physiologic disabilities. Although some sucking and swallowing activities are demonstrated before birth and in preterm infants, coordination of these mechanisms does not occur until approximately 32 to 34 weeks of gestation, and they are not fully synchronized until 36 to 37 weeks. Initial sucking is not accompanied by swallowing, and esophageal contractions are uncoordinated. Consequently, infants are highly prone to aspiration and its attendant dangers. As infants mature, the suck–swallow pattern develops but is slow and ineffectual, and these reflexes may also become easily exhausted.

The amount and method of feeding are determined by the infant's size and condition. Nutrition can be provided by either the parenteral or the enteral route or by a combination of the two. Infants who are ELBW, VLBW, or critically ill often obtain the majority of their nutrients by the parenteral route because of their inability to digest and absorb enteral nutrition. Hypoxic insults or illness and major organ immaturity further preclude the use of enteral feeding until the infant's condition has stabilized; necrotizing enterocolitis (NEC) has previously been associated with enteral feedings in acutely ill or distressed infants (see Necrotizing Enterocolitis later in this chapter). Total parenteral nutritional support of acutely ill infants may be accomplished successfully with commercially available IV solutions specifically designed to meet the infant's nutritional needs, including protein, amino acids, trace minerals, vitamins, carbohydrates (dextrose), and fat (lipid emulsion).

Studies have shown that there are benefits to the early introduction of small amounts of enteral feedings in metabolically stable preterm infants. These **minimal enteral (trophic gastrointestinal priming) feedings** have been shown to stimulate the infant's gastrointestinal tract, preventing mucosal atrophy and subsequent enteral feeding difficulties. Minimal enteral feedings with as little as 1 ml/kg of breast milk or preterm formula may be given by gavage as soon as the infant is medically stable. Parenteral nutrition is continued until the infant is able to tolerate an amount of enteral feeding sufficient to sustain growth. An increased incidence of NEC in VLBW infants receiving minimal enteral nutrition has not been substantiated (Ramani and Ambalavanan, 2013). Minimal enteral feedings have been proven to increase