Management of early chronic kidney disease

GREENLANE SUMMER GP SYMPOSIUM 2018

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Introduction

- A growing public health problem in NZ and throughout the world.
- Unknown prevalence in NZ, but 7 – 10% based on overseas population-based studies.
- Maori and Pacific peoples have higher rates of diabetes, CKD and ESKD in NZ.
- 2674 dialysis patients in 2015 (12% increase in the last 5 years).

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Introduction

- A major risk factor for cardiovascular disease (CVD) and premature death.

- Timely detection and management of CKD reduce the risks of CVD and CKD progression by up to 50%.

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The Classification of CKD and Prognostic Risk from the KDIGO CKD Consensus Consortium

Prognosis of CKD by GFR and Albuminuria Categories: KDIGO 2012 (units changed to SI)				Persistent albuminuria categories Description and range		
				A1 Normal to mildly increased < 3 mg/mmol	**A2** Moderately increased 3–30 mg/mmol	**A3** Severely increased > 30 mg/mmol
GFR categories (ml/min/1.73 m^2) Description and range	G1	Normal or high	≥ 90			
	G2	Mildly decreased	60–89			
	G3a	Mildly to moderately decreased	45–59			
	G3b	Moderately to severely decreased	30–44			
	G4	Severely decreased	15–29			
	G5	Kidney failure	< 15			

Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk; Orange: high risk; Red: very high risk.

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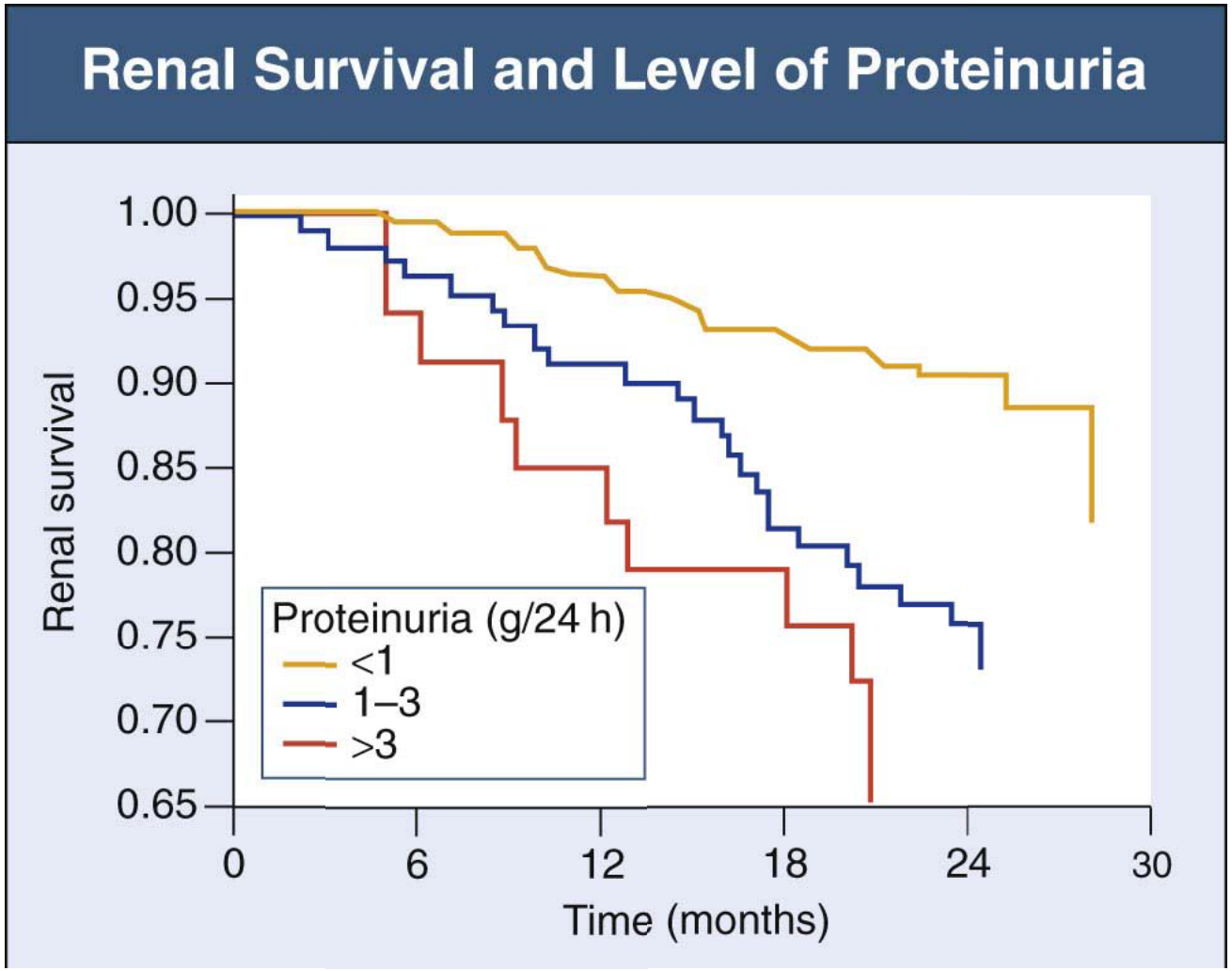
Renal Survival and Level of Proteinuria



