

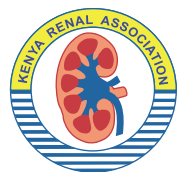
NUTRITION GUIDELINES IN DIALYSIS

2017

NUTRITION GUIDELINES



MINISTRY OF HEALTH



KENYA RENAL ASSOCIATION

FOREWORD: MINISTRY OF HEALTH

Message from the Chairman, Kenya Renal Association

The Kenya Renal Association (KRA) is pleased to partner with the Ministry of Health in the formulation of the dialysis guidelines. This is the first edition of the guidelines covering many areas relevant in dialysis care. The writing of these guidelines was motivated by the realization of the existing human resource capacity gap in the country. The expansion in installed hemodialysis infrastructure has far out - paced the requisite trained human resource complement needed to offer these services. As a result, services are offered by personnel who have only undertaken short preceptorship courses. These short courses in no way substitute formal training. These guidelines attempt to provide a guide to management of common conditions and situations that may be encountered during the course of dialysis and in management of dialysis dependent patients.

These guidelines are deliberately simplified to make them easy to use. In coming up with these guidelines, we have borrowed from other major guidelines which we acknowledge at the references section. KRA is grateful to all who contributed their time and effort to ensure that these guidelines come to fruition. Special gratitude goes to the pioneer EAKI Nephrology Fellows who took the time to painstakingly go through these guidelines as well as the Nephrologists who mentored them.

These guidelines are by no means exhaustive and the user must not hesitate to ask for help or consult more detailed nephrology texts if they encounter situations not envisioned or well captured in these guidelines. KRA hopes to review these guidelines periodically as and when significant changes to best practice recommendations occur.

It is hoped that these guidelines will prove educative and practical to the user and help improve the quality of care offered to the dialysis patient.

Prof. S. O. McLigeyo,

Chairman,

Kenya Renal Association.

List of Contributors

1. Prof. Seth O. McLigeyo
2. Prof. Joshua Kayima
3. Dr. Anthony J. Were
4. Dr. Doris Kinuthia
5. Dr. John Ngigi
6. Dr. Benjamin Wambugu
7. Dr. Patrick Mbugua
8. Dr. Ahmed Twahir
9. Dr. Ahmed Sokwala
10. Dr. Jonathan Wala
11. Dr. George Moturi
12. Dr. Peter Koech
13. Dr. John Mutiso
14. Dr. Beatrice W. Ndege
15. Dr. Samuel Kabinga
16. Dr. James Kahura
17. Dr. Caroline Mwololo
18. Dr. David Ndonge
19. Dr. Edward Njogu
20. Dr. Hardeep Gill
21. Dr. Hussein Bagha
22. Ms. Diviner Nyarera
23. Ms. Matroba Obunaka
24. Ms. Beatrice Mugo

25. Ms. Nancy Wagombe

26. Mr. Charles Mwangi

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Abbreviations and acronyms

CKD	-	Chronic kidney disease
HD	-	Haemodialysis
IDPN	-	Intra dialytic parenteral nutrition
KCl	-	Potassium chloride
Kg	-	Kilograms
NaCl	-	Sodium chloride
TPN	-	Total parenteral nutrition
UF	-	Ultrafiltration

Definition of terms

- **High biological value:** - High oral bioavailability with low products of metabolism.
- **Dry weight:** - Post haemodialysis weight at which the patient is normotensive without experiencing symptoms of fluid overload or dehydration.
- **Leaching:** - Removing minerals from vegetables by boiling them in water, discarding the water and then cooking them.

Introduction

Malnutrition is common among dialysis patients and predicts morbidity and mortality. Goals of nutritional therapy in dialysis patients are; to prevent malnutrition, improve nutritional status and improve quality of life. Nutritional assessment and treatment are required in all stages of CKD. All kidney care givers should be aware of the principles of nutritional assessment and intervention.

Nutrition has several domains, namely:

- Protein– energy nutrition.
- Acid–base balance.
- Divalent ion metabolism.
- Anaemia management.
- Micronutrient management.

Variations in dietary habits in different populations need to be put into consideration when designing the nutritional interventions. Nutritional education and counselling of the patient is key to ensuring adherence and success of the interventions.

Recommendations

- It is recommended that history of dietary habits, physical examination including anthropometric measures (e.g. weight, height, mid upper arm circumference, BMI, skinfold thickness) should be done monthly.
- It is recommended that serum albumin, calcium, phosphate, uric acid and lipid profile be done every three months.
- A dietary protein intake of 1.2 g/kg/day is recommended for stable patients on dialysis. At least 50% of protein should be of high biological value e.g., chicken, fish, meat and milk.
- The recommended energy intake for patients on HD is 35 kcal/kg/day if the patient is less than 60 years of age and 30 kcal/kg/day if the patient is more than 60 years. It is recommended that 50–60% of

total calories should come from carbohydrates, 30% of total calories should come from fats (saturated fats should be less than 7%), and 20% of total calories should come from protein. Energy intake of patients having diabetes mellitus should be 25–30 kcal/kg/d.

