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Dietary management in Renal Supportive Care

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Overview

- Dietary intervention for RSC
- Malnutrition
- Symptom control
- Electrolyte and fluid management
- Slowing the progression of disease
- Case study

Background

Renal supportive care encompasses

1. Patients choosing not to have RRT
2. Patients with significant symptoms who are continuing on dialysis
3. Patients withdrawing from dialysis or active medical treatment

Dietary intervention

Patients choosing not to have RRT

1. Malnutrition prevention
2. Symptom control (uraemic and electrolytes)
3. Control of electrolytes and fluid
4. Slow the progression of CKD

Dietary intervention

Patients with significant symptoms who are continuing on dialysis

1.Malnutrition prevention
2.Symptom control
3.Electrolyte and fluid management

Malnutrition

Prevalence and significance Malnutrition in CKD

Malnutrition evident in up to 50% of CKD patients, worsening as eGFR declines

Malnutrition recognised as one of the most significant predictors for adverse outcomes
- Increased hospitalisations
- Increased mortality

Reduction of protein and calories is an important contributor in the catabolic process of malnutrition

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Malnutrition in CKD

Protein-energy malnutrition (PEM) characterised by:

- Loss of body fat
- Loss of somatic protein stores (muscle)
- Diminished serum proteins
- Poor performance status
- Reduced cognition
- Reduced function

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Assessing Malnutrition in CKD

Guidelines recommend malnutrition ax should include various measures:
- Changes in weight and anthropometry
- Nutritional intake
- Biochemical parameters (e.g. prealbumin, albumin)
- Validated assessment tool: Subjective Global Assessment (SGA)

it is NOT recommended that a single biochemical parameter is used (e.g. albumin)

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Albumin

Processes which control plasma Alb concentration

1. Absolute rate of synthesis (how much we make)
2. Fractional catabolic rate (how much is broken down)
3. Distribution between vascular and extra-vascular compartments (e.g. plasma volume expansion)

Low Albumin levels can be due to number of factors, including:

-Reduction in synthesis (e.g. liver disease)

-Excess excretion (e.g. proteinuria)

-Redistribution (e.g. haemodilution, increased vascular permeability)

-Inflammation (albumin is -ve acute-phase protein)

-Malnutrition / low dietary intake

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Albumin

Unique conditions in CKD which impact on various control mechanisms of albumin include:

- rate of synthesis → reduced in inflammation & poor nutrition
- plasma volume expansion → fluid retention / oedema
- exogenous loss of albumin → during dialysis (10-20g per session) and proteinuria

Therefore, in CKD reduced albumin levels result from combined effects of fluid overload, inflammation, losses from different mechanisms and poor nutritional (protein) intake.

Alb is a marker of illness rather than nutritional state alone

Low serum Alb levels should be a prompt to investigate a patient's overall health rather than solely focusing on nutrition

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Assessing Malnutrition in CKD

7 point Subjective Global Assessment

Valid malnutrition assessment tool in the CKD population

Parameters:
- Change in weight
- Changes in appetite
- Nutrition impact symptoms (appetite, nausea, vomiting, diarrhoea)
- Functional status
- Physical assessment

SGA needs to be completed by a trained clinician

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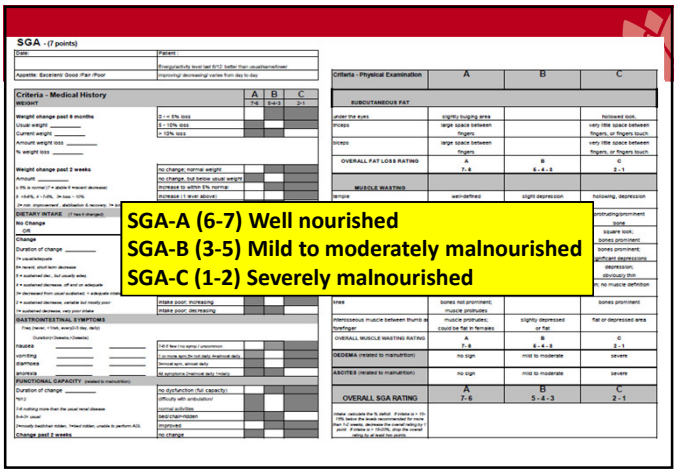

Assessing: Malnutrition in CKD

SGA is a key performance indicator to be collected 3 monthly for all RSC patients

Evidence based guideline recommendations:

eGFR <30ml/min every 3 months

**more frequently if malnutrition detected*

eGFR >30ml/min every 6-12 months

**more frequently if malnutrition detected*

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Symptom Control

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Symptom control: uraemia

Urea is a product of protein metabolism

Protein amino acids → ammonia → urea

Concentration of urea is dependent on:

- Protein intake
- Adequate urea excretion by the renal system

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Symptom control: uraemia

At some point in time patients will suffer some or all of the symptoms of uraemia to varying degrees.

- Poor appetite
- Nausea and vomiting
- Taste changes
- Itching
- Restless Legs

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Symptom control: uraemia

Modification of protein is vital to:

1. *Minimise uraemic symptoms*
2. *Improve quality of life* for patients.

