Enteral nutrition solutions for early and adequate feeding of critically ill patients means adequate nutrition for your ICU patients right from the start.

**N FACTOR**

**Time is Critical**

**Peptamen®**

Enteral nutrition solutions for early and adequate feeding of critically ill patients

*Nestlé Health Science*

*Nourishing Personal Health*
Critically ill highly stressed patients

- Risk of Infections
- Risk of Sepsis
- Risk of MOF (Multiple Organ Failure)
- Increased LOS (Length of Stay)

Gut hypoperfusion
- Loss of barrier function
- Gut hyper-inflammatory response

Hypercatabolism
- Muscle protein loss

Free radicals
- Pro-inflammatory cytokines
- Inflammation & Oxidative stress

Early enteral nutrition helps to:1
- Maintain gut integrity
- Modulate stress and the systemic immune response
- Attenuate disease severity

2009 Critical Care Nutrition Guidelines:1
- Enteral feeding should be started early in haemodynamically stable patients, within the first 24-48 hours following admission (Grade C)
- Feeding should be advanced towards goal over the next 48-72 hours (Grade E)

Early and adequate enteral nutrition can improve clinical outcomes

40 to 60% of patients who are eligible for early EN still fail to receive EN within 48 hours of ICU admission²

In an international observational study in 2,772 mechanically ventilated patients in 167 ICUs across 37 countries:³
- Patients received 59.2% of the energy prescribed
- Patients received 56.2% of the protein prescribed

Early vs delayed enteral nutrition is associated with:⁴
- Lower incidence of infections (p=0.00006)
- Reduced length of hospital stay (p=0.004)

Early enteral nutrition provided within 24 hours of injury or ICU admission:⁵
- Significantly reduced mortality (p=0.02)
- Significantly reduced pneumonia (p=0.01)

Increased intake of energy and protein is associated with:*³
- Reduction in mortality (p=0.014)
- Increase in ventilator free days by 3.5 days (p=0.003)

*International observational study in 2,772 mechanically ventilated patients in 167 ICUs across 37 countries

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Nutrition. The factor that can make a difference.
27% of ICU patients account for 74% of ICU patient days and resources

<table>
<thead>
<tr>
<th>ICU Length of Stay</th>
<th>≤ 3 days</th>
<th>3-7 days</th>
<th>&gt; 7 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of all admissions (%)</td>
<td>73</td>
<td>15.9</td>
<td>11</td>
</tr>
<tr>
<td>Proportion of ICU days (%)</td>
<td>25.8</td>
<td>21.6</td>
<td>52.6</td>
</tr>
<tr>
<td>Proportion of TISS points* (%)</td>
<td>27.7</td>
<td>20.6</td>
<td>51.7</td>
</tr>
</tbody>
</table>

*TISS = Therapeutic Intervention Scoring System, to reflect the consumption of ICU resources.
ICU-LOS group 3–7 consists of patients with ICU-LOS >3 and ≤ 7 days

GI symptoms occur frequently in ICU patients

Prevalence of gastrointestinal (GI) symptoms

<table>
<thead>
<tr>
<th>GI symptoms</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 symptoms</td>
<td>36</td>
</tr>
<tr>
<td>1 symptom</td>
<td>41</td>
</tr>
<tr>
<td>≥ 2 symptoms</td>
<td>23</td>
</tr>
</tbody>
</table>

Mean ICU stay

<table>
<thead>
<tr>
<th>ICU LOS (days)</th>
<th>Patients with 0 GI symptoms</th>
<th>Patients with 1 GI symptom</th>
<th>Patients with ≥ 2 GI symptoms</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.9</td>
<td>4.2</td>
<td>&gt;8</td>
<td></td>
</tr>
</tbody>
</table>

Patients with at least two GI complications were older and more severely ill

High Gastric Residual Volume (GRV) and diarrhoea are frequent GI complications in mechanically ventilated patients on EN

<table>
<thead>
<tr>
<th>Complications</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>GI complications</td>
<td>47.8-63.6%</td>
</tr>
<tr>
<td>High GRV (200ml)</td>
<td>42.4%</td>
</tr>
<tr>
<td>High GRV (500ml)</td>
<td>26.8%</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>20%</td>
</tr>
</tbody>
</table>

Peptamen® AF is an advanced formula designed for better tolerance for early enteral nutrition in critically ill patients

Designed for better tolerance for early enteral nutrition

- MCT decreases the potential for fat malabsorption
- Peptides can be helpful in managing diarrhoea
- Whey protein facilitates gastric emptying to reduce potential for reflux
- 1.5 kcal/ml and high protein formulas available for volume restricted patients

