

Enteral Feeding of the Preterm Infant

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Education Gaps

1. Clinicians should be able to initiate and advance enteral feedings for the preterm infant safely and effectively.
2. Clinicians should recognize the importance of appropriate enteral feeding and early nutrition for the long-term growth and neurodevelopment of preterm infants.

Abstract

Premature infants commonly suffer from extrauterine growth restriction from inadequate nutrition and the loss of the last months of gestation, a critical period for brain and body growth. Providing optimized nutrition for the premature infant is a crucial task of the neonatologist and has a significant impact on the future growth and neurodevelopment of these infants. Enteral feeding is nuanced in the preterm population and requires specific knowledge of the nutritional requirements of the preterm infant and the various substrates and methods available to achieve proper nutrition.

Objectives After completing this article, readers should be able to:

1. List the macronutrient requirements of the preterm infant.
2. Describe the nutritional composition of human milk, donor breast milk, and preterm infant formula.
3. Recognize the benefits of human milk for the preterm infant and that preterm and term human milk have different compositions.
4. Recognize that human milk needs to be fortified to meet the nutritional needs of preterm infants and describe how standard infant formulas are altered to meet the needs of preterm infants.
5. Explain advantages and disadvantages of the use of donor human milk.

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ABBREVIATIONS

BUN	blood urea nitrogen
CA	corrected age
EUGR	extrauterine growth restriction
GA	gestational age
HM	human milk
HMF	human milk fortifier
NEC	necrotizing enterocolitis
PMA	postmenstrual age
VLBW	very low birthweight

INTRODUCTION

The last months of gestation are characterized by rapid growth and brain development. Infants born prematurely are deprived of this experience. It is not

surprising that most preterm infants experience extrauterine growth restriction (EUGR) and are at risk for developmental delays. Appropriately feeding the preterm infant is one of the most crucial tasks of the neonatologist.

Most infants born at 24 to 29 weeks' gestation experience EUGR and their weights are at less than the 10th percentile at discharge or 36 weeks' postmenstrual age (PMA). There are many reasons for this inadequate growth. The nutritional needs of the preterm infant are not fully understood, so it is difficult to know what to provide and how to do so. Even when good nutrition is prescribed, the infant may not actually receive the full benefit because feedings may be suspended or other complications may ensue. Preterm infants have increased metabolic demands from illness severity and respiratory distress, which affect their ability to absorb and use nutrients. They often have decreased gut motility and poor tolerance of enteral feeding from medication exposure and underdeveloped gut mucosa. An association between severity of illness, poor linear growth, and decreased fat-free mass has been documented. Poor early growth is associated with decreased neurodevelopmental and growth outcomes at 18 to 24 months' corrected age (CA), with early nutrition having an impact of 6 to 15 IQ points in various studies. Children are less likely to have growth parameters lower than the 10th percentile at 18 months' CA if higher in-hospital growth rates are achieved, as well as lower incidences of cerebral palsy, neurodevelopmental impairment (including blindness and deafness), Bayley and Psychomotor Development Index scores less than 70, and rehospitalizations. Faster weight gain has been reported in infants who receive fewer days of parenteral nutrition, initiate enteral feedings sooner, and attain full enteral feedings earlier. Increased severity of illness, particularly the need for mechanical ventilation during the first week of life, greatly influences decisions about early feeding. Less critically ill infants are given significantly more enteral and parenteral nutrition during the first 3 weeks after birth. There is no evidence to support limiting any form of nutrition in infants receiving mechanical ventilation.

Poor nutrition may reduce immune competence and decrease energy stores, rendering preterm infants more susceptible to infection and less able to recover from acute and chronic disease. Lack of enteral nutrition causes gastrointestinal mucosal atrophy and leads to decreases in protective mucus, decreased enzyme activity, and increased gut permeability. These findings may cause dysfunction and feeding intolerance, and are associated with a greater risk for necrotizing enterocolitis (NEC). Enteral nutrition is paramount for gastrointestinal growth and development.

Early enteral feeding decreases the time to reach full feeding volume, as well as length of stay without increasing NEC or serious infections. Enteral feeding should not be initiated in infants who are hemodynamically unstable or have severe left-to-right ductal shunting, abnormal gastrointestinal examination, bilious gastric fluid, severe metabolic acidosis, sepsis, or hypoxemia.

