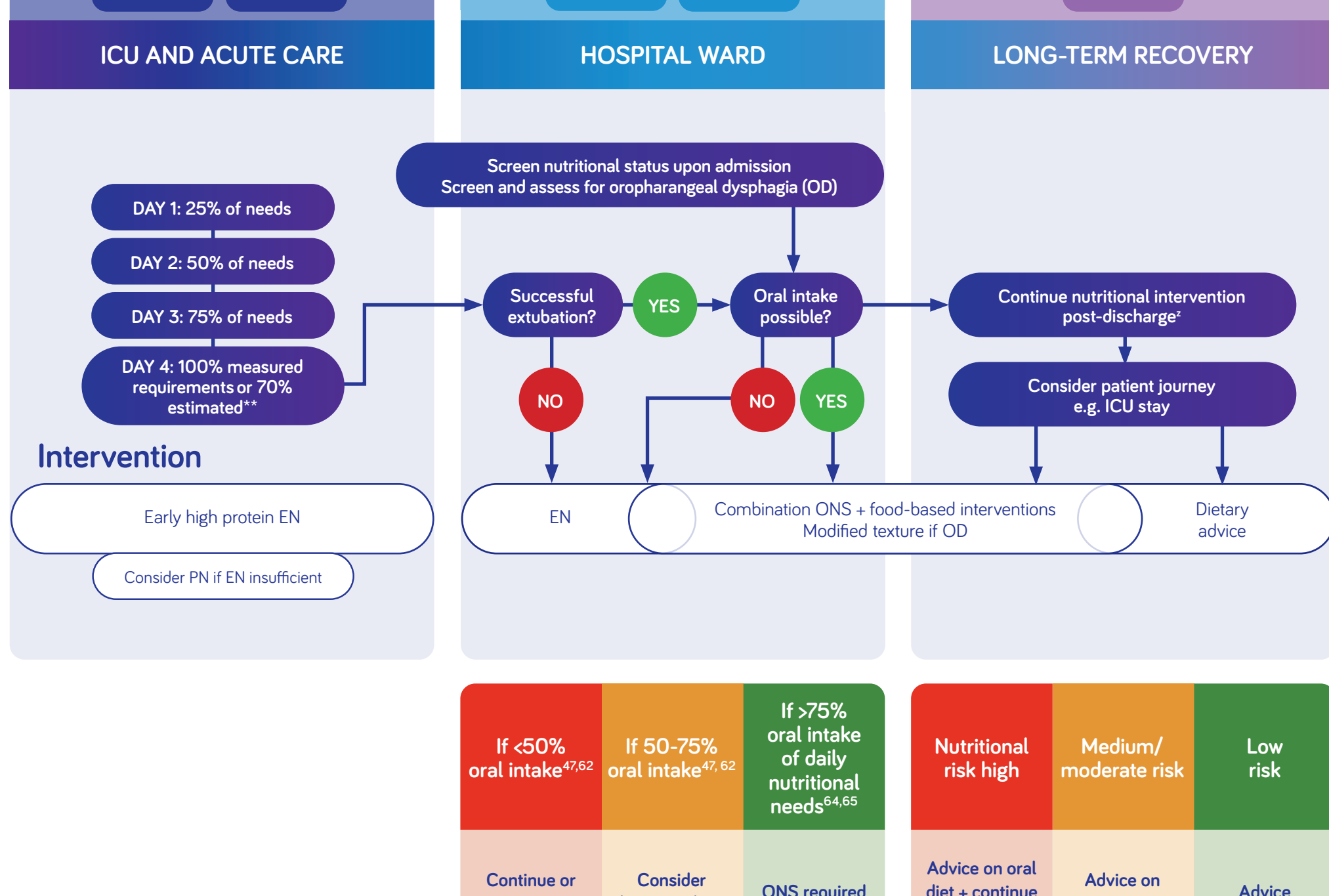


# ASSERTIVE, MULTI-MODAL NUTRITIONAL CARE INDIVIDUALISED TO MEET PATIENTS' NEEDS ACROSS THE CONTINUUM OF CARE<sup>1</sup>



