

Supplementary table

Table 1: Anthropometric measures in adults and children with CKD^{17,18}

Parameter	Details	General comments
Children 0-18 years		
Weight	<ul style="list-style-type: none"> ● Use dry weight when feasible ● Monitor weight gain/day in grams for children < 2 years¹⁸ 	<ul style="list-style-type: none"> ● Use WHO or country specific growth charts ● Use trends rather than single measurements to make clinical decisions ● Supplement measures to be used - Z scores
Height/Length	<ul style="list-style-type: none"> ● Use recumbent length < 2 years ● Calculate height age if height < 3rd centile ● Height age is the age that corresponds to the child's height when plotted at the 50th centile on a growth chart. 	
Head circumference	<ul style="list-style-type: none"> ● Measure in children up to 2 years 	
Weight for length and BMI	<ul style="list-style-type: none"> ● Measure in children up to 2 years ● BMI may be falsely high in children with short stature 	
Height velocity	<ul style="list-style-type: none"> ● Height velocity is calculated over minimum of 6 months 	
Mid-parental height	<ul style="list-style-type: none"> ● to assess a child's linear growth potential/target height ● Boys: [(Mother's height + 13 cm) + Father's height]/2 ● Girls: [Mother's height + (Father's height - 13 cm)]/2 	
Anthropometric measurements in adults		
BMI	<p>In adults with CKD 5D on MHD, overweight or obesity status (based on BMI) can be used as a predictor of lower mortality, whereas underweight status and morbid obesity (based on BMI) can be used as a predictor of higher mortality</p>	

<p>Body fat calculated from skin fold thickness</p>	<p>In adults with CKD 1-5D in the absence of edema, skinfold thickness measurements can be used to assess body fat.</p>
<p>Conicity index (CKD -5D only)</p>	<p>In adults with CKD 5D on MHD, conicity index may be used to assess nutritional status and as a predictor of mortality.</p>
<p>Waist circumference (CKD -5D only)</p>	<p>In adults with CKD 5D, waist circumference may be used to assess abdominal obesity</p>
<p>Serial changes in Hand grip strength</p>	<p>In adults with CKD 1-5D, handgrip strength may be used as an indicator of protein-energy status and functional status when baseline data (prior measures) are available for comparison</p>

Table 2: Micro and macronutrient recommendations in adults with CKD18,31

Macronutrient	CKD 1-2	CKD3-5 ND No DM	CKD 3-5 ND + DM	HD, No DM	PD, No DM	MHD/ PD +DM
Protein	RDA as per population guidelines	KDOQI 2020 0.55–0.60g /kg/d OR 0.28–0.43g+Ketoanalogues KDIGO 2024 -0.8 g /kg/d	KDOQI 2020 0.6-0.8g /kg/d KDIGO 2024 -0.8 g /kg/d	1.0-1.2g /kg/d	1.0-1.2g /kg/d	1.0-1.2g /kg/d
Insufficient evidence to recommend a particular type of protein						
Energy	25-35 kcal /kg/d	25-35 kcal /kg/d	25-35 kcal /kg/d	25-35 kcal /kg/d	25-35 kcal /kg/d	25-35 kcal /kg/d
Fats	No specific suggestions/limits in CKD					
Sodium	<2.3 g/d	<2.3 g/d	<2.3 g/d	<2.3 g/d	<2.3 g/d	<2.3 g/d
Potassium	No specific limit – intake to be adjusted to maintain serum P in normal range					

Phosphorus	No specific limit – intake to be adjusted to maintain serum phosphorus in normal range		
Calcium	RDA as per population guidelines	800-1000 mg /day (including dietary calcium, calcium supplementation and calcium-based phosphate binders)	Adjust calcium intake (including dietary calcium, calcium supplementation and calcium-based phosphate binders) to avoid calcium overload
Vit C	90 mg for men ,75 mg for women – supplement in case of deficiency		
Folate, vitamin B12, and/or B-complex supplement	Supplement only if deficiency state documented		
Trace elements	Supplement only if deficiency state documented		

Table 3: Macro and micronutrient PRNT and KDOQI recommendations in children with CKD 2-5D