GOALS OF ENTERAL NUTRITION

Extreme prematurity is a nutritional emergency. Fetal body composition and size at various stages of gestation are used as a reference standard for extrauterine growth and accretion rates of protein, fat, and minerals for preterm infants. Optimal nutrition should maintain lean body mass and bone density, maximize neurodevelopment, minimize complications (NEC, chronic lung disease, and infection), reduce postnatal weight loss with earlier return to birthweight, and improve catch-up growth. The targeted weight gain is 18 g/kg per day, head circumference growth of more than 0.9 cm/week, and length gain of 1 cm/week. The smallest and least mature infants need the most protein, but energy needs escalate with increasing body weight. Early protein intake is a major contributor to improved weight gain velocity and a decreased risk of neurocognitive impairment. For appropriate growth, a caloric goal of 120 kcal/kg per day and protein goal of 3.8 g/kg per day are recommended in very low birthweight (VLBW) infants within the first 7 days after birth (Table 1). This amount of protein can only be provided through enteral fluid of more than 150 mL/kg per day of fortified human milk or "high protein" preterm formula. Infants born at less than 31 weeks' gestational age (GA) typically have an 18 g/kg protein deficit and 600 kcal/kg deficit by 14 days of age. Proportional growth, rather than absolute weight gain, should be monitored to evaluate growth. Many studies suggest that reduction in practice variation improves patient outcomes. The establishment of feeding guidelines reduces EUGR and achieves full feedings sooner. Consulting a neonatal specialist (registered dietitian or nutritionist) to make recommendations and monitor guideline compliance may facilitate nutritional success.

SUBSTRATES FOR ENTERAL FEEDING

Human Milk

The American Academy of Pediatrics recommends that preterm infants should exclusively receive human milk (HM), preferably from their own mothers if available, or if not available, pasteurized donor HM. Breastfeeding

TABLE 1. Nutritional Needs of the Preterm Infant

NUTRIENT	RECOMMENDATION (PER KG/DAY)
Energy	110–130 kcal
Protein	3.5–4.5 g
Fat	4.8–6.6 g
Carbohydrate	11.6–13.2 g
Calcium	120–200 mg
Phosphorus	60–140 mg

Adapted from Koletzko B, Poindexter B, Uauy R. Nutritional Care of Preterm Infants: Scientific Basis and Practical Guidelines. Basel, Switzerland: Karger; 2014.

provides developmental benefits that extend into adolescence. The use of exclusive HM when paired with standardized feeding guidelines can improve tolerance of feedings and decrease the incidence of NEC. Decreased rates of NEC have been seen with an exclusive HM-based diet compared with an HM-based diet supplemented with bovine milk-based products. The number needed to treat with exclusively fed HM is 10 to prevent 1 case of NEC, and 8 to prevent 1 case of “surgical NEC” or death. HM-fed infants have decreased rates of late-onset sepsis, urinary tract infection, diarrhea, and upper respiratory infection. The protection against NEC and sepsis appears to be dose-dependent. HM is also associated with decreases in the incidence and severity of retinopathy of prematurity, improved neurodevelopmental and visual outcomes, and improved feeding tolerance compared with formula. Improved tolerance allows infants to receive fewer days of parenteral nutrition, significantly decreases morbidity, and decreases length of stay.

HM contains bioactive factors that benefit growth and development. This includes improved immunity with antibacterial, antiviral, and anti-inflammatory effects. A healthy microbiome is promoted by the high oligosaccharide content of HM. The oligosaccharides have a prebiotic and antiadhesive effect. This blunts the intestinal inflammatory response to pathogenic bacteria. The gut of the HM-fed infant is colonized mostly by *Bifidobacteria* and *Lactobacilli* as opposed to the coliforms, enterococci, and *Bacteroides* species that colonize formula-fed infants. Abnormal colonization is also promoted by delayed enteral feeding, the use of broad-spectrum antibiotics, and exposure to the pervasive organisms in the NICU milieu. Maturation of the gastrointestinal tract is supported by components in HM resulting

in improved motility, smaller gastric residuals, and decreased intestinal permeability. Preterm infants have decreased ability to absorb fats. Enzymes in HM allow for improved fat absorption and intestinal lipolysis.