Oral Intake	ONS	Risk Level	Advice
<50%	Continue or start EN + oral diet + start ONS	Nutritional risk high	Advice on oral diet + continue for > 4 weeks. If required, continue EN
50-75%	Consider (overnight) EN + start/continue ONS	Medium/moderate risk	Advice on oral diet and ONS if required
>75%	ONS required reduce/stop EN (if relevant)	Low risk	Advice on healthy diet

## Monitoring

- Monitor progress towards individualised goals and escalate/de-escalate nutrition intervention as indicated
- Initiate early polymeric EN as 1st line approach<sup>1,6,8-16</sup>. If required, consider alternative formulae depending on specific patient's need
- Ensure high protein intake for catabolic patients with significant muscle wasting
- Measure REE using indirect calorimetry where possible
- Monitor progress towards individualised goals and escalate/de-escalate nutrition intervention as indicated
- Ensure high protein intake for patients due to risk of ongoing muscle wasting
- Careful consideration should be given to avoiding premature removal of feeding tubes, and to ensuring continued care post ICU discharge
- Monitor progress towards individualised goals and escalate/de-escalate nutrition intervention as indicated
- Ensure high protein intake and consider muscle-targeted interventions (e.g. vit D, leucine) in patients with low muscle mass or sarcopenia
- Consider pre-existing cardiometabolic condition and individualize advice
- Monitor outcome indicators/measures linked to goals and clear plan for follow up

<sup>1</sup> This visual is an adaptation from "Recovery Focused Nutritional Therapy across the Continuum of Care: Learning from COVID-19" published in *Nutrients* 2021, 13, 3293.

## ICU ADMISSION

The primary goal is to prevent complications and support recovery to enable COVID-19 patients to achieve the best possible nutritional, physical, functional and mental health status and to apply learning to date from the COVID-19 pandemic to other patient groups experiencing acute severe illness<sup>1</sup>.

### DAYS 1-7 FROM DAY 7

To prevent overfeeding which risks poor outcomes, aim to provide 70% of estimated or 100% of measured requirements reached over 4-5 days in line with international expert guidelines and practical guidance for nutrition support in ICU<sup>1,2</sup>.

However, after day 7 COVID-19 patients are hypermetabolic (120-200% of equation predicted REE even when paralysed [25-35kcal/kg/day])<sup>1</sup>

Monitor progress towards individualised goals and escalate/de-escalate nutrition intervention as indicated<sup>1</sup>

**Initiate early polymeric EN as 1st line approach<sup>1</sup>.** If required, consider alternative formulae depending on specific patient's need

Ensure high protein intake for catabolic patients with significant muscle wasting<sup>1</sup>

Measure REE using indirect calorimetry where possible<sup>1</sup>

**FOR DRM, CRITICALLY ILL PATIENTS**

**NUTRISON PROTEIN INTENSE**

able to deliver guideline recommended protein levels without overfeeding calories by Day 4<sup>11</sup>

Energy	Protein type	Protein per 100 ml	NPC: Nitrogen Ratio
128kcal/ml	Whole protein blend with P4	10g (32%)	54 to 1

**Nutritional Guideline:** "During critical illness, 1.5 g/kg protein equivalents per day can be delivered progressively"<sup>11</sup>

**FOR DRM PATIENTS WITH METABOLIC STRESS**

**NUTRISON PROTEIN ADVANCE**

Moderate energy with high protein  
Lower NPC: N ratio than standard feeds

Energy	Protein type	Protein per 100 ml	NPC: Nitrogen Ratio	Fibre per 100ml
128kcal/ml	Whole protein blend	7.5g (24%)	83 to 1	1.5g MF6 blend

**Nutritional Guideline:** "That in daily practice the amount of protein provided to most ICU patients is less than the loss, and is related to technical difficulties and commercial product composition not adequately enriched with proteins in comparison to the calorie content"<sup>12</sup>

