Chronic Kidney Disease (CKD) Management in General Practice

SUMMARY GUIDE

Prevention • Support • Research

Kidney Health NEW ZEALAND

0800 KIDNEY (0800 543 639) www.kidneys.co.nz

Incorporating guidance from KHA-CARI Guidelines www.cari.org.au and the New Zealand Primary Care Handbook 2012

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Early detection of CKD using kidney health check

Who is at higher risk of kidney disease?	What should be done?	How often?
• Age > 60 years if other risk factors present • Diabetes • High blood pressure • Cardiovascular disease • Smoking • Obesity • Family history of kidney disease • Maori and Pacific people • South Asians • Hx of AKI • Nephrotoxin use	• Serum creatinine to determine eGFR • Urine ACR • Blood pressure	• **If CKD not present** At least every 1-2 years • **If Diabetes or CKD present** At least every 12 months

Adapted from KHA-CARI Early CKD Guidelines 2013.

Definitions of Albuminuria

	Urine albumin/creatinine ratio (mg/mmol)	24h urine albumin (mg/day)
Normalbuminuria	Male <2.5 Female <3.5	<30
Microalbuminuria	Male 2.5-25 Female 3.5-35	30-300
Macroalbuminuria	Male >25 Female >35	>300

If first void specimen not possible use a "spot" (random) urine

IF UACR positive, repeat 1-2 times over 3 months for confirmation

If eGFR<60mL/min/1.73m^2, repeat test within 14 days. Small fluctuations in GFR are common and are not necessarily indicative of progression

Clinically significant change in eGFR - drop of 20% or greater from baseline measure

Clinical tip

Urine protein:creatinine ratio of 100 mg/mmol ≅ daily protein excretion of 1g/24hrs

Clinical action plan

Based on a combination of kidney function (eGFR) and kidney damage (albuminuria/proteinuria)

eGFR (mL/min/1.73m^2)	Description	Clinical Action Plan
90	Stage 1 CKD - kidney damage* with normal kidney function	Further investigation for CKD may be indicated in those at increased risk**: • blood pressure • assessment of proteinuria • urinalysis Cardiovascular risk reduction: • blood pressure • lipids • blood glucose • lifestyle modification (smoking, weight, physical activity, nutrition, alcohol)
60-89	Stage 2 CKD - kidney damage* with mild ↓ kidney function	
45 - 59	Stage 3a CKD - mild-moderate ↓kidney function	As above, plus: • monitor eGFR 3 monthly • HbA1c • avoid nephrotoxic drugs • prescribe antiproteinuric drugs (ACE inhibitors or ARBs) if appropriate • address common complications • ensure drug dosages appropriate for level of kidney function • consider indications for a referral to a nephrologist
30-44	Stage 3b CKD - moderate-severe ↓kidney function	As above, plus refer patients with diabetes to nephrology
15 - 29	Stage 4 CKD - severe ↓ kidney function	As above, plus referral to nephrologist is usuallly indicated for physical and psychosocial preparation for renal replacement therapy (dialysis, pre-emptive transplantation) or supportive medical management
< 15	Stage 5 CKD - end-stage kidney disease	As above, plus referral to a nephrologist

* imaging or biopsy abnormalities, or proteinuria/haematuria

** hypertension, diabetes, smoker, age > 60 yrs, obesity, family history of kidney disease, Māori and Pacific people, South Asians, history of acute kidney injury (or AKI)

Clinical tip

Avoid combinaion of ACE inhibitors and ARBs

Prognosis of CKD by GFR and albuminuria category*

		Albuminuria stage		
Kidney function stage	**GFR (mL/min/1.73m^2)**	**Normal (urine ACR mg/mmol) Male: < 2.5 Female: < 3.5**	**Microalbuminuria (urine ACR mg/mmol) Male: 2.5-25 Female: 3.5-35**	**Macroalbuminuria (urine ACR mg/mmol) Male: > 25 Female: > 35**
1	≥90	Not CKD unless haematuria, structural or pathological abnormalities present		
2	60-89			
3a	45-59			
3b	30-44			
4	15-29			
5	<15 or on dialysis			

Risks of progressve CKD denoted as low , moderate , high , and very high .

