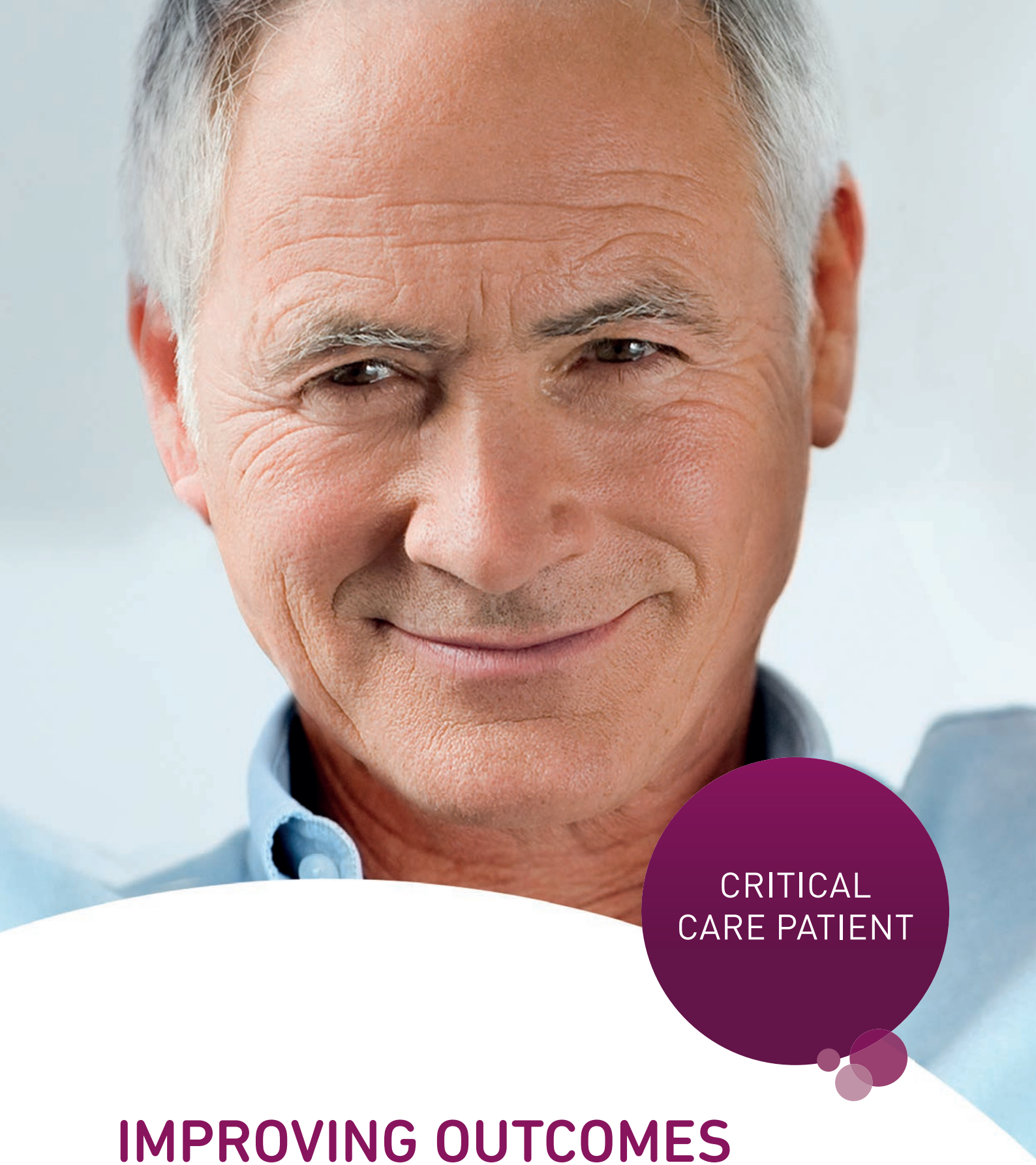

CRITICAL CARE PATIENT

IMPROVING OUTCOMES WITH NUTRITION IN CRITICAL CARE PATIENTS