**FOR DRM PATIENTS WITH DIABETES MELLITUS OR HYPERTHYROCAEMIA WITH HIGHER ENERGY OR PROTEIN NEEDS**

**NUTRISON DIASON ENERGY HP**

Clinically proven to improve plasma glucose profile versus a standard high energy feed<sup>13</sup>

Energy	Carbohydrates per 100ml	% Energy from Carbohydrates	Protein per 100ml	Fibre per 100ml	Contains isomaltulose for low glycaemic and low insulinemic properties. High levels of MUFAs. Low Glycaemic Index
15kcal/ml	12g (31%)	31%	7.7g (21%)	1.5g MF6 blend	

**Nutritional Guideline:** "The use of diabetic specific enteral formula in ICU patients suffering from Type 2 Diabetes Mellitus seems to improve the glucose profile and may have clinical and economic impact"<sup>13</sup>

**FOR DRM PATIENTS WITH MALABSORPTION AND/OR MALDIGESTION**

**NUTRISON PEPTISORB PLUS HEHP**

Proven to improve diarrhoea, support GI tolerance and increase nutritional intake<sup>14</sup>

Energy	Protein type	Protein per 100 ml	Fat
15kcal/ml	Peptide-based 100% whey	7.5g (20%)	5g of which 60% MCTs

**Nutritional Guideline:** "PN should not be started until all strategies to maximize EN tolerance have been attempted"<sup>14</sup>

**FOR DRM PATIENTS WITH FLUID RESTRICTIONS**

**NUTRISON CONCENTRATED**

High energy density for low volume intake  
Low electrolyte levels

Energy	Protein type	Protein per 100 ml	Low electrolytes so suitable for renal patients
2kcal/ml	Whole protein blend with P4	7.5g (15%)	

**FOR DRM PATIENTS WITH CHRONIC WOUNDS**

**NUTRISON ADVANCED CUBISON**

Contains higher protein, arginine, zinc, selenium, Vitamin C and other antioxidants than standard feeds  
Clinically proven to accelerate wound healing<sup>15</sup>

Energy	Protein per 100 ml	Fibre per 100ml
1kcal/ml	5.5g (21%)	1.5g MF6 blend

**Nutritional Guideline:** "Provide high-calorie, high-protein, arginine, zinc and antioxidant oral nutritional supplements or enteral formula for adults with a Category/Stage II pressure injury who are malnourished or at risk of malnutrition"<sup>15</sup>

## ICU TO HOSPITAL WARD

Practical guidelines for the nutritional management of acutely unwell inpatients with COVID-19 recommend enteral nutrition (EN) in patients unable to meet nutritional requirements orally with food based strategies and oral nutritional supplements.

Multiple nutritional challenges highlight the need for early individualised nutrition intervention<sup>1</sup>.

Monitor progress towards individualised goals and escalate/de-escalate nutrition intervention as indicated<sup>1</sup>

Ensure high protein intake for patients due to risk of ongoing muscle wasting<sup>1</sup>

Careful consideration should be given to avoiding premature removal of feeding tubes, and to ensuring continued care post ICU discharge<sup>1</sup>

ESPEN guidelines on nutritional support for polymorbid internal medicine patients.<sup>3</sup>

**Recommendation 3.1**  
In polymorbid medical inpatients whose nutritional requirements cannot be met orally, EN can be administered. In these cases, the use of EN may be superior to PN because of a lower risk of infectious and non-infectious complications.<sup>3</sup>

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Careful consideration should be given to avoiding premature removal of feeding tubes, and to ensuring continued care post ICU discharge<sup>1</sup>

ESPEN expert statements and practical guidance for nutritional management of individuals with Sars-COV-2 infection.<sup>5</sup>

**Statement 10**  
In ICU patients with dysphagia, texture adapted food can be considered after extubation. If swallowing is proven unsafe, EN should be administered<sup>5</sup>.

