not a contraindication to beginning trophic feeds with colostrum
- Systemic hypotension requiring Dopamine
- Persistent metabolic acidosis

Additional notes:

- Use EBM whenever available. In ELBW infants, consider using BBM if EBM is unavailable. Feeding preterm formula may increase nutrient input and growth rates, but may be associated with higher incidence of feeding intolerance and NEC.

References

- Bombell S, McGuire W. Early trophic feeding for VLBW infants. Cochrane Database of Systematic Reviews 2009, Issue 3. Art. No.:CD00504.

- Quigley M, Henderson G, Anthony MY, McGuire W. Formula milk versus donor breast milk for feeding preterm or LBW infants. Cochrane Database of Systematic Reviews 2007, Issue 4. Art No. :CD002971.

- Schurr P, Perkins, EM. The Relationship Between Feeding and Necrotizing Enterocolitis in VLBW infants. Neonatal Network. 2008; 27(6):397-407.

- Thureen PJ. Early Aggressive Nutrition in the Neonate. Pediatr. Rev. 1999; 20:e45-e55.

NURSING GUIDELINES FOR RESIDUALS
with BOLUS GAVAGE FEEDINGS

- "RESIDUAL" = "Volume in syringe after aspirating via NG/OG" (disregard tubing volumes).
- Evaluate patient and check for residual prior to each bolus gavage feeding.
- Up to 3 mL residual is considered physiologic gastric contents.

NORMAL
- Normal physical exam. (i.e. no "abnormal" findings*)
- Residual is non-bilious and is **≤3mL.**

→ **Return residual & feed full volume.**

THINK TWICE
- Normal physical exam.
- Residual is non-bilious and is **>3mL** but **≤50%** of prev. fdg vol.

→ First Occurrence?

- Yes → **Return residual & feed full vol**
  - If residual **<5 mL**: return & feed full vol.
  - If residual **>5 mL**: return only 5 mL & feed full vol.
- No
  - Hx of residuals, but not w/prev fdg → **Return residual & feed full vol**
  - Second consecutive residual → **Notify MD/NP immediately**

RN Considerations:
- Position prone on right side
- If no stool ≥24hrs, glycerin supp. w/order.

***ABNORMAL (any of the following)**
- Residual **>3mL & >50%** of prev fdg vol.
- Abnormal abdominal exam.
- Grossly bloody or bilious residuals.
- Repeated emesis.
- Frank/Obvious blood in stool.
- Cardiopulmonary instability.
- Clinical deterioration.

→ **Notify MD/NP immediately. Do not proceed with guideline.**