Milk from mothers of preterm infants initially has higher protein and mineral content than term HM. Unfortunately, HM is slightly low in chloride and is deficient in protein, calcium, and phosphorus to meet the needs of the preterm infant. The content of preterm HM varies widely in protein and fat content depending on time of day, the individual mother, stage of lactation, time within a single expression of HM, method of collection, storage, and mode of enteral feeding. By 42 days of lactation, preterm milk protein content stabilizes at approximately 0.8 to 1 g/dL, which is similar to term milk.

Maternal HM

Pumping should be started as soon as possible after delivery. Initiation of lactation can be difficult so the advantages of breastfeeding should be emphasized, along with continued encouragement. Most hospitals in developed countries have lactation consultants to facilitate this. Skin-to-skin contact can increase the success of lactation. Breastfeeding mothers report feeling empowered, self-confident, and more bonded to their infants. Frequent milk expression throughout the day should be implemented; more than 100 minutes of expression per day is optimal. Electric breast pumps are more efficient than hand expression and should be made available to mothers. Mothers must be advised of the importance of colostrum.

Donor HM

For VLBW infants, if maternal HM is not available, pasteurized donor HM is preferred over formula. Many feeding guidelines recommend donor HM through 33 weeks' PMA to reduce the rate of NEC, which normally declines after 32 weeks. Pasteurization removes potentially harmful bacteria, but unfortunately also removes lipases, lymphocytes, and other beneficial components of HM. Analysis of pooled donor HM reveals a consistent content of approximately 0.9 g/dL protein and 4 g/dL fat, with an energy content of 48.3 kcal/100 mL.

Preterm infants fed donor HM demonstrate slower growth rates and biochemical abnormalities that suggest insufficient protein and mineral intake. Decreased weight gain is observed when infants receive larger amounts of milk and more nutritional supplements. Despite these shortcomings, donor HM is a valuable resource. Seventy-two percent of mothers of preterm infants are unable to provide all the milk needed for an exclusive HM diet. Donor

HM costs \$27 to \$590 per NICU infant during hospitalization (based on an average price of \$4/oz).

Premature Formula

Formula specifically designed for preterm infants is appropriate to use if maternal or donor HM is not available. The specific formulations are based on fetal accretion rates and studies of metabolism and gastrointestinal tract development. Premature formula provides greater amounts of protein, calcium, zinc, iron, phosphorus, and copper than term formula without exceeding the overall energy intake goal (Table 2). Despite sodium content being higher than HM or standard infant formula, some infants may still require supplementation. Premature formula is composed mainly of whey, rather than casein, reducing the frequency of metabolic acidosis. Compared with standard formula, the protein content is 50% greater and provides 3 to 4 g/kg per day. This improves weight gain and protein accretion. Vitamin concentration is also higher. Fat content is provided by nearly equal quantities of long-chain and medium-chain triglycerides. Preterm infants have a relative lactase deficiency, and premature formula has a lower lactose concentration. Standard premature formula has low iron concentration (3 mg/L), but higher iron versions are available that provide 15 mg/L, which is optimal for a discharge formula. Use of premature formula results in higher verbal IQ scores (even into adolescence) than when term formula is used for preterm infants.

Infants with a birthweight of less than or equal to 1,800 g and GA of less than or equal to 34 weeks at birth with no available HM or needing HM supplementation should be provided 24 kcal/oz premature infant formula. This formulation is iso-osmolar. Infants who are volume restricted or have inadequate growth may benefit from hypercaloric formula. Ready-to-feed 30-calorie preterm formula is available. It reduces mixing errors and eliminates powdered formula use in this immunocompromised population. It provides the same amount of protein as standard preterm

formula but in less volume and has more calories from fat and less calories from carbohydrates. The osmolality of 30 kcal/oz ready-to-feed formula is 325 mOsm/kg of H₂O.

FORTIFICATION

Human Milk Fortifiers

HM does not provide adequate nutrients for optimal growth. Fortification is needed, especially to meet protein needs. Fortification provides additional protein, calcium, phosphorus, vitamin D, and sodium. Human milk fortifiers (HMFs) vary in micronutrients because the requirements of premature infants for most micronutrients are only approximated. Multicomponent HMFs improve postnatal weight gain, linear growth, and brain growth.