* Johnson DW, Atai E, Chan M, Phoon KS, Scott C, Toussaint ND, et al. KHA-CARI Guideline: Early chronic kidney disease: detection, prevention and management. Nephrology 2013; 18: 340-350.

Interpreting tests of GFR and albuminuria

- For patients with CKD, the combination of a low GFR and albuminuria or proteinuria places them at a greater risk of CKD progression at all ages, than those with just low GFR or albuminuria/proteinuria
- Repeated testing is needed to pick up the patient with rapidly deteriorating kidney function (a sustained decline in eGFR of more than 5ml/min/1.73m²/yr)
- A measured or estimated GFR <45mL/min/1.73m² is associated with increased risks of adverse renal, cardiovascular and other clinical outcomes, irrespective of age

Who should usually be referred to a nephrologist?

Anyone with

- eGFR <30mL/min/1.73m^{2}*
- Persistent significant albuminuria (urine ACR≥70mg/mmol)
- A consistent decline in eGFR of >15mL/min/1.73m² over a twelve month period which is confirmed on at least two separate readings.
- Haematuria with ACR>30
- CKD and hypertension that is hard to get to target despite at least three anti-hypertensive$_{S}$
- Diabetes with eGFR <45mL/min/1.73m^{2}**
- Consult local guidelines for full details

Referral to a nephrologist

Appropriate referral is associated with

- reduced rates of progression to end stage kidney disease
- decreased need for and duration of hospitalisation
- increased likelihood of permanent dialysis access created prior to dialysis onset
- reduced initial costs of care following the commencement of dialysis
- increased likelihood of kidney transplantation
- decreased patient morbidity and mortality

* Referral may not be appropriate if eGFR stable, proteinuria minor and cardiovascular risk reduction achieved

** New Zealand Primary Care Handbook

www.health.govt.nz/publication/new-zealand-primary-care-handbook-2012

Treatment targets for people with CKD

Parameter	Target	Treatment and effects on systolic BP
Lifestyle Factors		
Smoking	Cease smoking	Lifestyle modification - *refer to New Zealand Primary Care Handbook 2012**
Weight	BMI at least $\leq$ 30 and ideally $\leq$ 25 kg/m^2 Waist circ males < 102 cm Waist circ females < 88cm	Lifestyle modification - *refer to Handbook* SBP reduction 5-20 mmHg $\simeq$ 10 kg loss
Physical activity	$\geq$30 mins moderately intensive physical activity/day (3-6 METs)	Lifestyle modification - *refer to Handbook and "Green Prescriptions"*** SBP reduction = 4-9 mmHg
Nutrition	Dietary salt intake $\leq$ 100 mmol/day (6g salt/day) Dietary protein intake - normal protein diet (0.75 - 1.0 g/kg/day, with adequate energy). Low protein diet not recommended	Lifestyle modification - *refer to Handbook* SBP reduction = 2-8 mmHg
Alcohol	Reduce long-term health risks by drinking no more than: • 2 standard drinks a day for women and no more than 10 standard drinks a week • 3 standard drinks a day for men and no more than 15 standard drinks a week AND at least two alcohol-free days every week	Lifestyle modification - *refer to Health Promotion Agency**** Recommended upper limts for safer drinking • Refer to MOH guidelines SBP reduction = 2-4 mmHg
Clinical Factors		
Blood pressure	$\leq$140/90 mmHg $\leq$130/80 mmHg if albuminuria or diabetes	Lifestyle modification ACE inhibitor or ARB first line therapy Combination therapy with both ACEs and ARBs should be avoided
Proteinuria	>50% reduction of baseline value	ACE inhibitor or ARB first line therapy
Lipids	Total cholesterol <4.0 mmol/L LDL cholesterol <2.0 mmol/L HDL cholesterol $\geq$1.0 mmol/L Triglycerides <1.7 mmol/L	Drug treatment and specific lifestyle advice* Treatment based on individual cardiac risk* Statins less effective wih advanced CKD
Blood glucose (for people with diabetes)	Pre-prandial BSL 4.0 - 6.0 mmol/L HbA1c <53 mmol/mol	Lifestyle modification* Oral short-acting hypoglycaemics Insulin Use metformin with caution, review with nephrologist when GFR <30mL/min/1.73m^2. Avoid if GFR <25mL/min/1.73m^2

Consider immunisation against influenza and invasive pneumococcal disease for people with diabetes or CKD.