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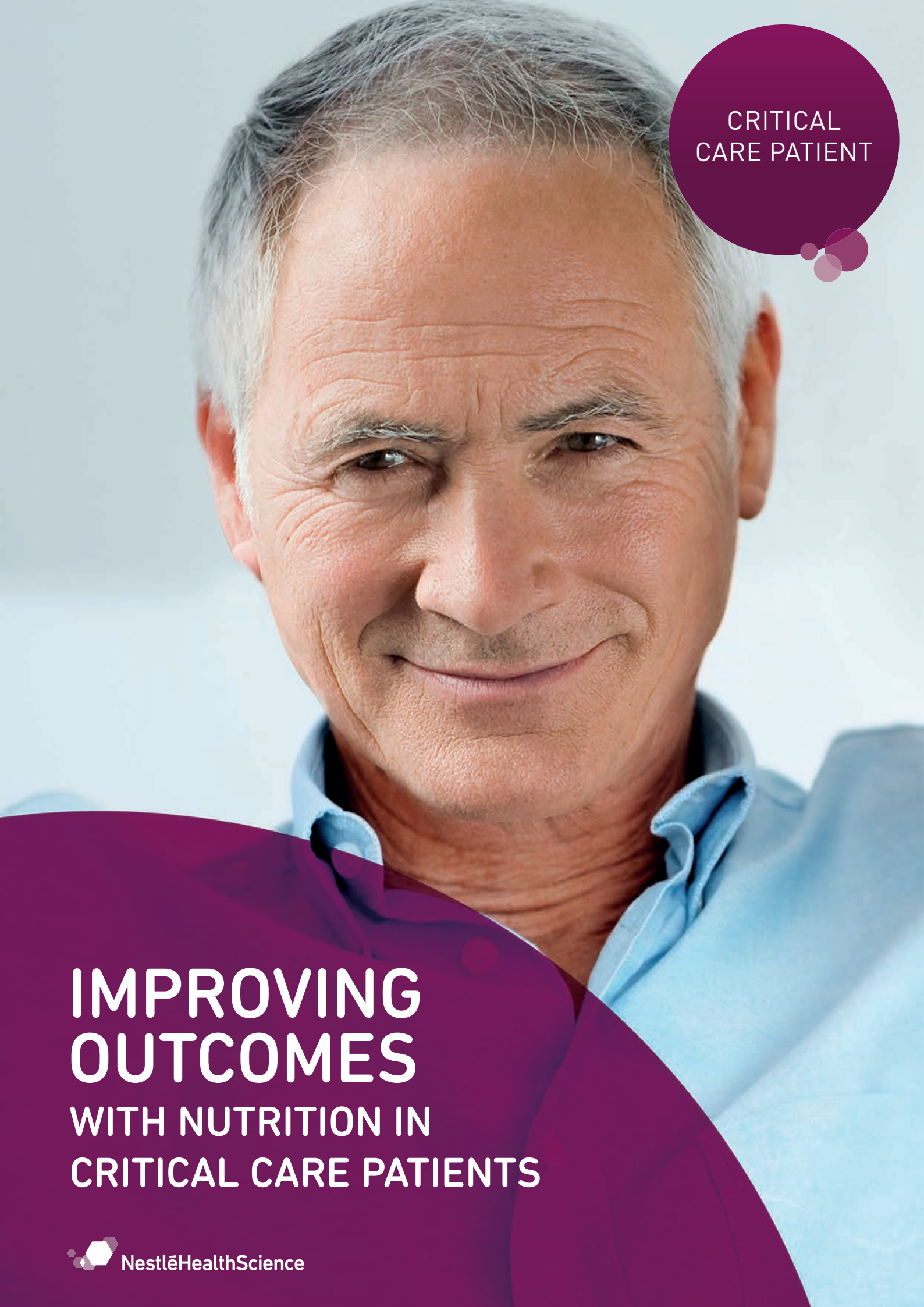

