

Chronic
Kidney Disease
(CKD) Management
in General Practice



SUMMARY GUIDE

P r e v e n t i o n • S u p p o r t • R e s e a r c h

kidney Health
NEW ZEALAND

0800 KIDNEY (0800 543 639)

www.kidneys.co.nz

Early detection of CKD using kidney health check

Who is at higher risk of kidney disease?	What should be done?	How often?
<ul style="list-style-type: none"> • Age > 50 years • Diabetes • High blood pressure • Smoking • Obesity • Family history of kidney disease • Maori and Pacific people 	<ul style="list-style-type: none"> • Blood pressure • Urine dipstick (microalbuminuria if diabetes present) • eGFR 	<ul style="list-style-type: none"> • If CKD not present At least every 5 years • If Diabetes or CKD present At least every 12 months

Source: Adapted from Guidelines for preventive activities in general practice (The Red Book) 6th edition. 2005. The Royal Australian College of General Practitioners, South Melbourne, Victoria, Australia.

Definitions of Albuminuria and Proteinuria

	Microalbuminuria	Macroalbuminuria	Proteinuria
Albumin/creatinine ratio	Females: 3.6-35 mg/mmol Males: 2.6-25 mg/mmol	>30 mg/mol	–
Dipstick	>30 mg/L (albumin specific dipstick)	>200 mg/L (albumin specific dipstick)	Dipstick = 1+ or greater
Protein/creatinine ratio	–	–	>30 mg/mmol
24 hour protein	–	–	>0.3 g/24 hrs

eGFR clinical action plan

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**: <ul style="list-style-type: none"> • blood pressure • assessment of proteinuria
60-89	Stage 2 CKD - kidney damage* with mild ↓ kidney function	Cardiovascular risk reduction: <ul style="list-style-type: none"> • blood pressure • lipids • blood glucose • lifestyle modification (smoking, weight, physical activity, nutrition, alcohol)
30 - 59	Stage 3 CKD - moderate ↓ kidney function	As above, plus: <ul style="list-style-type: none"> • monitor eGFR 3 monthly • avoid nephrotoxic drugs • prescribe antiproteinuric drugs (ACE inhibitors and/or ARBs) if appropriate • address common complications • ensure drug dosages appropriate for level of kidney function • consider indications for referral to a nephrologist
15 - 29	Stage 4 CKD - severe ↓ kidney function	As above + referral to nephrologist is usually indicated for physical and psychosocial preparation for renal replacement therapy (dialysis, pre-emptive transplantation, transplantation) or conservative medical management
< 15	Stage 5 CKD - end-stage kidney disease	As above + referral to a nephrologist

* imaging or biopsy abnormalities, or proteinuria/haematuria

** hypertension, diabetes, smoker, age > 50 yrs, obesity, family history of kidney disease, Maori and Pacific people

Indications for 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

Who should usually be referred to a nephrologist?

Anyone with

- eGFR $<30\text{mL}/\text{min}/1.73\text{m}^2$
- Unexplained decline in kidney function ($>15\%$ drop in eGFR over 3 months)
- Proteinuria $>1\text{g}/24\text{hrs}$ (see clinical tip)
- Glomerular haematuria (particularly if proteinuria present)
- CKD and hypertension that is hard to get to target
- Diabetes with eGFR $<45\text{mL}/\text{min}/1.73\text{m}^2$ *
- Unexplained anaemia (Hb $<100\text{ g/L}$) with eGFR $<45\text{mL}/\text{min}/1.73\text{m}^2$ and normal iron stores
- Anyone with an acute presentation and signs of acute nephritis should be regarded as a medical emergency and referred without delay.

Clinical tip

Urine protein:creatinine ratio of $100\text{ mg}/\text{mmol} \cong$ daily protein excretion of $1\text{g}/24\text{hrs}$

* See Management of Type 2 Diabetes . New Zealand Guidelines Group 2003 www.nzgg.org.nz

Who does not usually need to be referred to a nephrologist?