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Risk of CKD

All-cause mortality

	ACR < 1	ACR 1-3	ACR 3--30	ACR ≥30
eGFR > 105	1.1	1.5	2.2	5.0
eGFR 90–105	Ref	1.4	1.5	3.1
eGFR 75–90	1.0	1.3	1.7	2.3
eGFR 60–75	1.0	1.4	1.8	2.7
eGFR 45–60	1.3	1.7	2.2	3.6
eGFR 30–45	1.9	2.3	3.3	4.9
eGFR 15–30	5.3	3.6	4.7	6.6

Cardiovascular mortality

	ACR < 1	ACR 1-3	ACR 3-30	ACR ≥30
eGFR > 105	0.9	1.3	2.3	2.1
eGFR 90–105	Ref	1.5	1.7	3.7
eGFR 75–90	1.0	1.3	1.6	3.7
eGFR 60–75	1.1	1.4	2.0	4.1
eGFR 45–60	1.5	2.2	2.8	4.3
eGFR 30–45	2.2	2.7	3.4	5.2
eGFR 15–30	14	7.9	4.8	8.1

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Screening for early CKD in primary care

- Population screening in isolation is not recommended.

- Major risk factors for CKD in NZ:
  - Hypertension
  - Diabetes
  - Age over 60 years
  - BMI > 35
  - Family history of CKD
  - Maori and Pacific ethnicity
  - CVD resulting in reduced renal perfusion and endothelial dysfunction
  - Prostatic syndrome / urologic disease which has the potential to cause obstructive uropathy

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Screening for early CKD in primary care

- Other high-risk groups may include:
  - Previous acute kidney injury
  - Cigarette smoking
  - Nephrotoxic drugs
  - Systemic autoimmune conditions
  - Renal stones, recurrent urinary tract infections

- Frequency of testing – every 12 months
  - Urine ACR
  - Serum creatinine and eGFR

Firstly, repeat 1 – 2x over 3 months, then

Urine PCR
MSU (haematuria)

Inaccurate in some patients groups:
- Children
- Abnormally low or high muscle mass
- Cirrhosis

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Primary prevention of CKD

- Avoid development of CKD → a preferable strategy

- Limited evidence in general, but probably good evidence on the following:
  - Achieve blood pressure target of < 140 / 90 mmHg***
  - Educational programs
  - Avoidance or cessation of cigarette smoking
  - An individualized care plan with appropriate prescription of medications and interventions targeting CVD and renal risk modifications

- Importance of addressing and modifying risk factors irrespective of evidence

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Managing patients with CKD in Primary Care

- Stable CKD stage 3 or those aged > 75 years with early and stable CKD stage 4 can be managed in primary care.

- The most important aspects of CKD management are:
  - Controlling blood pressure
  - Controlling blood glucose (if the patient has diabetes)

- Appropriate cardiovascular disease management.

- Complementary community-based care strategies involving nurse-led teams (the DEFEND trial).