IMPROVING OUTCOMES

WITH NUTRITION IN CRITICAL CARE PATIENTS

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IMPROVING OUTCOMES

WITH NUTRITION IN CRITICAL CARE PATIENTS

CRITICAL CARE PATIENT

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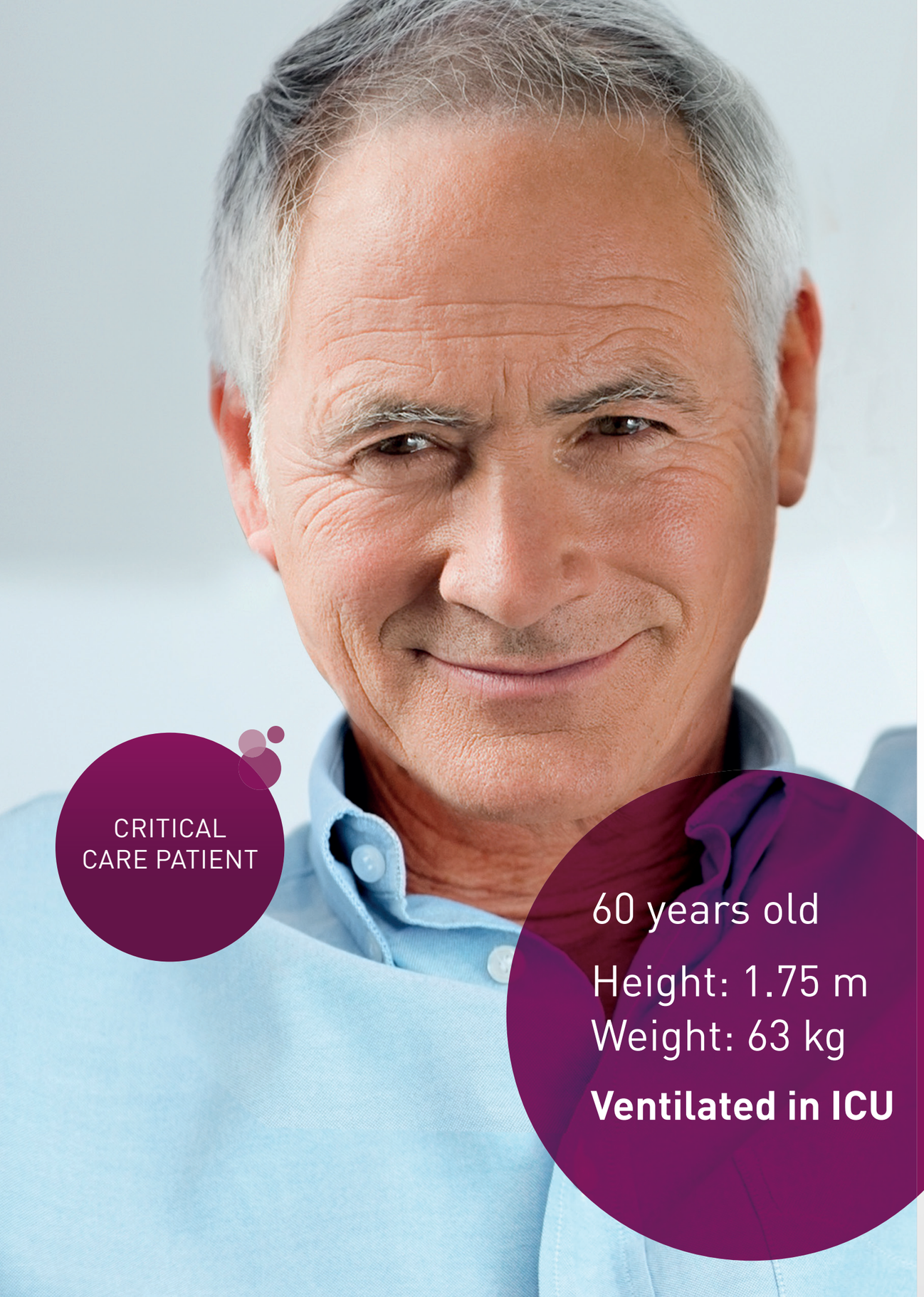

CRITICAL CARE PATIENT

60 years old

Height: 1.75 m
Weight: 63 kg

Ventilated in ICU

THERE ARE VARIOUS TYPES OF PATIENTS ADMITTED TO THE ICU....

