

MIND THE GUT

for Better Outcomes

Gut: The forgotten organ in critical care



WHY GASTROINTESTINAL DYSFUNCTION MATTERS IN THE ICU

Gut dysfunction is highly prevalent and often underestimated in critically ill patients — despite its direct link to worse clinical outcomes.^{1,2}

HIGH INCIDENCE

25% more likely

Up to

75% of patients



in critically ill patients with sepsis.³



suffer from EFI in an ICU setting.^{4,5}

WORSE OUTCOMES



3 more days



on mechanical ventilation.¹



Mortality increases by

40–60%

in patients with GI dysfunction



compared to those with preserved gut function.¹

EXTENDED ICU STAYS



ICU length of stay extended by

3–4 days,



significantly increasing costs.^{1,5}



Over

\$450,000


in additional cost




Resulting from GI intolerance for every 100 patients with a longer length of ICU stay.⁶

THE GUT IS MORE THAN A DIGESTIVE ORGAN


The gut is a central immuno-metabolic hub that influences the entire body, particularly in critical illness.¹¹⁻¹⁴




BARRIER INTEGRITY:
Maintains mucosal protection; enteral feeding reduces bacterial translocation and infection risk.¹¹



IMMUNOMODULATION:
Home to 70% of the body's immune cells, the gut regulates systemic inflammation.^{12,13}



ENDOCRINE/METABOLIC CONTROL:
Secretes hormones vital for insulin sensitivity and glucose homeostasis.¹⁴




ABSORPTION:
Essential for uptake of nutrients needed for recovery and organ function.¹⁵

WHY DO WE NEED TO FEED THE GUT IN THE ICU?

Feeding the gut early isn't just supportive — it's preventive.

