

Minimize the uncertainty for your patients by integrating Proplete® IDPN/IPN Protein Therapy into their treatment plan.

Periodic nutritional assessment and dietary counseling of patients with CKD:

- Dry weight, laboratory values (albumin, prealbumin), muscle mass, nutritional scores (SGA, MIS), appetite, diet (DPI, DEI, K, P, fluid, Na, vitamins, other micronutrients)

Indications for nutritional interventions:

- Poor appetite and/or poor oral intake
- Unintentional loss of dry weight, sarcopenia
- Albumin <4.0 g/dL
- DPI <1.0 (CKD stage 5)

Start CKD-specific oral nutritional supplementation 1–2 servings per day:

- CKD stage 5D: DPI target of >1.2g/kg/kg per day using oral supplements at home and in-center meals and oral supplements during dialysis treatment

Monthly Assessment

- Monitor nutritional status for changes in appetite, food intake, weight status, serum albumin and prealbumin concentration, MIS and SGA

Improvement

Maintenance oral therapy

- Maintenance oral therapy if albumin reaches 4.0 g/dL.
- Continue in-center meals & oral supplement to target DPI 1.2 g/kg & DEI 30–35 kcal/kg/d
- Consider liquid oral supplement with pill intake

Adjunct pharmacological and dialysis therapies

- Appetite stimulants
- Antidepressant
- Anti-inflammatory and/or antioxidative
- Anabolic and/or muscle enhancing
- Dialysis treatment alterations

No Improvement or deterioration

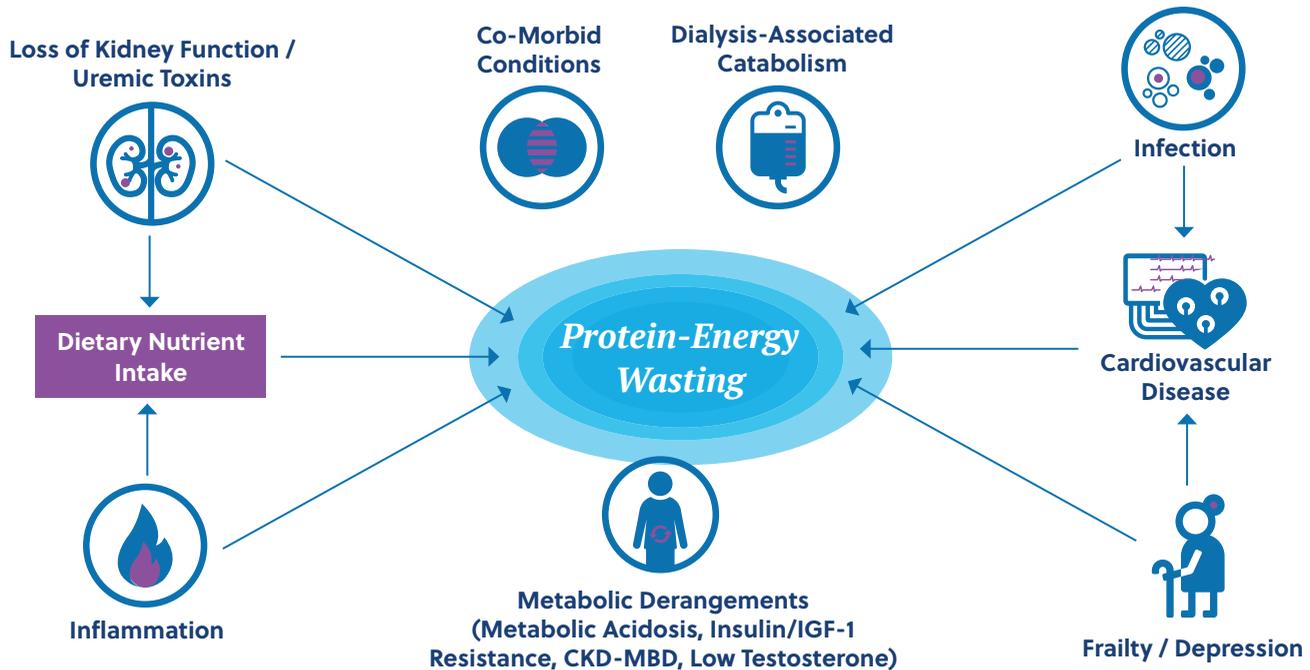
Intensify enteral therapy or additional interventions

- Increase quantity of oral therapy
- Tube feeding (including PEG)
- Parental interventions such as IDPN or IPN (especially if enteral feeding is not possible)

Proposed algorithm for enteral nutritional support in patients with CKD adopted from: Kalantar-Zadeh, K. et al. Nat. Rev. Nephrol. 7, 369–384 (2011); published online 31 May 2011.

Causes of PEW

Consequences of PEW



Adopted from: Carrero, J. J., Stenvinkel, P., Cuppari, L., Ikizler, T. A., Kalantar-Zadeh, K., Kaysen, G., Milch, W. E., Price, S. R., Wanner, C., Wang, A. Y., ter Wee, P., and Franch, H. A. (2013) Etiology of the protein-energy wasting syndrome in chronic kidney disease: a consensus statement from the International Society of Renal Nutrition and Metabolism (ISRNM), *JRenNutr* 23,77-90.

Yoshitsugu Obia, Hemn Qadera, Csaba P. Kovesdyc, and Kamyar Kalantar-Zadeha. *Curr Opin Clin Nutr Metab Care*. 2015 May; 18(3): 254–262.

Readily utilizable criteria for the clinical diagnosis of PEW in CKD

Serum Chemistry

- Serum albumin <3.8 g/dL^a
- Serum prealbumin (transthyretin) <30 mg/dL (for maintenance dialysis patients only)^a
- Serum cholesterol <100 mg/dL^a

Body Mass

- Body mass index (edema free) <23^b
- Unintentional weight loss over time: 5% over 3 months or 10% over 6 months
- Total body fat percentage <10%

Muscle Mass

- Reduced muscle mass 5% over 3 months or 10% over 6 months
- Reduced mid-arm muscle circumference area^c (reduction >10% in relation to 50th percentile of reference population)
- Creatinine appearance^d

Dietary intake

- Unintentional low DPI <0.80 g/kg/day for at least 2 months for dialysis patients or <0.6 g/kg/day for patients with CKD stages 2–5
- Unintentional low DEI <25 kcal/kg/day for at least 2 months

≥3 out of the 4 listed categories along with at least one test in each of the selected category must be satisfied for the diagnosis of kidney disease-related PEW. Each criterion should be documented on at least three occasions, preferably 2–4 weeks apart.

^aNot valid in abnormally great urinary or gastrointestinal protein losses, liver disease, or cholesterol-lowering medicines;

^bA lower body mass index might be favorable in certain Asian populations;

^cMeasured by a trained anthropometrist;

^dCreatinine appearance is influenced by both muscle mass and meat intake.

Abbreviations: CKD, chronic kidney disease; DEI, Dietary energy intake; DPI, dietary protein intake; GFR, glomerular filtration rate; PEW, protein energy wasting.

Obi, Y., Qader, H., Kovesdy, C. P., & Kalantar-Zadeh, K. (2015). Latest consensus and update on protein-energy wasting in chronic kidney disease. *Current opinion in clinical nutrition and metabolic care*, 18(3), 254-62.