Examples of patient conditions in the ICU[1]

- **Acute pancreatitis**
- **Organ failure** (pulmonary, renal, and liver)
- **Sepsis**
- **Trauma**
- **Traumatic brain injury**
- **Open abdomen**
- **Burns**
- **Postoperative major surgery**
- **Critically ill obese**
- **Chronic critically ill**

... BUT ALL SHARE THE SAME CHALLENGES

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MANY CRITICAL CARE PATIENTS FACE METABOLISM CHALLENGES

PROTEIN

Hyper-metabolism and marked protein catabolism[2,3]

In response to stress[2,3]:

- protein catabolism
- lean body mass

CARBOHYDRATE

Carbohydrate (CHO) metabolism issues and stress hyperglycemia[4-6]

During stress induced by trauma, surgery, or infection or sepsis[4]:

- endogenous glucose production
- plasma glucose concentrations

Stress hyperglycemia involves[6]:

- hepatic gluconeogenesis
- insulin resistance
- insulin deficiency

What do the guidelines say?

PROTEIN

- **Protein requirements are expected to be** in the range of **1.2–2.0 g/kg/day**, with potentially greater amounts needed for burns or multitrauma[1,11]
- **Protein requirements are proportionately higher than energy requirements**[1]

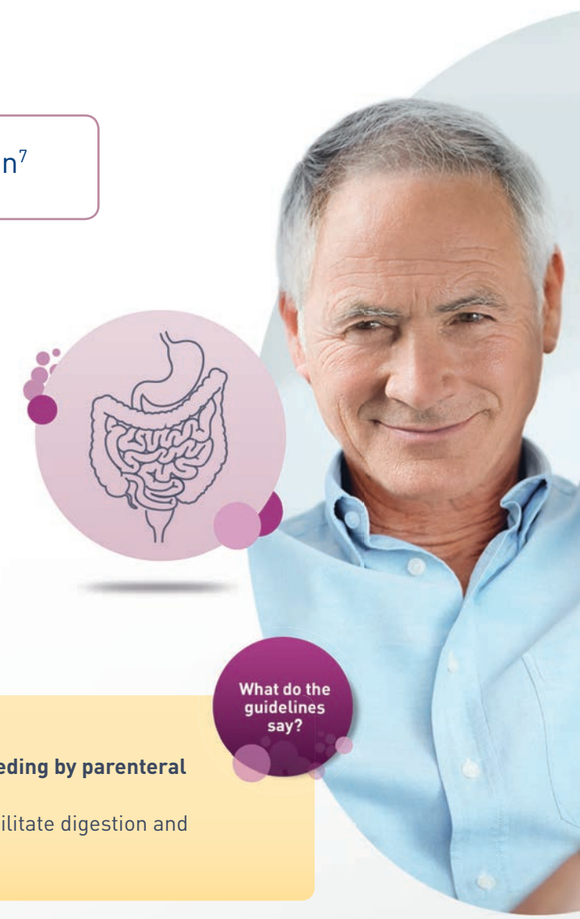
CHO

- **Hyperglycemia is a common response to acute illness**[1]
- Tight glycemic control is recommended[1]
- **High protein hypocaloric feeding** may help glucose control[11]

MANY CRITICAL CARE PATIENTS ALSO FACE GI CHALLENGES

GI dysfunction: contribution to malnutrition[7]

- **62%** of patients in the ICU have **GI dysfunction**[7]
- GI dysfunction affects the ability to **ingest, digest, absorb, transport, use and secrete nutrients** in the body[7]



What do the guidelines say?