Because of the variable composition of HM, appropriate fortification, especially of protein, is challenging and often inadequate, resulting in EUGR. Fat content can also be decreased by the collection, storage, and administration of HM, resulting in lower energy content. HM analyzers can help optimize fortification. Only 76% of the total nitrogen in HM is true protein, so most analyzers overestimate protein content by about 24%. If a milk analyzer is not available, fortification can be adjusted based on blood urea nitrogen (BUN) concentration (goal: 3.2–5 mmol/L) as a surrogate for adequate protein supply. While custom fortification may provide more appropriate amounts of nutrition to an individual infant, generalized fortification strategies are simpler and less prone to error. HMFs provide additional protein from either cow milk fractions or donor HM. Fortification increases the osmolality by 35 to 95 mOsm/kg H₂O, which can be further increased if the fortified milk is left standing.

Fortifiers are available as powders or liquids in premeasured quantities, which are added to specific volumes of HM. No significant long-term adverse effects due to HMFs have been reported. The higher osmolality resulting from the addition of HMF has not been associated with NEC or intestinal injury. Introduction of fortification can slow

TABLE 2. Nutrition Provided by Unfortified Substrates

Per 100 mL	kCal	PROTEIN (g)	FAT (g)	CHO (g)	Ca (mg)	P (mg)
Preterm human milk	67	1.4	3.8	6.5	24.4	12.5
Donor milk	65–67	0.9–1.2	3.2–3.6	7.2–7.8	24.4	12.5
Preterm formulas (24 kcal/oz)	80	2.4	4–4.3	8.1–8.7	130–143	66–79

CA=calcium; CHO=carbohydrate; P=phosphorus. From Adamkin DH. Nutritional Strategies for the Very Low Birthweight Infant. New York, NY: Cambridge University Press; 2009.

gastric emptying and cause increased residuals. The antibacterial activity of HM can be diminished by added iron in fortifiers.

Fortification to prevent poor growth and osteopenia should be started in infants of less than 32 weeks' GA or less than 1,500 g birthweight. Appropriate fortification must be initiated no later than when HM enteral feedings reach 100 mL/kg per day but may be started as early as 50 mL/kg per day. Fortification of even the first feed has been well-tolerated. When using donor HMF, fortification can be started at low volumes, such as at 40 mL/kg per day. Some NICU feeding guidelines initiate fortification at half strength and advance to full strength; however, it is more commonly started at full strength.

HM can be mixed with 24 kcal/oz preterm formula to make 22 kcal/oz formula with enhanced nutrients. Portions of a 30 kcal/oz ready-to-feed liquid premature formula can be added to HM to make 24 or 25 kcal/oz feeds with the added benefit of avoiding nonsterile powders. As this practice dilutes the HM, the benefits of HM theoretically may decrease (Table 3).

Powder Fortification

Historically, there has been a fear of "high" protein content in premature formulas. These concerns arose after a study in the 1970s demonstrated that high quantities of poor-quality protein (6–7.2 g/kg per day) increased the risk of neurodevelopmental impairment. Powder fortifiers were developed during this era and provide 1 to 1.1 g/dL of protein, levels that do not meet the protein needs of preterm infants. The Academy of Nutrition and Dietetics and the Centers for Disease Control and Prevention do *not* recommend the use of powdered formula fortification in the NICU because of the potential for infectious complications.

Liquid Fortifiers

Bovine milk-based fortifiers add 1 to 1.8 g/dL of protein. HM-based liquid fortifier adds 0.6 g/dL of protein when mixed at 80 kcal/dL. However, the amount of protein added increases as the ratio of fortifier to milk increases and can be as high as 1.6 g/dL when it is mixed 1:1 with HM, resulting in a 100-kcal/dL formula. The dilution of HM increases as fortification increases. Commercially available HM donor milk has +4, +6, +8, and +10 formulations to provide 24 to 30 kcal/oz of protein. Liquid fortification results in better weight, head circumference, and linear growth without differences in tolerance or days to achieve full feedings. Liquid fortification is associated with increased prealbumin, albumin, and BUN but does not appear to increase the incidence of NEC or sepsis.