Effects of whey-based formulas on gastric emptying time

Adapted from Fried MD et al

Advanced lipid blend helps modulate inflammation

Enriched with omega-3 fatty acids to help modulate the inflammatory response by decreasing production of pro-inflammatory cytokines

Low levels of pro-inflammatory omega-6 fatty acids

- Ratio of MCT:LCT (50:50) to help decrease inflammation by reducing dietary load of omega-6 fatty acids
- n6:n3 ratio (1.8:1) to beneficially modulate lipid mediator synthesis
Tube-feeding intolerance can compromise patients’ comfort and outcomes

1: TUBE FEEDING INTOLERANCE

Can be manifested by patient discomfort:
- Feeling of fullness
- Abdominal distension or bloating
- Nausea
- Vomiting
- Diarrhoea

2: FEEDING INTERRUPTIONS

3: INADEQUATE CALORIE AND PROTEIN PROVISIONS

- Reduced Weight
- Reduced Lean Body Mass

Solving tube-feeding intolerance helps to minimise patient discomfort and to support optimal nutrition status

Peptamen®: A specific enteral formula to help promote feeding tolerance

100% Whey protein for faster gastric emptying

Enhanced gastric emptying helps to:
- Provide relief for:
  > Abdominal distension  > Bloating  > Nausea
- Reduce potential for gastric reflux

50-70% of fat as MCT for improved digestion and absorption
- Decreases the potential for fat malabsorption
- Provides readily available energy

Low to moderate osmolarity to support tolerance by limiting contribution to osmotic load

Peptide based formula may help reduce risk of diarrhoea

Effects of whey-based formulas on gastric emptying time

Adapted from Fried MD et al. (2011)
The Peptamen® Family - designed for better tolerance

**Peptamen® AF**
- Elevated energy and protein requirements
  - 1.5 kcal/ml
  - 9.4g protein per 100ml
  - 100% whey protein
  - 50% of fat as MCT
  - Rich in omega-3 fats (0.36g per 100ml)
- Osmolarity: 380mOsm/l
- Available in 500ml DRIPAC®-flex suitable for tube feeding

**Peptamen® HN**
- Elevated energy and protein requirements
  - 1.33 kcal/ml
  - 6.6g protein per 100ml
  - 100% whey protein
  - 70% of fat as MCT
- Osmolarity: 350mOsm/l
- Available in 500ml DRIPAC®-flex suitable for tube feeding

**Peptamen®**
- Standard energy and protein requirements
  - 1 kcal/ml
  - 4.0g protein per 100ml
  - 100% whey protein
  - 67% of fat as MCT
- Osmolarity: 280mOsm/l
- Available in 4 x 200ml Vanilla Bottles for oral feeding

**Peptamen® Vanilla**
- Standard energy and protein requirements
  - 1 kcal/ml
  - 4.0g protein per 100ml
  - 100% whey protein
  - 67% of fat as MCT
- Osmolarity: 280mOsm/l
- Available in 4 x 200ml Vanilla Bottles for oral feeding

**Peptamen® can be used for the following patients:**
- Early enteral feeding
- Transition from TPN
- Malabsorption
- Diarrhoea management
- Intolerance to standard formula
- Delayed gastric emptying
- Short-bowel syndrome
- Inflammatory bowel disease
- Pancreatitis
- Chyle leaks

**Peptamen®: a range of specific enteral formulas designed for better tolerance**
- 100% Whey protein to facilitate gastric emptying and reduce reflux
- MCT* to decrease potential for fat malabsorption
- Peptides to help manage diarrhoea
- Low osmolarity for improved GI tolerance and reduction in diarrhoea

**100% Whey protein**
100% Whey protein helps support the body’s antioxidative defence system.
- Cysteine is the rate-limiting amino acid for the synthesis of glutathione, a principal protective antioxidant mechanism of the cells.
- Whey is rich in cysteine and may be effective in maintaining or repleting glutathione status.

**High quality protein:**

<table>
<thead>
<tr>
<th>Type of Protein</th>
<th>Biological Value</th>
<th>NPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whey</td>
<td>100</td>
<td>92%</td>
</tr>
<tr>
<td>Casein</td>
<td>80</td>
<td>76%</td>
</tr>
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*Medium Chain Triglycerides*

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- Whey is rich in cysteine and may be effective in maintaining or repleting glutathione status.

**Nutrition. The factor that can make a difference.**
References:

12. Meredith JW et al., Visceral protein levels in trauma patients are greater with peptide diet than with intact protein diet. J Trauma 1990, 30:825-829.
18. Nutrition. The factor that can make a difference.

We believe in the power of nutrition. We call it the **NF**actor.