**ESO & ESSD guideline for the diagnosis and treatment of post-stroke dysphagia 2021.<sup>6</sup>**

**Recommendation 3.1**  
In patients with post-stroke dysphagia, we recommend that texture modified diets and/or thickened liquids are prescribed only based on an appropriate assessment of swallowing<sup>6</sup>.

**Recommendation 12:**  
In stroke patients who tolerate an oral diet and present with a risk of malnutrition or with manifest malnutrition, we suggest to consider the use of oral nutritional supplementation<sup>6</sup>.

**Recommendation 13:**  
In patients with post-stroke dysphagia and insufficient oral intake we suggest an early enteral nutrition via a nasogastric tube<sup>6</sup>.

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## HOSPITAL WARD (WITH DYSPHAGIA)

Prolonged orotracheal intubation and tracheostomy are risk factors for dysphagia... Compensatory treatments including texture modified diet, fluid thickening and specific rehabilitation procedures should be provided with EN continued until oral intake is sufficient to meet energy and protein needs<sup>17</sup>.

Monitor progress towards individualised goals and escalate/de-escalate nutrition intervention as indicated<sup>1</sup>

Ensure high protein intake for patients due to risk of ongoing muscle wasting<sup>1</sup>

Careful consideration should be given to avoiding premature removal of feeding tubes, and to ensuring continued care post ICU discharge<sup>1</sup>

ESPEN expert statements and practical guidance for nutritional management of individuals with Sars-COV-2 infection.<sup>5</sup>

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## HOSPITAL WARD AND DISCHARGE

The aim is to limit the development of malnutrition during hospital stay to enable active recovery after discharge. There is a need for early, assertive nutritional intervention in critically ill and non-critically ill hospitalised patients to mitigate the symptom, metabolic, nutritional status and nutritional intake factors that contribute to malnutrition, loss of lean body mass and function that in turn impair and delay recovery<sup>1</sup>.

Monitor progress towards individualised goals and escalate/de-escalate nutrition intervention as indicated<sup>1</sup>

Ensure high protein intake for patients due to risk of ongoing muscle wasting<sup>1</sup>

Careful consideration should be given to avoiding premature removal of feeding tubes, and to ensuring continued care post ICU discharge<sup>1</sup>

Guidelines  
ESPEN expert statements and practical guidance for nutritional management of individuals with Sars-COV-2 infection.<sup>5</sup>

**Statement 5**  
Oral nutritional supplements (ONS) should be used whenever possible to meet patient's needs, when dietary counselling and food fortification are not sufficient to increase dietary intake and reach nutritional goals, ONS should provide at least 400kcal/day including 30g or more of protein/day and should be continued for at least one month<sup>5</sup>.

**FOR DRM PATIENTS**

**NUTRISON PROTEIN PLUS/ PLUS MF**

Nutrition Protein Plus MF:  
Improved GI tolerance (diarrhoea) versus standard care in an RCT [19% versus 48% incidence]<sup>16</sup>  
Improved plasma levels of EPA, DHA & carotenoids<sup>16</sup>  
Improved clinical outcome and reduced length of stay in post-operative ileus patients versus PN<sup>16</sup>

Energy	Protein type	Protein per 100 ml	NPC: Nitrogen Ratio	Fiber per 100 ml
125kcal/ml	Whole protein blend with P4	6.5g (20%)	99:1	0

Energy	Protein type	Protein per 100 ml	NPC: Nitrogen Ratio	Fiber per 100 ml
128kcal/ml	Whole protein blend with P4	6.5g (20%)	10:1	1.5g MF6 blend

**FOR DRM PATIENTS**

**NUTRISON PROTEIN PLUS ENERGY/MF**

For tube fed patients requiring a high energy and high protein formula.