HOW TO GIVE ENTERAL FEEDINGS

Initiating and Advancing Feedings

There is no consensus on the best approach to provide enteral feedings to a preterm infant. However, there are basic principles. Minimal enteral nutrition/trophic feedings/gut priming are small feedings of less than or equal to 24 mL/kg per day and are thought to promote gastrointestinal maturation, reduce mucosal atrophy, and protect against NEC. Trophic feedings should be started as soon as possible. They are usually given for 1 to 3 days or more, depending on clinical status. Typically, only small amounts of colostrum are available for several days after birth. In such cases, clinicians should consider supplementing with donor breast milk or preterm formula. Ideally, enteral feedings should be started within 48 hours of birth, with delays up to 72 hours because of parental request to await the mother's own milk production. Delays in initiation of enteral feedings may occur because of clinical reasons,

TABLE 3. **Nutrition Provided with Different Commercial Human Milk Fortification Strategies**

Per 100 mL	kCal	PROTEIN (g)	FAT (g)	CHO (g)	Ca (mg)	P (mg)
PTHM + SSC30 (4:3 ratio, 24 kcal/oz)	80	1.7	4	5.6	72	40
PTHM + SHMF (1 pkt/25 mL, 24 kcal/oz)	80	1.9	3.3	6.7	112	63
PTHM + EHMf (1 pkt/25 mL, 24 kcal/oz)	80	1.8	3.8	5.6	77	42
PTHM + SSC30 (1:1 ratio, 24 kcal/oz)	83	1.9	4.2	6.2	84	47
Prolacta +4 (25 kcal/oz)	100	2.3	4.9	7.3	128	70

CA=calcium; CHO=carbohydrate; EHMf=Enfamil® Human Milk Fortifier; P=phosphorus; PTHM=preterm human milk; SHMF=Similac® Human Milk Fortifier; SSC30=Similac® Special Care®.

Adapted from Adamkin DH. 2009. Nutritional Strategies for the Very Low Birthweight Infant. New York, NY: Cambridge University Press.

such as treatment with vasopressor agents in a severely ill premature infant.

Advancement of feedings by increments of 20 to 30 mL/kg per day is reasonable for 1,000 to 1,499-g birthweight infants. However, for those weighing less than 1,000 g, lower volume advancement is generally used. Nevertheless, slower rates of advancement (<24 mL/kg per day) have not been shown to reduce the risk of NEC in VLBW infants. Faster advancement (up to 35 mL/kg per day) shortens the time to achieve full feedings and regain birthweight without increasing NEC. Feedings should be advanced with goals of achieving an enteral volume intake of 150 to 160 mL/kg per day, as well as 110 to 130 kcal/kg per day energy and 3.5 to 4.5 g/kg per day protein.

Bolus versus Continuous Feedings

Studies have failed to demonstrate differences between bolus and continuous feedings for VLBW infants. Systematic reviews comparing these methods have shown no differences in time to achieve full oral feedings, length of stay, NEC incidence, or postnatal growth rate. However, in infants weighing less than 1,250 g, continuous feedings may improve weight gain and lead to earlier discharge. Traditionally, gavage tube feedings were given as intermittent boluses using gravity for 10 to 30 minutes every 2 to 3 hours. Studies suggest that feedings every 2 hours improve feeding tolerance and reduce the time to achieve full volume. For some infants, especially those with feeding intolerance, slow bolus feedings for 30 to 120 minutes may be better. Continuous infusions can lead to fat loss, with up to 30% of the energy lost in the tubing. However, for VLBW infants, continuous feedings have been used to decrease energy expenditure, improve gastrointestinal maturation, reduce reflux, and improve feeding tolerance.

Route of Feeding

Prolonged gavage tube feeding is often necessary for preterm infants secondary to neurologic immaturity. Systematic reviews have not found benefits of nasal versus oral gavage tube placement. Transpyloric feeding should generally be avoided when possible, because it has been associated with increased mortality and gastrointestinal disturbances. This may be due to bypassing gastric acids (which destroy bacteria). Non-nutritive sucking starting around 32 weeks' PMA can facilitate the transition from tube feedings to nipple feedings. Once breastfeeding begins, higher caloric supplementation may be needed to provide adequate energy and protein.

Assessing Intolerance

Gastric residuals do not have predictive value for feeding tolerance. They occur frequently in the neonatal period from gestationally appropriate physiologic slow gastric motility and are virtually always benign and not indicative of NEC. Abdominal examination (assessing for distention), pattern and consistency of stools, and other clinical findings are much more informative than residuals. Volumes less than 4 mL/kg or less than 50% of a feeding given 3 hours earlier are not indications to withhold or reduce enteral feeding unless other significant clinical signs are present. Occult blood in the stool, increased abdominal girth, high urine specific gravity, and delayed passage of meconium or stool are all typically minimal obstacles in initiating and advancing feedings. If enteral feedings are held to evaluate for NEC or another disease, they should be restarted as soon as the clinical status of the infant allows, even if it is only within a few hours.