Golden Rules! (Advice regarding what to do in the event of dehydration/self management)

People with moderate or severe CKD are at very high risk of a CVD event

Achieving adequate BP targets will often require the use of more than one agent particularly for those with DM where on average three different agents are required to achieve target BP

As eGFR declines more drugs will typically be required to achieve target blood pressure

*www.health.govt.nz/publication/new-zealand-primary-care-handbook-2012

**www.health.govt.nz/our-work/preventative-health-wellness/physical-activity/green-prescriptions

***www.alcohol.org.nz

CKD management according to stage

CKD Stage	1	2	3a	3b	4	5
Description	Kidney damage + normal or ↑eGFR	Kidney damage + mild ↓eGFR	Moderate ↓eGFR	Moderate / servere ↓eGFR	Severe ↓eGFR	End-stage kidney disease
eGFR(ml/min/1.73m^2)	≥ 90	60 - 89	45 - 59	30 - 44	15 - 29	< 15 or on dialysis
Common Signs and Symptoms	Nil		Nil or nocturia, mild malaise, anorexia	Nil or nocturia, mild malaise, anorexia	As for stage 3 + nausea, pruritis, restless legs, dyspnoea	As for stage 4
Common Complications	Hypertension		As for stage 1-2 + Anaemia Sleep Apnoea CVD Malnutrition	As for stage 1-2 + Anaemia Sleep Apnoea CVD Malnutrition	As for stage 3 + Hyperphosphatemia Acidosis Hyperkalaemia Restless legs	As for stage 4 + Pericarditis Encephalopathy Neuropathy
Clinic Assessment	BP Weight Urinalysis		As for stage 1-2	BP, weight, urinalysis	As for stage 1-2 + Fluid overload	As for stage 4
Lab Assessment	General chemistry, eGFR Glucose Lipids Albuminuria or proteinuria		As for stage 1-2 + FBC Iron stores Ca/PO4 PTH (repeat test on nephrologist advice)	Urine ACR eGFR Biochemistry Fasting lipids FBC Calcium & phosphate PTH	As for stage 3 + plasma bicarbonate	As per monthly blood schedule specified by Renal Unit
Management	Diagnosis (may require renal biopsy) Cardiac and kidney risk factor modification ≤ 140/90 or ≤ 130/80 if albuminuria or diabetes (Urine protein/creatinine 100 mg/mmol ≅ protein excretion of 1g/24hrs)		As for stage 1-2 + Treat complications Medication review	Early detection and management of complications. Adjustment of medications doses to levels appropriate for kidney function. Lipid lowering monitoring.	As for stage 3 + Education regarding treatment options including pre-emptive transplantation Dialysis access surgery	As for stage 4+ Dialysis or transplantation (or supportive medical management)
Frequency of clinical review	6 - 12 months Less frequently if eGFR stable and treatment targets met		3 - 6 monthly	3 - 6 monthly	3 monthly	Monthly (shared with renal unit)
Nephrologist Referral	Consider referral if indication is present		Consider referral if indication is present	Consider referral if indication is present	All patients should be referred to a nephrologist	All patients should be referred to a nephrologist

Referral to a nephrologist is not necessary if

- Stable eGFR $\geq$30 mL/min/1.73m^2
- Urine ACR <70mg/mmol (no haematuria)
- Controlled blood pressure

The decision to refer or not must always be individualised, and particularly in younger individuals the indications for referral may be less stringent.

Tips for referral:

- Familiarise yourself with your local nephrology unit's referral guidelines
- Don't refer to a nephrologist if targets of therapy are achieved.
- Pay attention to CVD risk reduction.
- Consider discussing management issues with a nephrologist in cases where uncertainty regarding referral exists.

Clinical tip

When referring to a nephrologist, ensure patient has current blood chemistry, quantification of proteinuria and if possible a recent renal ultrasound.

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