Energy	Protein type	Protein per 100 ml	NPC: Nitrogen Ratio	Fiber per 100 ml
15kcal/ml	Whole protein blend with P4	7.5g (20%)	100:1	0

Energy	Protein type	Protein per 100 ml	NPC: Nitrogen Ratio	Fiber per 100 ml
153kcal/ml	Whole protein blend	7.5g (20%)	100:1	1.5g MF6 blend

**Nutritional Guideline:** "In polymorbid medical inpatients and in older persons with reasonable prognosis, whose nutritional requirements cannot be met orally, enteral nutrition (EN) should be administered"<sup>16</sup>

**FOR DRM PATIENTS**

**FORTIMEL COMPACT PROTEIN**

High energy, high protein ONS  
Low volume with 12 different flavours  
An ideal solution for better adherence to ONS<sup>17</sup>

Serving (ml)	Energy (kcal/serving)	Protein (g/serving)	% Energy from Protein
125ml	300kcal	16g	24%

**Nutritional Guideline:** "In malnourished polymorbid medical inpatients or those at risk of malnutrition, nutritional support shall be continued after hospital discharge in order to maintain or improve body weight and nutritional status"<sup>17</sup>

## DISCHARGE, REHABILITATION AND RECOVERY

Low muscle mass is associated with higher rates of infections, poorer tolerance to chemotherapy, hospitalisation, fractures, reduced quality of life, and reduced survival with implications for patient outcomes and healthcare utilisation.  
Recommendation to target muscle mass and function required a multi-modal approach with a focus on optimal protein intake, resistance training and Vitamin D.<sup>18</sup>

Monitor progress towards individualised goals and escalate/de-escalate nutrition intervention as needed<sup>1</sup>

Ensure high protein intake and consider muscle-targeted interventions (e.g. vit D, leucine) in patients with low muscle mass or sarcopenia<sup>1</sup>

Consider pre-existing cardiometabolic condition and individualize advice<sup>1</sup>

Monitor outcome indicators/measures linked to goals and clear plan for follow up<sup>1</sup>

Protein intake and exercise for optimal muscle function with aging: Recommendations from the ESPEN Expert Group<sup>18</sup>

"High protein nutrition in combination with exercise is considered optimal for maintaining muscle function"

**FOR PATIENTS WITH DISEASES ASSOCIATED WITH PROTEIN MALNUTRITION WITH A LOSS OF MUSCLE MASS**

**FORTIFIT**

High-protein ONS, containing ActiSyn™, a unique combination of nutrients (100% whey protein, leucine and vitamin D) which stimulates muscle protein synthesis<sup>19</sup>.

Serving (ml)	Energy (kcal/serving)	Protein (g/serving)	Leucine (g/serving)	Vitamin D (µg/serving)
40g in 125ml water	150kcal	21g	3g	20 µg (800IU)

**Nutritional Guideline:** "Nutritional support should be continued post hospital discharge to maintain or improve functional status and quality of life"<sup>19</sup>

**FOR PATIENTS WITH DRM AND MUSCLE LOSS**

**FORTIMEL ADVANCED**

High-energy and high-protein ONS, containing ActiSyn™, a unique combination of nutrients (100% whey protein, leucine and vitamin D) which stimulates muscle protein synthesis<sup>19</sup>.

Serving (ml)	Energy (kcal/serving)	Protein (g/serving)	Leucine (g/serving)	Vitamin D (µg/serving)
200ml	302kcal	21g	3g	10 µg (400IU)

**Nutritional Guideline:** "In malnourished polymorbid medical inpatients or those at high risk of malnutrition, nutrient-specific ONS should be administered when they may maintain muscle mass, reduce mortality or improve quality of life"<sup>19</sup>

"A recent study showed benefits of a muscle-targeted ONS (20g whey protein, 2.8g leucine, 800 IU Vitamin D, 500mg calcium) compared to iso-calorie placebo in sarcopenic patients during a rehabilitation program.  
The muscle-targeted ONS led to a reduction in rehab duration (-27%), shorter length of stay (-10 days), more patients discharged home (+24%)<sup>18</sup>"

All Nutricia products stated are Foods for Special Medical Purposes, for the dietary management of the disease/disorder or medical condition, as indicated here for each product. They must be used under medical supervision.

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