ASPEN Critical Care Guidelines, 2016¹³ ,ESPEN Practical Guidelines, 2023¹⁶



PRESERVE GUT INTEGRITY




SUPPORT OTHER ORGANS



MODULATE IMMUNE RESPONSE



IMPROVE OUTCOMES



PREVENT GI DYSFUNCTION PROGRESSION

GUT INJURY: A KEY DRIVER OF MULTI-ORGAN DYSFUNCTION IN CRITICAL CARE¹⁷

The gut is a central immuno-metabolic organ and driver of MODS¹⁷

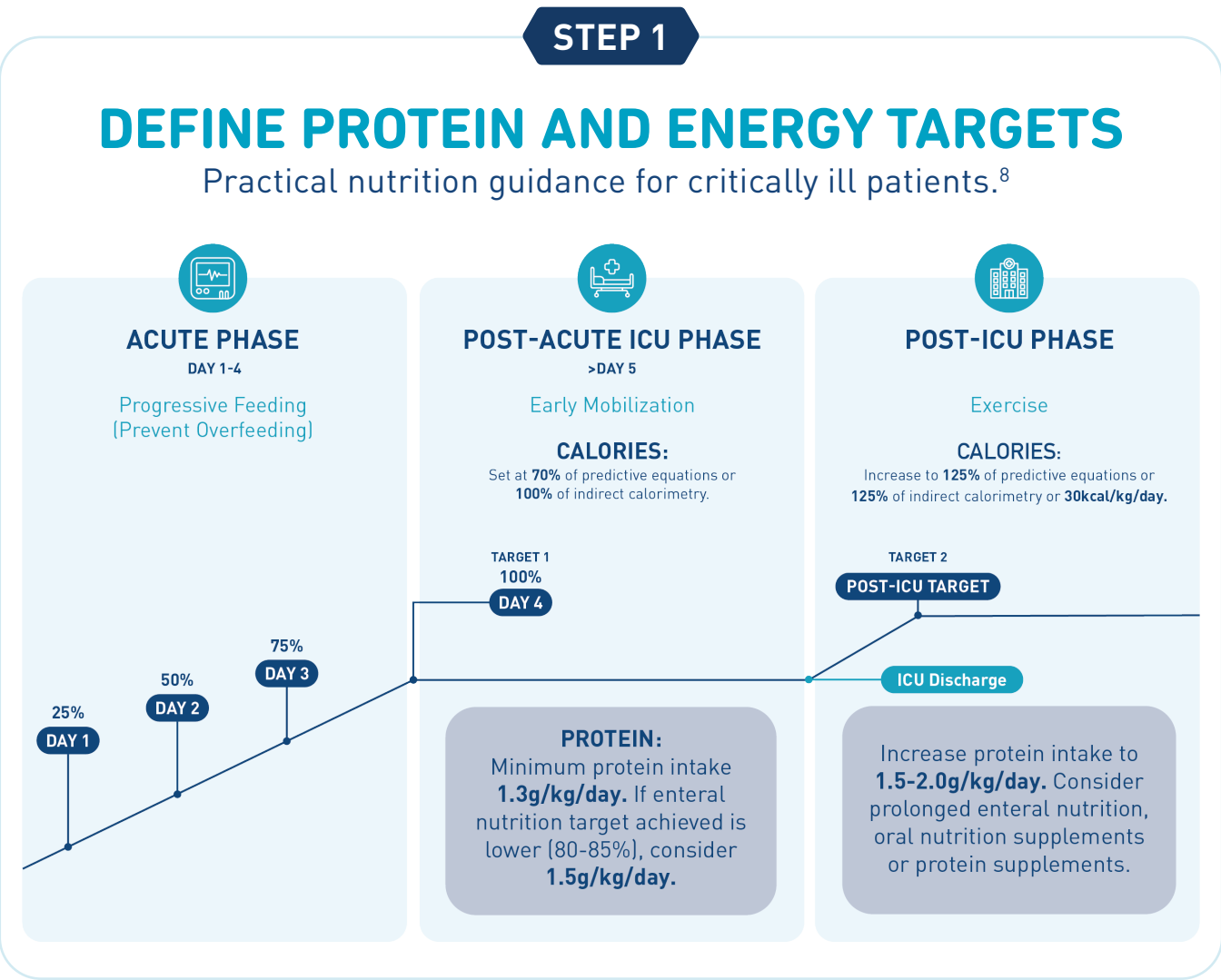
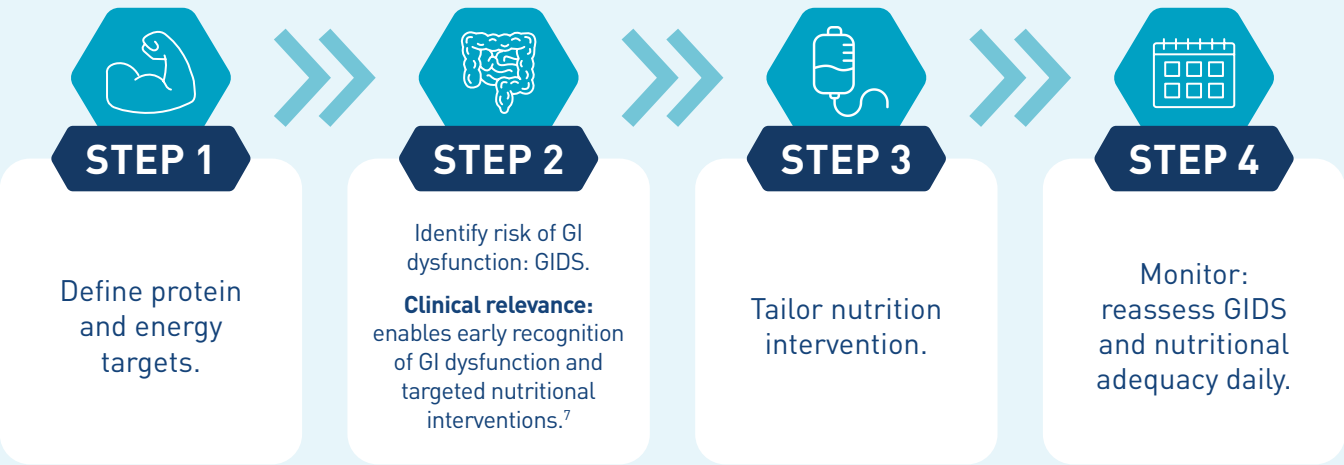
FIGURE 1: Assessment of gastrointestinal dysfunction as part of multi-organ dysfunction. Gastrointestinal injury may impact other organ systems and vice versa. Arrows represent the bidirectional nature of these interactions. When assessing gastrointestinal dysfunction, inter-organ crosstalk should be considered in patients with multiple organ dysfunction.