- It is recommended that patients who are unable to meet nutrient requirements should be evaluated by a nutritionist for consideration of nutritional support e.g. oral supplementation, tube feeding, intradialytic parenteral nutrition (IDPN) or total parenteral nutrition (TPN).
 - Enteral tube feeding should be started with 50–100 ml bolus feeds every 4 hours and gradually increased to 300–500 ml every 4 hours. If continuous feeding is started, then start from 20 to 50 ml/hour, then increase by 20 ml every 2–8 hours as tolerated until the requirement is reached.
 - Intra dialytic parenteral nutrition (IDPN) should be considered if spontaneous intake of energy is 20-25 kcal/kg/day and if protein intake is 0.8 -1 g/kg/day. An equivoluminous degree of UF should be added to regular UF rate to maintain fluid balance. Include sodium, potassium, and magnesium in the IDPN /TPN solution as per the patient's requirement. Examples of TPN formulations include: -Renal specific 7% amino acids, dextrose for energy, 10% or 20% intra lipid fat emulsion-for concomitant hepatic pathology.
 - Total Parenteral Nutrition should be initiated if spontaneous intake of energy is <20 kcal/kg/day and protein intake is < 0.8 g protein/kg/day.
 - About 15-25% of patients develop side effects with parenteral nutrition like nausea and vomiting. In such cases, decrease the infusion rate as tolerated and reduce the total IDPN by half for 1–2 weeks.
 - Intradialytic cramping may occur in rare cases because of low

plasma osmolality if sodium profiling is not done. It is recommended that 111 mLs of Normal saline per 250 ml of IDPN infusion should be added.

- Glucose metabolism should also be monitored. In case of hyperglycaemia soluble insulin should be administered as per sliding scale (See table 2).
- It is recommended that patients on HD should restrict dietary sodium intake to no more than 2 g/d. Restrict foods with high salt content like crisps, popcorn, spices and processed meats.
- A potassium intake of 800mg per day is recommended. Patients should be advised to leach potassium from all foods. Fruit juices and vegetable soup should be avoided. Low potassium containing fruits include apples, pineapples, pears, guavas, pawpaws etc. An intake of two servings per day is adequate (See table 6 and 7).

REFERENCES

1. Agarwal, R. *et al.* (2014) ‘Assessment and management of hyper-tension in patients on dialysis.’, *Journal of the American Society of Nephrology*, 25(8), pp. 1630–46. doi: 10.1681/ASN.2013060601.
2. Boyce, J. M. and Pittet, D. (2002) ‘Guideline for Hand Hygiene in Health-Care Settings. Recommendations of the Healthcare Infection Control Practices Advisory Committee and the HIPAC/SHEA/APIC/IDSA Hand Hygiene Task Force.’, *American journal of infection control*, 30(8), pp. S1-46. doi: 12461507.
3. Indian Society of Nephrology.(2012) ‘Guidelines for haemodialysis units’, *Indian journal of nephrology*, 22(Supplement).
4. Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2012 Clinical Practical Guideline for the Evaluation and Management of Chronic Kidney Disease. *Kidney inter.,Suppl.* 2013; 3: 1-150.
5. Kim, D. K. *et al.* (2017) ‘Advisory Committee on Immunization Practices Recommended Immunization Schedule for Adults Aged 19 Years or Older - United States, 2017.’, *MMWR. Morbidity and mortality weekly report*, 66(5), pp. 136–138. doi: 10.15585/mmwr.mm6605e2.
6. Ministry of Public Health and Sanitation and Ministry of Medical Services, Republic of Kenya. National Infection Prevention and Control Guidelines for Health Care Services in Kenya. Nairobi, Kenya: Government of Kenya, December 2010.
7. Siegel, J. D. *et al.* (2007) ‘Guidelines for isolation precautions: preventing transmission of infectious agents in healthcare settings’, *CDC*, pp. 681–686. doi: 10.1016/j.ajic.2007.10.007.
8. Uptodate Version 21.6

APPENDIX

Table 1: BMI categories

CATEGORY	BMI (Kg/m ²)
UNDERWEIGHT	<18.5
NORMAL	18.5-24.9
OVERWEIGHT	25-29.9
GRADE 1 OBESITY	30-34.9
GRADE 2 OBESITY	35-39.9
GRADE 3 OBESITY	>40

Table 2: Soluble insulin sliding scale

BLOOD GLUCOSE (mmol/l)	SUBCUTANEOUS SOLUBLE INSULIN (units)
8.1-10	2
10.1-12	4
12.1-14	6
14.1-16	8
16.1-18	10
>18.1	12

Table 3: Renal exchanges for meal planning

F O O D GROUPS	Kcal	CHO g	PRO g	FAT g	Na mg	K+ mg	PO ₄ mg
Milk (1/2c)	85	6	4	5	80	185	110
Meat	65	0	7	4	25	100	65
Starch	80	15	2	1	80	35	35
Vegetables	25	5	1	0	15	150	20

Fruit	60	15	0.5	0	5	150	15
Fat	100	0	0	11	150	0	5
Beverages	0	0	0	0	0	100	0
Coffee(1c)							
Tea (1 bag)							
Wine (4oz)							
Beer (12oz)							

Table 4: Example of a food diary

DATE:				
TIME/MEAL	FOOD/BEVERAGE and amount)	(type	CALORIES	NOTES
BREAKFAST				
SNACK				
LUNCH				
SNACK				
DINNER				
<u>TOTAL CALORIES</u>				

Table 5: Food frequency table



KENYA RENAL ASSOCIATION

P.O. BOX 963 Sarit Centre 00606, Nairobi, Kenya, Tel: +254 20 375 2727 / 374 0397
Cell: +254 714 673 305 Fax: +254 20 375 2726 Upper Hill Medical Centre, Ralph Bunche Rd,