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ESPEN GUIDELINES

ESPEN Guidelines on Enteral Nutrition: Adult Renal Failure ☆

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Summary Enteral nutrition (EN) by means of oral nutritional supplements (ONS) and tube feeding (TF) offers the possibility of increasing or ensuring nutrient intake in cases where normal food intake is inadequate. These guidelines are intended to give evidence-based recommendations for the use of ONS and TF in nephrology patients. They were developed by an interdisciplinary expert group in accordance with officially accepted standards and are based on all relevant publications since 1985. They were discussed and accepted in a consensus conference.

Because of the nutritional impact of renal diseases, EN is widely used in nephrology practice. Patients with acute renal failure (ARF) and critical illness are characterized by a highly catabolic state and need depurative techniques inducing massive nutrient loss. EN by TF is the preferred route for nutritional support in these patients. EN by means of ONS is the preferred way of refeeding for depleted conservatively treated chronic renal failure patients and dialysis patients. Undernutrition is an independent

Abbreviations: EN, enteral nutrition. This is used as a general term to include both ONS and tube feeding. When either of these modalities is being discussed separately this is specified in the text; Normal food/normal nutrition, normal diet of an individual as offered by the catering system of a hospital including special diets, e.g. gluten-free; lactose-free, etc. diets; ONS, oral nutritional supplements; TF, tube feeding; ARF, acute renal failure; CRF, chronic renal failure; CVVH, continuous veno-venous haemofiltration; CRRT, continuous renal replacement therapies; CAPD, continuous ambulatory peritoneal dialysis; RRT, renal replacement therapy; RDT, regular haemodialysis treatment

☆For further information on methodology see Schütz et al.[71] For further information on definition of terms see Lochs et al.[72]

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factor of survival in dialysis patients. ONS was shown to improve nutritional status in this setting. An increase in survival has been recently reported when nutritional status was improved by ONS.

The full version of this article is available at www.espen.org.

Summary of statements: Acute renal failure (ARF)

Subject	Recommendations	Grade[71]	Number
General	***Macronutrient*** requirements are not so much determined by acute renal failure (ARF) as by the severity of the underlying disease, the type and intensity of extracorporeal renal replacement therapy, and by nutritional status and associated complications: Table 1		1.7
	Extracorporeal treatment induces increased losses of ***micronutrients*** which should be supplemented.		1.7
	Monitor micronutrient status because excessive supplementation may result in toxicity.	C	1.7
	In ICU patients with ARF, the ***electrolyte*** content of most 1500–2000 kcal enteral formulae is usually adequate. However, requirements can differ and have to be assessed individually. Plasma electrolyte monitoring should avoid hypokalaemia and/or hypophosphataemia after initiation of enteral nutrition (EN) (refeeding syndrome).	C	1.7
Indications	Undernutrition is the main but not the only indication for EN.		1.6
	In uncomplicated ARF use tube feeding (TF) if normal nutrition and oral nutritional supplements (ONS) are not sufficient to meet estimated requirements.	C	1.6
	In severe ARF, the recommendations for TF are the same as for other ICU patients (see guideline ''Intensive Care''). If possible initiate EN within 24 h.	C	1.6
Route	In uncomplicated ARF, when spontaneous alimentation is insufficient, ONS may be useful to meet estimated requirements.	C	1.9
	Use nasogastric tube as the standard access for the administration of EN. Jejunal tube placement may be indicated in the presence of severe impairment of gastrointestinal motility.		1.9
	In some cases where requirements cannot be met via the enteral route, supplementary parenteral nutrition may be needed.	C	1.9
Type of formula	Standard formulae are adequate for the majority of patients.	C	1.8
	In case of electrolyte derangements formulae specific for chronic renal failure can be advantageous.	C	1.8

Grade: Grade of recommendation; Number: refers to statement number within the text.