Diet in renal disease

Documentation on the Renal Database

Two Proton (Edinburgh renal EPR) screens are maintained and updated by Dietetic staff:-

- Nutritional status
- Dietary therapy

Malnutrition or undernutrition is prevalent in patients with renal disease, the prevalence increasing as GFR falls. The cause is multifactorial. Intake often improves on starting dialysis, but malnutrition on dialysis is common and a strong predictor of mortality.

Constituents of food important in renal disease

Protein

In CKD our policy is to estimate protein intake, and make dietary recommendations to achieve intake in the range 0.8-1g/kg of ideal body weight. This is not a low protein diet, but may in some patients involve a reduction in intake. In others it will require increased intake.

On HD intake is increased to 1-1.2g/kg ideal body weight (ibw) to compensate for small increased losses and a tendency to under-nutrition.

On PD intake is increased to >1.2g/kg to compensate for peritoneal protein losses, which are variable but at times high.

A typical daily intake in the UK is 60-80g; normal requirement is only 45-55g (assuming adequate energy intake).

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Food	Protein content (g)
500ml cows milk	17
100g meat, poultry, cheese, nuts	25-30
100g fish	20
1 egg	8
1 yoghurt	7
135g baked beans (small tin, in tomato sauce)	7

Sodium

Typical daily intake in the UK is 150 – 200mmol. Daily requirement is less than half of this. Only around 10% of this is naturally-occurring in fresh/food – the remainder is added in cooking and food processing or as table salt after cooking.

Salt substitutes mainly consist of potassium chloride and are therefore not usually suitable for patients with renal failure.

For almost all renal patients without extra losses we recommend an intake of 80-100mmol/day. We refer to this as 'no added salt' but it also requires avoiding pre-added salt. Lower intake than this is probably desirable but may compromise energy intake.

Fluid

It is impossible for patients to comply with fluid restrictions if their salt intake is high.
HD – urine output plus 500mls/d
PD – normally urine output plus 750mls/d, but depends on ultrafiltration.

Potassium

Typical daily intake in the UK can vary from 50 to 150mmol. Intake should only be limited if blood tests show it's necessary, as the fruit and vegetable contribution to potassium intake is important for general health.

Potassium is found in many foods but particularly high in fruit, fruit juice, and potatoes and vegetables which have not been boiled.

CKD – restriction not usually required until GFR<20, unless on ACE inhibitions, and their continuation thought important.
HD – most patients require some restriction.

PD – some patients require restriction.

Phosphate and Calcium

Typical daily intake of phosphorus in the UK is 35-40mmol.

Phosphate is commonly found in association with protein – milk, yogurt and cheese being particularly rich. However, there are some other foods that contribute phosphate, e.g., oatcakes; also offal, shellfish, nuts, milk chocolate, eggs, scones, Horlicks). Other sources are convenience foods that have phosphates added by food manufacturers.

Dietary prescriptions in renal failure

Status	Protein	Energy	Fluid	Sodium	Potassium	Phosphate
CM	0.8g – 1g/kg IBW*	35kcals/kg IBW min (unless overweight)	Normal (some exceptions require restrictions)	'No added salt' 80-100mmols	Restricted only if blood levels high	Restriction may be required if levels high or dietary intake excessive
Nephrotic Syndrome	1g/kg IBW	35 kcals/kg IBW	May require restriction	'No added salt' 80-100mmols	Unrestricted unless levels high	Unrestricted unless levels high
Haemo-dialysis	1g – 1.2g/kg IBW	35 kcals/kg IBW	500mls + UO	'No added salt' 80-100mmols	most require some restriction <1mmol/kg	dietary restriction and phosphate binders
Peritoneal dialysis	>1.2g/kg IBW – higher in peritonitis	25-30kcal/kg IBW (300-600kcals from PD fluid)	based on ultrafiltration – or 750mls + UO	'No added salt" 80-100mmols	unrestricted for most patients	Dietary restriction and binders often required
Transplant	1g/kg IBW Higher 1-2 wks post-op	Depends on BMI and need for weight gain/loss	high fluid requirements normally	'No added salt' 80-100mmols	unlikely to need restriction	high intake advised post-op

Acutes	0.17-2g Nitrogen per kg	BMR + stress and activity factors	Depends on UO and RRT	'No added salt' 80-100mmols	based on blood levels but intake often low anyway	be aware of hypophosphataemia – re-feeding syndrome

* IBW = Ideal Body Weight * CM = Conservative Management * UO = Urine Output

Dietetic Referral Criteria

Chronic Renal Failure

Patients with any of the following should be referred to the renal dietitian for individual dietary assessment and advice.

