Metabolic Phases

Ebb Phase (12-24 hours, nut not priority)	**Flow Phase** (10-14 days)	
Ebb-Phase Response	**Acute response**	**Adaptive Response**
Hypovolaemic Shock	Catabolism Predominates	Anabolism Predominates
↓metabolic rate	↑glucocorticoids	Hormonal response gradually diminishes
↓ O2 consumption	↑glucagon	↓ hypermetabolic rate
↓ BP	↑N excretion	Potential for restoration of body protein
↓ Body temp	↑ BMR	Wound healing (depends on nut intake)
	Impaired use of fuels	

Guidelines & References

ESPEN guideline on clinical nutrition in the intensive care unit (2019)

Biochem

Increased by	Decreased by
Serum Albumin	
dehydration, marasmus (severe malnutrition), blood transfusion	overhydration, hepatic failure, ascites, eclampsia, protein losing state, cancer, pregnancy, bed rest, trauma/post-op, inflammation/infection/metabolic stress
Serum Prealbumin	
severe renal failure, oral contraceptives	post-op, liver disease/hepatises, infection, dialysis, hyperthyroidism, hyperglycaemia
Serum Transferrin	
iron deficiency, chronic blood loss, hepatitis, hypoxia, chronic renal failure	pernicious anaemia, overhydration, chronic infection, uraemia (declining renal function), cancer

Changes to BMR

↑ **BMR**	stress, sepsis, fever, pain, adrenaline
↓ **BMR**	anaesthesia, sedation, sleep, starvation, continuous feeding

Nut Reqs

START AT HIGH END OF EARLY PHASE (84-105kJ/DAY) – Then lower range of critical illness

NEMO – critical illness (105-125kJ/day). Higher end of range in recovery phase

Awake = moves from critical illness to trauma requirements

P: NEMO: 1.2-2.0g/kg/day. Lower range.

Fluid: 30-35ml/kg/day

Avoid overfeeding – risk outweighs benefit

Underweight & healthy weight = ABW

Overweight = IBW

Obese = AdjBW (actual body weight - ideal body weight) x 0.33 + ideal body weight)

No guidelines for micros - not a focus in ICU

Intervention

Prevent malnutrition & catabolism

Stimulate/facilitate wound healing

Minimise risk associated with feeding

Maintain fluid & electrolyte balance

Strategies

Early EN (within 12-24 hours) = Reduction in pneumonia, mortality. Improved wound healing, GIT function & structure, strength & recovery. o Aim for goal, or 80%+, within 48-72 hours

Gut impaired? = **PN w/ trophic feeds** (10-20mL of EN).

ONS, purred diet + moderately thick liquids

HPHE education

Reduce fluid: restrict IV, diuretic medication, fluid removal via dialysis

Consider: eeb or flow, Med Hx, usual diet pre-hospital, allergies/intolerances, refeeding risk

Monitoring

reqs need to be evaluated and recalculated at least once per week

Wean NGT as oral intake ↑

EN: GI S/S

Swallowing function – w/ speechies

Example PESS

P: Inadequate protein-energy intake, altered GI function, impaired nutrient utilisation

Notes

lots of low evidence recommendations due to the nature of the patients – very limited high/Grade A evidence