GI DYSFUNCTION

- **Using enteral nutrition for feeding is preferable to feeding by parenteral means**[12]
- **Predigested enteral feeds** should be considered to facilitate digestion and absorption of nutrients[13]

METABOLIC AND GI CHALLENGES IN CRITICAL CARE PATIENTS CAN ADVERSELY AFFECT OUTCOMES[8-10]

- Delayed recovery, with subsequent increased morbidity and financial costs
- Decreased quality of life

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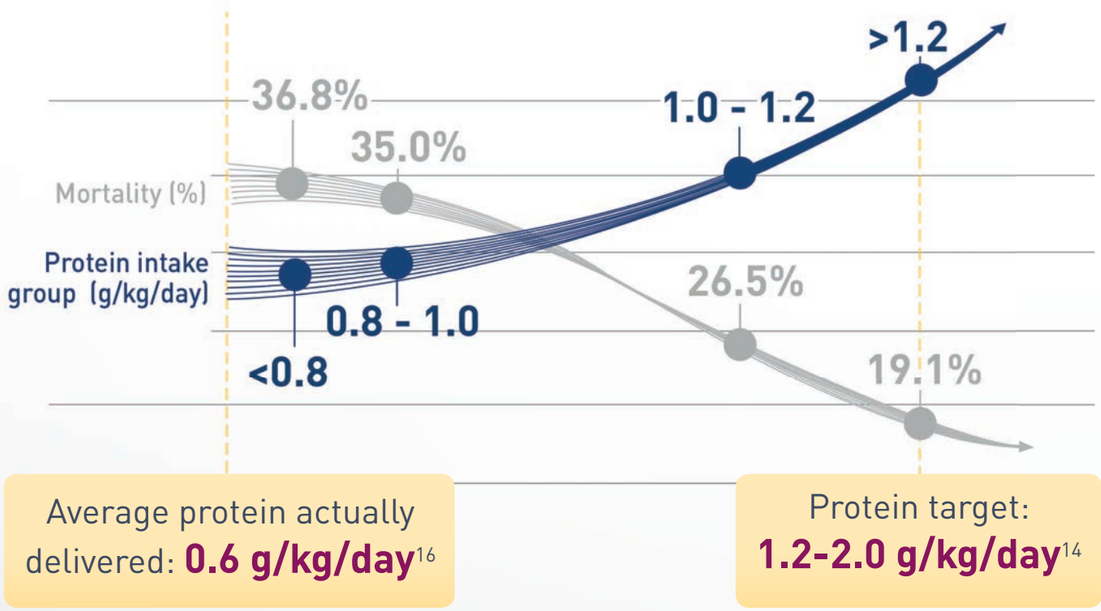
HIGHER PROTEIN INTAKE IS ASSOCIATED WITH REDUCED MORTALITY IN THE ICU[14]

Protein intake and mortality in the ICU[15]



Average protein actually delivered: **0.6 g/kg/day**[16]

Protein target: **1.2-2.0 g/kg/day**[14]

- Inadequate protein delivery is associated with **an increase in mortality**[14,17]

STANDARD POLYMERIC FEEDS FAIL TO OPTIMALLY DELIVER THE PRESCRIBED AMOUNT OF PROTEIN[1]

- On average ICU patients receive **only approximately 58% of the prescribed protein**[18]

Average % protein delivered by EN

Prospective, multi-institutional study in 201 units from 26 countries including 3,390 mechanically ventilated patients who remained in the unit and received artificial nutrition for at least 96 h.[18]

- Failure to deliver prescribed amount of protein may be linked to **delayed gastric emptying or gut dysmotily**[18]
- Reasons for enteral nutrition interruption have been shown to include **frequent use of invasive procedures**[19]

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THE CHALLENGE TO MEET PROTEIN TARGETS WITH STANDARD POLYMERIC FEEDS

Typical composition of standard polymeric enteral feeds[1,20]

PROTEIN	CALORIES
44-62 g/l	**15-20%** from **protein** **40-55%** from **carbohydrates** **30-40%** from **fat**