Adapted from: Bachmann K, Asrani V and Reintam Blaser A. *Curr Opin Crit Care*. 2025; 31(2): 172-178.

GUT CARE CHECK

A simplified roadmap to guide nutritional support in critically ill patients.



Adapted from: van Zanten ARH, De Waele E, Wischmeyer PE. Crit Care. 2019;23(1):368.

STEP 2 & 4

ASSESSING GI FUNCTION: THE GIDS SCORE⁷

60% of critically ill patients have at least one GI symptom during ICU stay.⁹

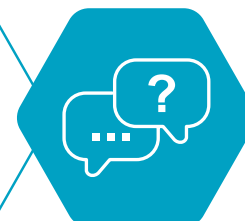
TABLE 1: Gastrointestinal Dysfunction Score (GIDS), grades of severity.

0 No risk	1 Increased risk	2 GI dysfunction	3 GI failure	4 Life threatening
No symptoms OR one of the following with oral intake	Two of the following	Three or more symptoms of score 1 OR up to two of the following	Three or more of the following	One of the following
<ul style="list-style-type: none"> • Absent bowel sounds • Vomiting • GRV > 200ml • GI paralysis/dynamic ileus • Abdominal distension • Diarrhea (not severe) • GI bleeding without transfusion • IAP 12-20mmHg 	<ul style="list-style-type: none"> • No oral intake • Absent bowel sounds • Vomiting • GRV > 200ml • GI paralysis/dynamic ileus • Abdominal distension • Diarrhea (not severe) • GI bleeding without transfusion • IAP 12-20mmHg 	<ul style="list-style-type: none"> • Severe diarrhea • GI bleeding without transfusion • IAP > 20mmHg 	<ul style="list-style-type: none"> • Prokinetic use • GI paralysis/dynamic ileus • Abdominal distension • Severe diarrhea • GI bleeding without transfusion • IAP > 20mmHg 	<ul style="list-style-type: none"> • GI bleeding leading to hemorrhagic shock • Mesenteric ischemia • Abdominal compartment syndrome

If some variables (e.g., GRV or IAP) have not been measured, the score can be calculated without considering these variables.
Abbreviations: GRV - gastric residual volume; GI - gastrointestinal; IAP - intra-abdominal pressure.

DID YOU KNOW?

- EFI includes the inability to deliver planned enteral nutrition due to GI dysfunction.¹⁰
- EFI isn't just intolerance — it's a clinical red flag: **Mortality increases by 50% in patients who developed EFI** (odds ratio of 1.50; 95% CI:1.38-1.64).¹



STEP 3

TAILOR NUTRITION INTERVENTION

Match the formula to patient tolerance using GIDS²-based guidance.

GIDS severity score	Type of enteral formula
0 - No risk	Polymeric formula
1 - Increased risk	Peptide-based formula depending on the symptoms*
2 - GI dysfunction	Peptide-based formulas if enteral nutrition is allowed**

*Symptoms associated with EFI: vomiting, GRV > 200ml, abdominal distension or diarrhea.¹¹

**Absence of GI bleeding and IAP < 20mmHg.

DID YOU KNOW?

In a study of over 19,000 patients, 100% whey peptide-based formula was associated with significantly lower risk of EFI compared to both other peptide-based formulas and standard intact-protein formulas (p<0.05).⁴



Peptamen[®]

When every ingredient counts.