CKD Stage 2

- Stable eGFR 60-89 mL/min/1.73m²
- Minor proteinuria (<0.5 g/24hrs with no haematuria)
- Controlled blood pressure

CKD Stage 3

- Stable eGFR 30-60 mL/min/1.73m²
- Minor proteinuria (<0.5 g/24hrs with no haematuria)
- Controlled blood pressure

The decision to refer or not must always be individualised, and particularly in younger patients the indications for referral may be less stringent (e.g. minor proteinuria).

In CKD Stages 2 and 3

- Don't refer to nephrologist if targets of therapy are achieved
- Pay attention to CVD risk reduction
- Use ACE inhibitors/ARBs
- Monitor 3-6 monthly

Clinical tip

When referring to a nephrologist, ensure patient has had a recent kidney ultrasound, current blood chemistry, and quantification of proteinuria.

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Treatment targets for people with CKD

Parameter	Target	Treatment and effects on systolic BP
Lifestyle Factors		
Smoking	Cease smoking	Lifestyle modification - refer to The assessment and management of cardiovascular risk . New Zealand Guidelines Group 2003*
Weight	BMI at least < 30 and ideally < 25 kg/m ² WC males < 100 cm WC females < 90cm	Lifestyle modification - refer to NZGG guide ~ SBP reduction = 5-20 mmHg/10 kg loss
Physical activity	>30 mins moderately intensive physical activity/day (3-6 METs)	Lifestyle modification - refer to NZGG guide and "Green Prescriptions"*** ~ SBP reduction = 4-9 mmHg
Nutrition	Dietary salt intake 40-100 mmol/day	Lifestyle modification - refer to NZGG guide ~ SBP reduction = 2-8 mmHg
Alcohol	Moderate alcohol consumption only (2-3 standard drinks/day or 12-14 standard drinks/wk)	Lifestyle modification - refer to ALAC 2003 Recommended upper limits for safer drinking ~ SBP reduction = 2-4 mmHg
Clinical Factor		
Blood pressure	<130/80 mmHg <125/75 mmHg if proteinuria >1g/24hrs	Lifestyle modification ACE inhibitor and/or ARB first line.
Proteinuria	>50% reduction of baseline value	ACE inhibitor and/or ARB first line
Lipids	Treat if TC or TC:HDL ratio > 8, CVD risk > 15%, or clinically high CVD risk	Drug treatment and specific lifestyle advice* Treatment based on individual cardiac risk*
Blood glucose (for people with diabetes)	Pre-prandial BSL 4.4 - 6.7 mmol/L HbA1c <7.0%	Lifestyle modification Oral short-acting hypoglycaemics Insulin

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

Golden Rules!

Blood pressure targets in CKD are <130/80 mmHg or <125/75 if proteinuria > 1 g/24hrs