CONCLUSION

Premature infants commonly suffer from EUGR from inadequate nutrition and loss of the last months of gestation, a critical period for brain and body growth. Providing optimized nutrition for the premature infant is a crucial task of the neonatologist and has a significant impact on the future growth and neurodevelopment of these infants. Enteral feeding is nuanced in the preterm population and requires specific knowledge of the nutritional requirements of the preterm infant and the various substrates and methods available to achieve proper nutrition.

American Board of Pediatrics Neonatal-Perinatal Content Specifications

- Know the differences in the nutritional composition of human milk and infant formula.
- Recognize the effects of different methods of processing of human milk, such as freezing, pasteurization, sterilization, and microwaving.
- Know that human milk needs to be fortified in order to meet the nutritional needs of preterm infants.

Suggested Reading

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1. Early enteral nutrition is important for gastrointestinal growth and development and has been shown to improve weight gain in preterm infants. Which of the following statements regarding early enteral nutrition is FALSE?
 - A. The lack of enteral nutrition causes mucosal atrophy.
 - B. Early enteral nutrition decreases the time to reach full feeding volumes.
 - C. Early enteral nutrition decreases length of stay.
 - D. Early enteral nutrition is associated with a greater risk of necrotizing enterocolitis.
 - E. The lack of enteral nutrition leads to increased gut permeability.
2. The goals of enteral nutrition are to maintain lean body mass and bone density, maximize neurodevelopment, minimize complications, and optimize weight gain. Which of the following recommended targets for appropriate growth is correct?
 - A. A weight gain of 18 g/kg per day.
 - B. A head circumference growth of 0.5 cm/week.
 - C. A length gain of 0.75 cm/week.
 - D. A caloric goal of 90 kcal/kg per day.
 - E. A protein goal of 3 g/kg per day.
3. Pasteurized donor human milk is recommended over formula for very low birthweight infants. Which of the following statements regarding pasteurized donor human milk is correct?
 - A. Approximately 50% of mothers of preterm infants are unable to provide all the milk needed for an exclusive human milk diet.
 - B. The pasteurization process removes lymphocytes but preserves lipase levels in donor human milk.
 - C. The protein content of pooled donor human milk is typically similar to that of term milk.
 - D. Infants fed donor human milk demonstrate similar growth rates as preterm infants fed their own mothers' milk.
 - E. The use of pasteurized donor human milk is recommended through 35 weeks' postmenstrual age to decrease the risk of necrotizing enterocolitis.
4. Human milk contains many bioactive factors shown to be beneficial for growth and development. However, human milk is low in protein, calcium, and phosphorus; therefore, fortification is required to meet the nutritional needs of the preterm infant. Which of the following statements regarding human milk fortifier (HMF) is correct?
 - A. The use of HMF increases the osmolality by 150 mOsm/kg H₂O.
 - B. The introduction of HMF leads to faster gastric emptying.
 - C. Fortification should be held until feeds have advanced to 120 mL/kg per day and are well tolerated.
 - D. The antibacterial activity of human milk is not affected by the addition of HMF.
 - E. Bovine milk-based fortifier adds 1 to 1.8 g/dL protein.

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5. Enteral nutrition is very important to optimize outcomes in preterm infants. Although there is no consensus on the best approach to feed a preterm infant, which of the following basic principles regarding enteral nutrition in the preterm infant is correct?

- A. The terms *minimal enteral nutrition*, *trophic feedings*, and *gut priming* describe small feedings of no more than 10 mL/kg per day.
- B. Daily enteral feeding advancement of 20 to 30 mL/kg per day is reasonable in preterm infants with birthweights more than 1,000 g.
- C. Rates of advancement of less than 24 mL/kg per day have been shown to decrease the risk of necrotizing enterocolitis.
- D. Trophic feeds for a minimum of 5 days are recommended to promote gastrointestinal maturation, reduce mucosal atrophy, and protect against necrotizing enterocolitis.
- E. Enteral feedings should be advanced to a maximum enteral volume intake of 130 to 140 mL/kg per day.

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