MEETING PROTEIN TARGET[1,20]

volume of enteral feeds

↓

delivery of carbohydrates and fat

↓

RISK OF OVERFEEDING

THE CHALLENGE OF DELIVERING HIGH AMOUNTS OF CARBOHYDRATES AND CALORIES WITH STANDARD POLYMERIC FEEDS

High amounts of carbohydrates (40-55%) in critical care patients

↓

Increase in the risk of overfeeding[21-23]

Acute stress[5]

↓

HYPERGLYCEMIA[5,22,24]

↓

- **2-fold** increase **risk of infections***[25]
- **60%** increase in ICU length of stay*[26]
- **Longer length of stay**: **8 days** vs. 5 days, p=0.001, independent of diabetes status*[26]
- Higher hospital readmission rates*[26]
- **Increased mortality***[27,28]

*Compared with patients without hyperglycemia

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OPTIMIZING NUTRITION MANAGEMENT TO IMPROVE OUTCOMES IN ICU PATIENTS

GOAL
1,14,29

Preserve lean body mass
Help attenuate the metabolic response to stress
Prevent oxidative cellular injury

STRATEGY
1,4,14,21-23,29

Early enteral nutrition:[1]

- Proactive strategy to favorably impact patients' health outcomes

Increased protein intake

- Protein needs are higher than energy needs[1,29]
- Higher protein intake is associated with reduced mortality[14]

Reduced carbohydrate intake

- CHO feeding fails to suppress glucose production in critically ill patients, indicating hepatic resistance to glucose, insulin, or both[4]
- Increasing the volume of standard polymeric feeds to meet protein targets leads to excessive amount of CHO, inducing hyperglycemia[21-23]

PEPTAMEN®: HIGH PERFORMANCE DELIVERY OF NUTRIENTS FOR YOUR ICU PATIENTS

Enzymatically hydrolyzed
100% whey protein, high MCT content

High performance delivery of nutrients with a balanced protein and energy composition

Facilitates enteral success from the start

- Facilitates gastric emptying vs. standard feeds[30]
- Supports better tolerance vs. standard feeds[31]

Improves absorption and utilization

- Optimized absorption[3,32,33]
- Gut function preservation[33]
- Enhanced energy and protein delivery[34]

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PEPTAMEN®
High performance.
Improved outcomes.