Nutrient	Recommendation (PRNT) ^{24, 25,26}	Recommendation (KDOQI 2009) ²⁷
Energy	<ul style="list-style-type: none"> ● Initial prescription same as for healthy children of same chronological age for CKD 2-5D ● In children with suboptimal weight or linear growth, adjust to higher end of SDI* ● Consider additional calories from PD fluid for patients on PD (7.5 ± 7 to 9.08 ± 4.13 kcal/kg/day depending on dextrose concentration, volume used and number and duration of dwells) 	Children with CKD stages 2–5D prescribe 100% of the estimated energy requirement (EER) for chronological age
Protein	<ul style="list-style-type: none"> ● Target protein intake in children with CKD2–5D is at the upper end of the SDI for age to promote optimal growth. ● Protein intake at the lowest end of SDI is the minimum safe amount, protein intake should not be reduced below this level. ● Children on dialysis need higher than upper SDI compared to non-dialysis patients 	<p>Maintain dietary protein intake at 100 to 140% of the dietary reference intake (DRI)in CKD 3, 100-120% for CKD 4 and 5, 100% +allowance for protein loss in CKD 5D.</p> <p>(PD 0.15–0.3 g/kg/day and HD 0.1 g/kg/day)</p>
Calcium		Children with CKD stages 2-5D, it is suggested that the total oral and/or enteral calcium intake from diet and phosphate binders be between 100% to 200% of the DRI for calcium for age.
Phosphorus	In children with CKD 2-5D, it is suggested that intake of Ca and P is adjusted to maintain serum Ca and P levels within the age-appropriate normal range, without compromising nutrition.	<ul style="list-style-type: none"> ● Children with CKD 3-5D, reducing dietary phosphorus intake to 100% of the DRI for age is suggested when the serum PTH is above target range for CKD stage and the serum P is within normal range for age. ● Children with CKD 3-5D, reducing dietary phosphorus intake to 80% of the DRI for age is suggested when the serum PTH is above the target range for CKD stage and the serum P is above normal range for age.

Sodium	-	<ul style="list-style-type: none"> • Sodium supplements should be considered for children with CKD 2-5D and polyuria and for all infants with CKD stage 5D on PD • Restrict sodium in children with hypertension and prehypertension.[†] <ul style="list-style-type: none"> ○ 2-3 years - 1500 mg/d ○ 4-8 years - 1900 mg/d ○ 9-13 years - 2200 mg/d ○ 14 years and above- 2300 mg/d
Potassium	In children with CKD 2-5D, adjust the dietary potassium intake based on serum potassium levels, aiming to maintain potassium levels within the normal range.	Potassium intake should be limited for children with CKD stages 2-5D who have or are at risk of hyperkalemia

*The lower and upper limits of the suggested dietary intake (SDI) for energy fall within the average of published values (meets requirement of half the population)

The lower and upper limits of the SDI for protein fall within the average amount +2 SD given in the published values (meets the needs of 97.5% population)

For age based energy and protein requirements for infants, children and adolescents with CKD2-5D aged 0-18 years, see reference 20.

†Grams of sodium & 2.53 # grams of salt; 1 teaspoon salt # 2,300 mg sodium.

Table 4: Nutritional supplements and fortification of diet for children with CKD ^{20, 41}

Natural / supplements (100gm)	Energy (kcal)	Protein (gm)	Phosphorus (mg)	Potassium (mg)	Comments
Breast milk	65	1.3	15	51	Low Po4/K
Cow's milk (undiluted)	60	3.2	222	150	High PO4/K
Supplements for adults on dialysis (high protein)	460-500	20-40	170-190	280-460	Some supplements have zero PO4 and K
Supplements for adults (Low protein)	450- 500	5-12	300-350	160-190	
High energy low protein food categories		High protein food categories		Additives for extra energy	

Refined carbohydrates - honey, jam sugars	Dairy foods - milk, cheese	Glucose polymers (neutral taste and no osmotic effect on gut) Sugar, glucose, honey, jams (sweet taste) Fat emulsions or oils (5-6g/100 ml feed in children < 1year and upto 9g/100ml for children >1 year.
Sweets or candies	Eggs	
Fats - mayonnaise, vegetable oil	Meat and fish	
Starchy carbohydrates - pastries - eg. doughnut, muffin, pancakes	Legumes and nuts (with no skin or shells)*	
Fortifying breast milk and concentrating formula - refer to PRNT guidelines on infant feeding		

***low biological value**