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Electrolyte and fluid management

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Electrolyte management: potassium

Hyperkalemia contributes to increased hospitalisations, morbidity and mortality

- Nausea
- Fatigue
- Muscle weakness
- Cardiac arrhythmia
- Cardiac death

**hypokalemia is less common but seen when people have poor dietary intake*

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Symptom control: Fluid and sodium

Excess sodium	Excess fluid
Increased BP - Worsening cardiac and kidney function - Reduced QoL	Increased BP & LV hypertrophy - Worsening cardiac and kidney function - Reduced QoL
Increased albuminuria - Worsening kidney function - Increased protein losses, contributing to malnutrition	Shortness of breath - Reduced mobility - Reduced QoL - Hospitlisation in severe cases
Peripheral oedema - Reduced mobility - Reduced QoL	Peripheral oedema - Reduced mobility - Reduced QoL

Symptom control: phosphate

Most commonly see hyperphosphatemia.
Leads to significant morbidity and mortality

Symptoms include:
- Pruritis
- Bone and joint pain

Chronic issues:
- Vascular calcification and CVD
- Renal bone disease and increased rate of fractures

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Slowing the progression of disease

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Protein restriction: to slow CKD progression

Latest evidence suggests that low protein diets (0.6g protein per Kg IBW) do NOT increase mortality and maintains adequate muscle stores

Need to ensure these low protein diets are well designed to ensure that patients are meeting their other nutritional needs

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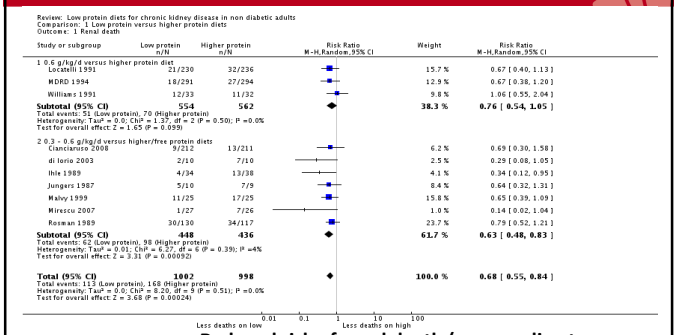
Fouque 2009, Cochrane Review



Reduced risk of renal death (e.g. needing to commence dialysis) reduced by 32%

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Case Study

Pt AD 86yr man, commenced HD Feb 2014

Referred to me in August 2014 re: unintentional weight loss

RSC approach WRT reduced dialysis hours and meds to reduce burden

Initial Ax, met with patient and his family:

- 12.5% loss body weight
- Symptoms: anorexia
- High PO4 with associated itch
- Reduced mobility and daily function
- **SGA-B3 (moderately malnourished)**

Plan:
1. Liased with nephrologist re: high PO4. (*Agreed for QoL to commence)*
2. Designed high energy, low PO4 diet
3. Review in 1/12

Patient (and family) Goals: improve itch, return to his woodwork and regular daily activities, reduce time spent in dialysis. Family concerned over weight loss.

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Case Study

Review:

✓ Itch had subsided and Maintained weight

✗ Becoming breathless with less dialysis and high fluid gains between dialysis.

Patient was happy with diet and not finding PO4 binders burdensome

Primary concerns: Fluid overload and SOB affecting mobility, daily function and QoL

Plan:
1. Pt educated for FR and low fluid foods
2. Continue high energy, low PO4 diet
3. Review in 1/12

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Case Study

Reviews over the next 3-4 months

- Itch resolved (PO4 normal)
- Fluid overload and breathlessness improved
- Improved appetite and enjoying foods again
- Re-gained weight, (back to usual weight after 6 months)
- Improving mobility and daily function (Back to wood work)
- Improved QoL with reduced dialysis hours, reduced symptoms and improved daily function
- Family and patient much happier
- **SGA-A6 (well nourished)**

Reduced reviews to 3-6 monthly.

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Case Study

Lessons learnt

- Important to understand patient (and family's) concerns, priorities and goals
- Working closely with MDT
- Early intervention to prevent symptoms / issues escalating
- Regular follow up with patient (and family)

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When should you refer to a specialist renal dietitian?

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Referral for dietetic consultation is a RSC key performance indicator

A blanket referral when a patient is accepted into the RSC program to conduct initial nutrition assessment

Dietary prescription as warranted by individual patient needs WRT:

- symptom control
- improving nutrition and QoL
- electrolyte and fluid management
- Protein modification to slow progression of CKD

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THANK YOU

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References

Ash, S. et al. 2014. *Nutrition prescription to achieve positive outcomes in chronic kidney disease: a systematic review.* Nutrients, vol 6

CARI guidelines: *Modification of lifestyle and nutrition interventions for management of early chronic kidney disease*, Kidney Health Australia, 2012

Fouque, D. 2009. *Low protein diets for chronic kidney disease in non-diabetic adults*. Cochrane Collaboration

Fouque, D. 2014. *Low protein diets in Chronic Kidney Disease: are we finally reaching a consensus*? NDT

KDOQI Guidelines: *Clinical practice guideline for nutrition in chronic renal failure*, National Kidney Foundation, 2000

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