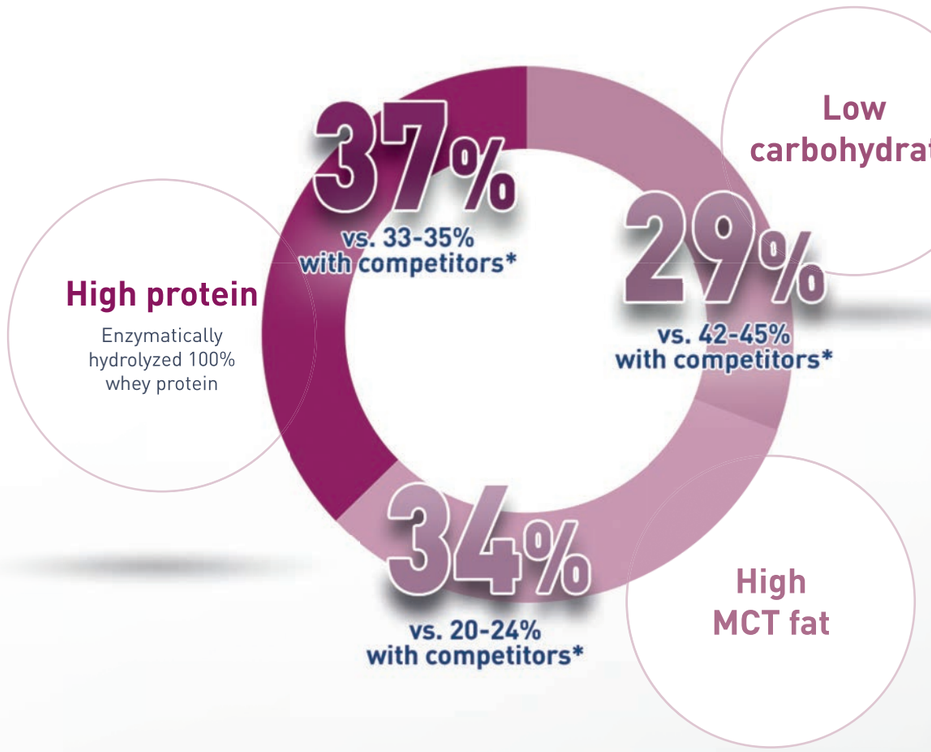
INTRODUCING PEPTAMEN® INTENSE

THE HIGH PROTEIN/LOW CHO FORMULA SPECIFICALLY DEVELOPED FOR YOUR ICU PATIENTS

PEPTAMEN® INTENSE

- **Highest amount of protein in the market (37% of calories from protein)[1]**
- **Contains 50:50 MCT:LCT ratio for easy absorption**
- **1.0 kcal**

Composition of total calories



High protein
Enzymatically hydrolyzed 100% whey protein

Low carbohydrate

High MCT fat

PEPTAMEN® INTENSE meets the recommendations of ASPEN and ESPEN for adult critical care patients

*Other tube feeding products

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PEPTAMEN® INTENSE

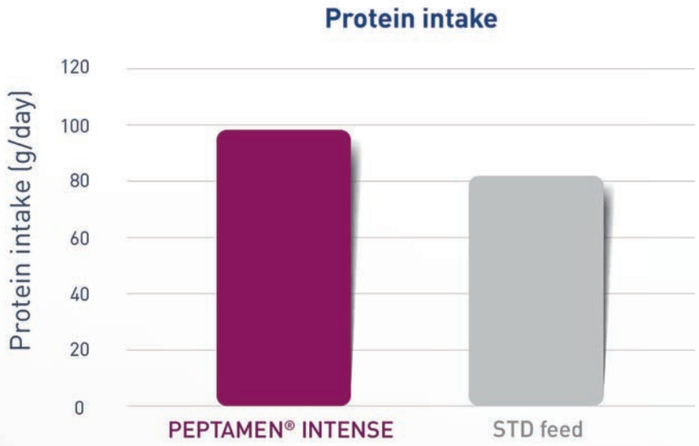
High performance. Improved outcomes.

PEPTAMEN® INTENSE OPTIMIZES DELIVERY OF THE RIGHT PROTEIN/ ENERGY BALANCE[35-39]

In critical care patients receiving propofol

The protein intake was **significantly higher with PEPTAMEN® INTENSE** than with a standard high-protein feed:[37]

97.9 + 28.6 g/day vs. 81.7 + 19.5 g/day (*p*=0.044)



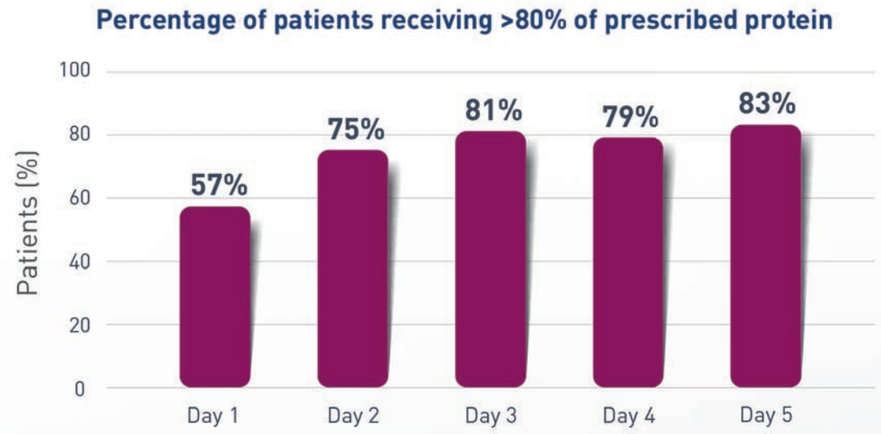
Retrospective study comparing 20 critical care patients who received propofol and Peptamen® INTENSE and 20 critical care patients on propofol and standard semi-elemental formulas.37

