

Enteral Protein Supplementation for VLBW Infants

East Bay Newborn Specialists Guideline

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03-01-11

Purpose: To define the guidelines for providing enteral protein supplementation in very low birth weight infants.

Background: Breast milk is the preferred form of nutrition for premature infants, but may not supply sufficient quantities of protein, calcium, phosphorus, vitamins, and iron. Premature infants receiving breast milk fortified with protein and minerals in less volumes of milk experience greater weight gain, linear growth, and neurodevelopmental outcomes compared to infants receiving unfortified breast milk exclusively.

Although the content of protein in premature human breast milk may be variable, it is initially high but declines significantly 2-4 weeks after birth from 1.4 gm protein/100ml to 1 gm protein/100ml. Therefore, the protein content of breast milk fortified to 24kcal/oz declines from approximately 2.5 gm protein/100ml to 2.1 gm protein/100ml. The protein needs of the VLBW/ELBW infant in order to adequately support growth and nutrient needs are 3.5-4.5 gm/kg/day and cannot be met with routine fortification alone.

Beneprotein powder is a 100% whey protein isolate, lactose-free, gluten-free, and kosher supplement that provides 1.3 gm protein (5.6kcal) per teaspoon. By adding ½ teaspoon/100ml, the protein concentration of fortified breastmilk increases by 0.7 gm/100ml.

Criteria for use:

- Birth weight less than 1500 grams
- Tolerating greater than or equal to 150ml/kg/day of breast milk fortified to 24kcal/oz for at least one week

Calculations:

- ½ teaspoon Beneprotein powder/100ml 24kcal/oz EBM = 2.7 gm protein/100 ml
- 150ml/kg of 24kcal/oz EBM with Beneprotein = 4 gm/kg protein
- 160 ml/kg of 24kcal/oz EBM with Beneprotein = 4.3 gm/kg protein

Discontinuation:

- Consider discontinuing protein supplementation when patient reaches 36-40 wks post conceptual age and meets appropriate growth standards
- Patients will not be discharged home with protein supplementation routinely

Monitoring:

- Blood urea nitrogen (BUN) levels may be followed every other week with other metabolic bone labs until stable
- Weekly length and head circumference

Dispensing/mixing (Children's approach):

- Individual packets will be ordered for each individual patient from materials management
- RN mixes at breast milk zone into breast milk
- ½ teaspoon of Beneprotein powder is measured with single use medicine cups and added to 100ml of 24kcal/oz fortified breast milk
- Beneprotein powder package is single use only and should be discarded after nurse prepares 24 hour volume of breast milk

- 24 kcal/oz fortified breast milk with Beneprotein can be refrigerated and used for up to 24 hours or up to 4 hours hang time for continuous drip feeds

Ordering (Children's approach):

- Beneprotein is ordered in Meditech thru the pharmacy PREMATURE FORMULA order set along with other nutritional additives to breast milk.

References:

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- Embleton ND. Protein Requirements in Preterm Infants: Effect of Different Levels of Protein Intake on Growth and Body Composition. *Pediatr Research* Vol. 58, No. 5, 2005, pp 855-860
- Tsang RC. 2005 Nutrition of the Preterm Infant. Scientific Basis and Practical Guidelines, Digital Educational Publishing, Inc, pp 45-80
- Ziegler EE. Protein Requirements of Very Low Birth Weight Infants. *J Pediatr Nutr* 45:2007, S170–S174