A TARGETED SOLUTION FOR A COMPROMISED GUT

In patients with GI dysfunction or malabsorption, Peptamen[®] has been proven to improve tolerance and absorption.

- **100% Hydrolyzed Whey Protein:** promotes rapid gastric emptying and better tolerance.⁷
- **70% MCT Content:** provides fast, efficient energy with minimal digestive load.⁷
- **Small Peptides:** facilitate absorption even in inflamed or compromised mucosa.⁷



Must be used under medical supervision.

Peptamen[®]

in critically ill patients

18%

Reduction⁴

GI Intolerance

23%

Reduction⁴

Malnutrition

81%

Reduction⁴

Hyperglycemia[†]

[†]Peptamen[®] Intense VHP only

1. Heyland DK, Ortiz A, Stoppe C, et al. Consequence of enteral feeding intolerance in the mechanically ventilated critically ill: An analysis of a multicenter, multiyear database. *Crit Care Med*. 2021;49(1):49-59. 2. Gungabissoon U, Hacquoil K, Bains C et al. Prevalence, risk factors, clinical consequences, and treatment of enteral feed intolerance during critical illness. *JPEN*. 2015; 39(4):441-448. 3. Wang S et al. Risk factors for enteral feeding intolerance in critically ill patients: an updated systematic review and meta-analysis. *BMC Gastroenterology*. 2025;25:233. 4. Nguyen DL et al. Characteristics and feeding intolerance in critically ill adult patients receiving peptide-based enteral nutrition: A retrospective cross-sectional study. *Clinical Nutrition ESPEN*. 2024; 59:270-278.* 5. McClave SA et al. Gastrointestinal dysfunction and feeding intolerance in critical illness: do we need an objective scoring system? *Current Gastroenterology Reports*. 2020; 22(1): 1-8. 6. Curry AS, et al. Early introduction of a semi-elemental formula may be cost saving compared to a polymeric formula among critically ill patients requiring enteral nutrition: a cohort cost-consequence model. *ClinicoEconomics and Outcomes Research*. 2018 Jun 5:293-300.** 7. Reintam Blaser A et al. Development of the Gastrointestinal Dysfunction Score (GIDS) for critically ill patients – A prospective multicenter observational study (ISOFA study). *Clinical Nutrition*. 2021;40(8): 4932-4940. 8. van Zanten et al. Nutrition therapy and critical illness: practical guidance for the ICU, post-ICU, and long-term convalescence phases. *Critical Care*. 2019; 23: 368. 9. Reintam Blaser A et al. Gastrointestinal symptoms during the first week of intensive care are associated with poor outcome: a prospective multicentre study. *Intensive Care Med*. 2013;39:899-909. 10. Reintam Blaser A et al. Enteral feeding intolerance: updates in definition and pathophysiology. *NCP*. 2021; 36(1):40-49. 11. Patel J and Barash M. The gut in critical illness. *Current Gastroenterology Reports*. 2025; 27: 11. 12. Deepak J. Role of Gut-Associated Lymphoid Tissue (GALT) in mucosal immunity and homeostasis: current perspectives. *J Mucosal Immunol Res*. 2024; 8:3. 13. McClave et al. Guidelines for the provision and assessment of nutrition support therapy in the adult critically ill patient: Society of Critical Care Medicine (SCCM) and American Society for Parenteral and Enteral Nutrition (ASPEN). *JPEN*. 2016; 40(2): 1549-2111. 14. Deane et al. Bench-to-bedside review: The gut as an endocrine organ in the critically ill. *Critical Care*. 2010; 14:228. 15. Elfadil O et al. Peptide-based formula: Clinical applications and benefits. *NCP*. 2023; 38(2): 318-328. 16. Singer et al. ESPEN practical and partially revised guideline: Clinical nutrition in the intensive care unit. *Clin Nutr*. 2023; 42(9):1671-1689. 17. Bachmann K et al. Assessing gastrointestinal system dysfunction in intensive care. *Curr Opin Crit Care*. 2025; 31(2): 172-178.

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