Significant lower caloric intake with PEPTAMEN® INTENSE than with a standard high-protein feed:

1,077 + 314.7 kcal/day vs. 1,333 + 329.2 kcal/day (*p*=0.016)

PEPTAMEN® INTENSE HELPS ACHIEVE HIGH PROTEIN TARGETS AS RECOMMENDED BY GUIDELINES[40]

More than **75%** of patients on PEPTAMEN® INTENSE received **≥80%** of prescribed protein on days 2 through 5[40]



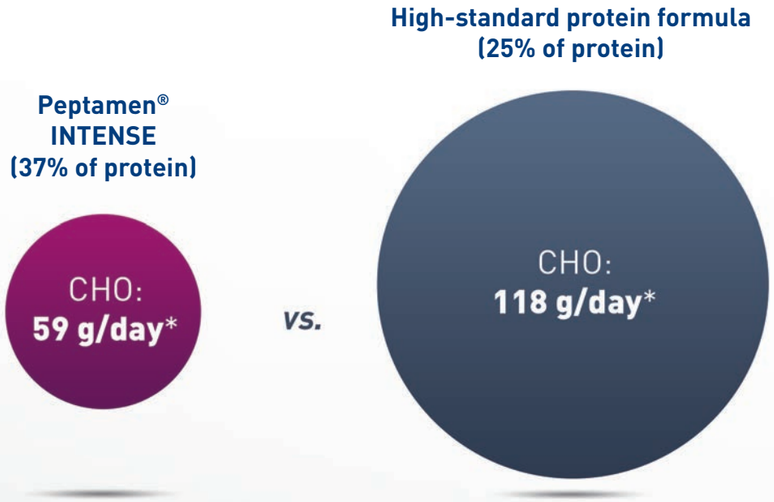
Patients requiring exclusive enteral feeding for up to 5 days were recruited from six Canadian ICUs. The most common reasons to prescribe the formula were: obesity, lipid-based medications, ratio of protein/ calories, high protein needs, and renal replacement therapy.[40]

Achieving ≥80% of prescribed protein is a **key recommendation** of the SCCM-ASPEN guidelines in order for patients to derive clinical benefit from enteral nutrition[1]

PEPTAMEN® INTENSE FACILITATES BLOOD GLUCOSE MANAGEMENT IN ADULT ICU PATIENTS[35,41,42]

More patients significantly achieved **the recommended target blood glucose range** on PEPTAMEN® INTENSE than on high-protein standard formula[35]

PEPTAMEN® INTENSE: **twice less CHO** than in high-standard protein formulas



PEPTAMEN® INTENSE: **Lower incidence of insulin administration** than with high-standard protein formulas (p=0.044)[35]

12% reduction in the incidence of insulin administration (p=0.044)

*Mean CHO intake

PEPTAMEN® INTENSE:

THE HIGH PROTEIN/LOW CHO FORMULA SPECIFICALLY DEVELOPED FOR YOUR ICU PATIENTS

Achieves high protein targets as recommended by guidelines: 1.2-2.0 g/kg /day

Facilitates blood glucose management: low carbohydrate content (29%)

Decreases the risk of overfeeding

PRESERVES LEAN BODY MASS

ATTENUATES THE METABOLIC RESPONSE TO STRESS

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START WITH PEPTAMEN® INTENSE TO DELIVER THE RIGHT BALANCE OF ENERGY AND PROTEIN

Put your critical care patients on track to a fast recovery[43] and improved clinical outcomes

Reduces recovery time and LOS[35,44]

Slows down weight loss[43]

Improves nitrogen balance and utilization[45,46]

Improves nutritional status[42,43,46-49]

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