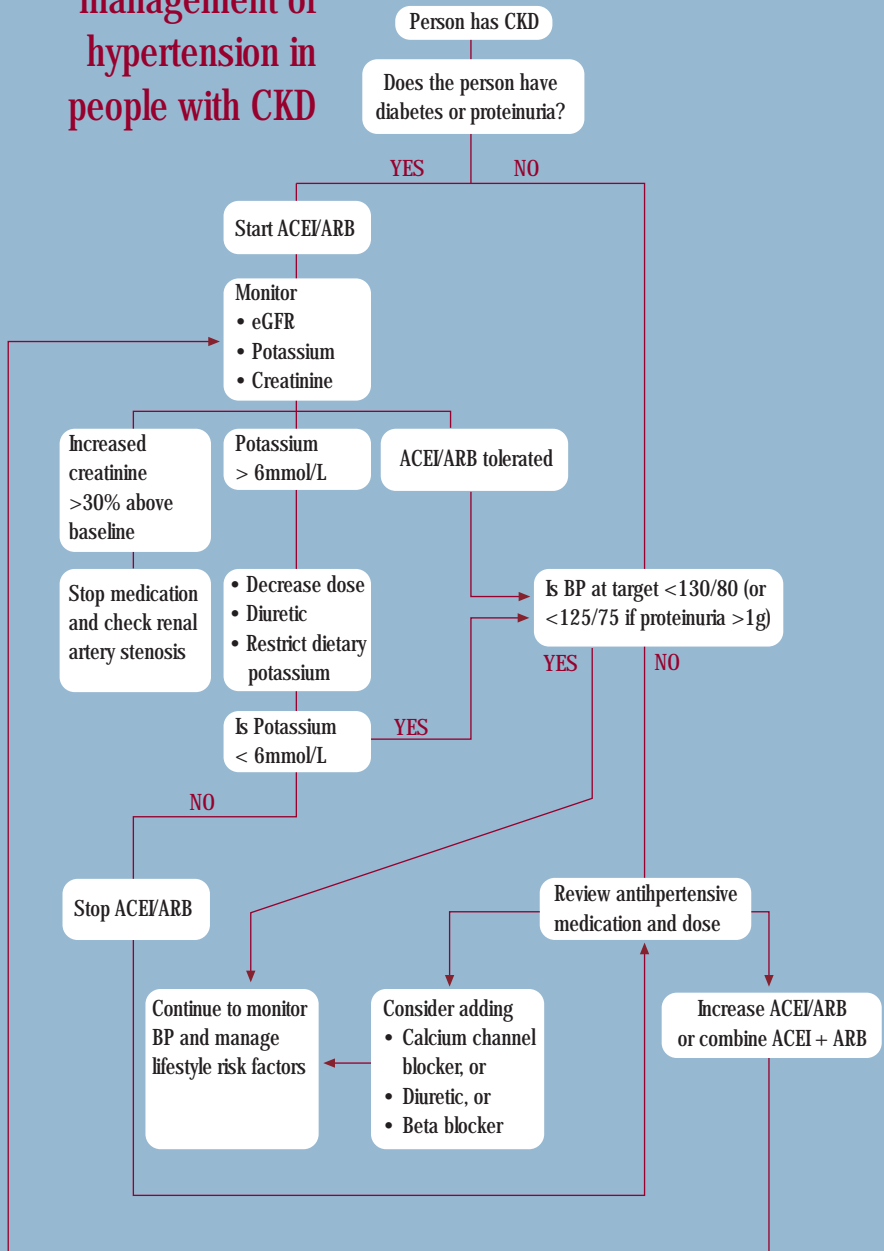
Urine protein:creatinine ratio of 100 mg/mmol \cong daily protein excretion of 1g/24hrs

Achieving adequate BP targets will often require the use of more than one agent

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

*www.nzgg.org.nz ** www.pushplay.org.nz

Principles of management of hypertension in people with CKD



CKD management according to stage

CKD Stage	1	2	3	4	5
Description	Kidney damage + normal or \uparrow eGFR	Kidney damage + mild \downarrow eGFR	Moderate \downarrow eGFR	Severe \downarrow eGFR	End-stage kidney disease
eGFR(ml/min/1.73m²)	> 90	60 - 89	30 - 59	15 - 29	< 15 or on dialysis
Common Signs and Symptoms	Nil		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 3 + Hyperphosphataemia Acidosis Hyperkalaemia Restless legs	As for stage 4 + Pericarditis Encephalopathy Neuropathy
Clinic Assessment	BP Weight Urine dipstick		As for stage 1-2	As for stage 1-2 + Fluid overload	As for stage 4
Lab Assessment	General chemistry, eGFR Glucose Lipids Urine protein/creatinine (if dipstick test positive)		Urine protein/creatinine if dipstick test positive As for stage 1-2 + FBC Iron stores Ca/PO4 PTH (repeat test on nephrologist advice)	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 BP to target <130/80 mmHg or <125/75 mmHg if proteinuria >1g/24hrs (Urine protein/:creatinine 100 mg/mmol \equiv protein excretion of 1g/24hrs)		As for stage 1-2 + Treat complications Medication review	As for stage 3 + Dialysis education Dialysis access surgery	As for stage 4 + Dialysis or transplantation (or conservative medical management)
Frequency of clinical review	6 - 12 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	All patients should be referred to a nephrologist	All patients should be referred to a nephrologist