1. CKD stages 4 and 5 (GFR <30ml/min/1.73m2)
2. Hyperkalaemia, Serum K+ ≥ 5.5mmol/l on an upward trend, not acidotic.
3. Starting an ACE Inhibitor with serum K+ ≥ 5.0mmol/l
4. Malnutrition related to uraemia
    a. BMI < 20kg/m2
    b. Unintentional weight loss >5% in 3 months
5. Serum PO4 ≥ 1.8mmol/l
6. Patients with moderate to severe nephrotic syndrome requiring no added salt diet ± nutritional support.
7. Renal stones – patients with calcium oxalate or uric acid stones who will benefit from dietary information, at the dietitian's discretion.

General Nephrology and Transplant Clinics

- Refer in writing, giving relevant information.
- Please ensure the patient is aware that they have been referred to the dietitian and is willing to attend.
- After receipt of referral, patients will be seen at their next nephrology clinic appointment if possible. If necessary, request earlier contact in your referral.
- Patients with hyperkalaemia will be sent basic written low potassium dietary information as first line advice before being seen. Dietary advice for non-renal conditions such as cholesterol lowering, weight reduction, IBS and eating disorders: will not be accepted, clinic staff can provide

written information on general healthy eating such as “Your weight, Your Health”, but for more detailed information refer to a community dietitian.
- Basic information on a no added salt diet is available for all staff to issue as appropriate.

Follow Up Policy

- Patients with stages 4 and 5 CKD will usually be kept under follow-up.
- Others and patients who miss appointments will usually be discharged and the referrer will be informed by letter.

Haemodialysis

Before referring please check dietetic therapy entries in Proton, as often patients will have recently seen the dietitian.

- Newly started onto haemodialysis for dietary education
- K >6.5 mmol/l
- PO4 >1.8 mmol/l on more than one occasion
- Consistent inter-dialytic weight gain >2.5 kgUnintentional weight loss >5% in 3 months
- BMI <20 kg/m2
- Poor appetite/GI symptoms for 2 weeks or more.

Patients will be seen on dialysis at a convenient time. All patients will be routinely reviewed 6 monthly as per QIS standards.

Peritoneal Dialysis

- First check Proton diet screen.
- Newly started onto peritoneal dialysis for dietary education.
- K >5.5 mmol/l
- PO4 >1.8 mmol/l on more than one occasion
- Persistent fluid overload related to fluid intake
- Unintentional weight loss >5% in 3 months
- Poor appetite/GI symptoms for 2 or more weeks
- BMI <20 kg/m2

PD patients will be seen for initial education when they are training or for review at their next clinic appointment. Please specify if patients require earlier input.

All patients should be reviewed 6 monthly as per QIS standards.

Considerations include: Adequacy of PD; ? acidotic; PO4 binders

Management of Hyperkalaemia

- Upon receipt of referral for hyperkalaemia a letter will be sent out to the patient with basic low potassium dietary information, requesting the patient to phone for further advice. This will be documented on Proton. We won't routinely telephone the patient.
- When the patient calls back, telephone advice will be given and documented on Proton.
- Patients will usually be seen at their next Nephrology appointment.
- If the patient does not phone for further advice they will have a copy of the basic low potassium dietary information and will be seen at their next Nephrology clinic appointment.

Patient information

Our Diet info pages for patients in EdRenINFO are the most popular pages on www.edren.org and have lots of info about what's in food, and what's different about diet on different types of dialysis and CRF. There are also info sheets to download about potassium, sodium etc. The Further Info section at the foot of the 'Diet Home' page has these downloadable files, links to look up What's in …. [any specific food you can imagine].

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