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Managing patients with CKD in Primary Care

Lifestyle management	Systolic blood pressure reduction
Reduce BMI to < 30, an ideal target of <= 25 Waist circumference < 102 cm - male Waist circumference < 88 cm - female	5 – 20 mmHg
Moderate intensity **physical activity > 30min/day**	4 – 9 mmHg
Low salt diet (< 6 g / day), avoid processed food and takeaway	2 – 8 mmHg
Reduce alcohol consumption <= 2 standard drinks / day – female <= 3 standard drinks / day – male	2 – 4 mmHg
Smoking cessation	-
Low sugar and cholesterol diet	-
Normal daily protein intake 0.75 – 1 g/kg/day	-
Adequate fluid intake 30ml/kg/day ***	-

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Managing patients with CKD in Primary Care

- **Blood pressure management**
  - Target blood pressure <= 130 / 80 mmHg ***
  - ACEIs or ARBs are the first line treatment
  - Avoid the combination of ACEI and ARB
  - Calcium channel blockers, thiazide and B-blockers are second line therapy

- **Glycaemic control**
  - Target HbA1C < 53 mmol/mol ***
  - Metformin can be used in stage 4 CKD, but maximal dose 500mg – 1g /day ***

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Managing patients with CKD in Primary Care

- **Treating hyperlipidaemia according to cardiovascular risk**
  - Statin treatment, less effective in advanced CKD
  - Avoid Fibrates

- **Hyperuricemic and gout control**
  - Target uric acid < 0.36 mmol/L
  - Allopurinol is the first line therapy
    - Dosage up to 300mg/day in advanced CKD
    - Slow titration
  - Prednisone for acute gout attacks; Colchicine use with caution
  - Avoid NSAIDs

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Managing patients with CKD in Primary Care

- **Avoid nephrotoxic agents**
  - NSAIDs
  - Proton pump inhibitors
  - Lithium
  - Antivirals (Acyclovir, Cidofovir, Foscarnet, Indinavir)
  - Amphotericin
  - Aminoglycosides (Amikacin, gentamicin, tobramycin)
  - Calcineurin inhibitors (Ciclosporin/Tacrolimus)
  - Chemotherapeutics (Cisplatin, Ifosfamide)
  - Sulphonamides
  - Fibrates
  - Radiocontrast media

Managing patients with CKD in Primary Care

- **Avoid nephrotoxic agents**
  - Unregulated traditional/Herbal medicine
    - Heavy metals contamination
    - Aristolochic acid

- **Preventing acute kidney injury**
  - Avoid some or all of antihypertensive medications, diuretics, NSAID, metformin during an acute illness
  - Pre-hydration when undergoing procedures requiring radiocontrast media.

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Monitoring patients with established CKD

CKD staging	Frequency of review	Investigations requested
Stage 1 – 2	6 – 12 months; less frequently if the patient's eGFR is stable and risk factors controlled	Serum creatinine, ACR (or PCR), serum electrolytes, serum urate, HbA_{1c} and lipids
Stage 3	Three to six-monthly	In addition to the above: FBC, serum ferritin, calcium, phosphate and parathyroid hormone
Stage 4	Three-monthly	In addition to the above: plasma bicarbonate
Stage 5	Monthly	Investigations usually determined in conjunction with a nephrologist

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When to refer for specialist renal care

- Stage 4 and 5 CKD of any cause (eGFR < 30 ml/min/1.73m2)
- A progressive decline in eGFR from a baseline of < 60min/min/1.73m2
  - > 5ml/min over a 6-month period, confirmed on >= 3 separate readings
- Evidence of intrinsic renal disease (GN, AIN, polycystic kidney disease)
- ***Persistent*** significant albuminuria (uACR > 30mg/mmol) or proteinuria (uPCR > 50mg/mmol) or urinary protein excretion >= 500mg/24h) and/or glomerular haematuria
- CKD and uncontrolled hypertension despite >= 3 BP medications

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Take home message

- CKD is a major health burden in NZ.
- Early detection of CKD improves CVD outcome and slows CKD progression.
- The most important aspects of CKD management are:
  - Controlling blood pressure
  - Controlling blood glucose (if the patient has diabetes)
- Lifestyle modifications can reduce rate of renal function decline.
- Primary care physicians play a significant role in the management of early CKD

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