Here are some key messages from the Nutrition Requirements and Feeding Issues for the Preterm Infant video series available on nutritioncare.org/NeonatalCareResources.

**Protein Requirements**

- Protein requirements are dynamic and decrease with advancing gestational age and weight. Recommend enteral protein 3.5 to 4.0 g/kg/day.
- Protein/Energy ratio is important to determine proportionality of growth.
- This is how to accomplish this:
  - For infants where there is no human milk available, higher protein containing preterm formulas should be used.
  - Use of sterile liquid higher protein containing fortifiers should be used to initially fortify mothers’ milk or donor milk when feeding VLBW infants.
  - Caloric dense formulas or caloric dense human milk strategies can be used to reach adequate protein intake in fluid restricted infants.

For more information, view short video on protein requirements.

**Lipid Requirements**

- When indicated, initiate parenteral lipid injectable emulsions (ILE) between birth and day 2 of life. Typical daily requirement is 1-3 g/kg/day with some select clinical circumstances up to a maximum of 4 g/kg/day. (ESPGHAN/ESPEN/ESPR/CSPEN guidelines on pediatric parenteral nutrition: Lipids. Clin Nutr. 2018;37:2324-36.)
- Preterm infant has immature lipase activity and low carnitine palmitoyltransferase; human milk and preterm formula contain carnitine and lipases.
- Fats constitute the majority of energy contained in human milk (~40-50%), feedings should provide 5 to 7 grams of fat per kg per day.

For more information, view short video on lipid requirements.
Long Chain Polyunsaturated Fatty Acids (LCPUFA) Recommendations

- ARA and DHA supplementation is recommended, preferably at 2:1 ratio
- LCPUFA content of available nutrition:
  » Currently available parenteral lipid emulsions appear to be inadequate
  » Maternal breast milk contains varying amounts
  » Donor breast milk has lower concentrations of LCPUFA than maternal breast milk
  » Preterm formulas are supplemented with DHA and ARA, approximating average breast milk levels
  » Enteral nutrition products may need LCPUFA supplementation
- Additional supplementation likely needed such as the use of concentrated supplements
- Optimal dosing strategy unknown as are effects on preterm morbidities and long-term outcomes

For more information, view short video on LCPUFA recommendations.

Micronutrient Requirements

All essential micronutrients are needed to optimize physiological growth and development.

- Premature infants are born at risk for deficiencies.
  » Low stores
  » Rapid growth leads to increased requirements.
- Primary prevention of deficiencies is critical.

<table>
<thead>
<tr>
<th>Trace Element</th>
<th>Recommended Intake mcg/kg/day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zinc</td>
<td>300</td>
</tr>
<tr>
<td>Copper</td>
<td>20</td>
</tr>
<tr>
<td>Manganese</td>
<td>1</td>
</tr>
<tr>
<td>Selenium</td>
<td>2</td>
</tr>
<tr>
<td>Iodine</td>
<td>No recommendation</td>
</tr>
<tr>
<td>Iron</td>
<td>No recommendation</td>
</tr>
</tbody>
</table>


For more information, view short video on micronutrient requirements.

Gastroesophageal Reflux

- Gastroesophageal Reflux (GER) is common in preterm infants: Most have no complications, do not need evaluation/intervention
- Many symptoms are attributed to GERD: likely that in many cases, GER is not the underlying cause
- The diagnosis of GERD is challenging in preterm infants
- Treatment only for infants with significant morbidity
  » first, nonpharmacologic measures
  » then, limited trial of acid suppression

For more information, view short video on GER.