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Chronic Kidney Disease - Update

Chronic kidney disease (CKD) is estimated to affect approximately 10% of the population, with Māori, Pacific and Indo-Asian people experiencing a higher burden of disease.[1, 2] A 2015 Ministry of Health consensus statement for the management of CKD in primary care reinforces the need to view CKD as a significant contributor to cardiovascular risk, and recommends that targeted testing for CKD be linked to routine cardiovascular risk assessment and diabetes testing.[2]

Key points

- ✓ People with diabetes are at risk of developing renal disease, although early intervention may slow progression to end stage renal failure[1]
- ✓ Younger people with type 2 diabetes have a higher lifetime risk of renal complications
- ✓ Include targeted testing for CKD with routine cardiovascular and diabetes testing
- ✓ Annual screening for microalbuminuria using albumin:creatinine ratio (ACR) measurement is recommended for all people with diabetes[4]
- ✓ More frequent (6 monthly) monitoring of renal status is indicated for Māori, Pacific and Indo-Asian, and for those patients with, or at moderate to high risk of diabetes-related complications[3, 4]
- ✓ Minimise medicine-induced acute kidney injury (AKI) by prescribing non-nephrotoxic drugs where possible, assessing baseline renal function before prescribing, and monitoring renal function
- ✓ Advise people who have had AKI that they are at increased risk of CKD developing or progressing[7]

Role of Primary Care

It is estimated that some 30% of people, by age 70 years could be classified as having CKD, but most do not have progressive disease. Further loss of renal function for this group is usually slow; however, those with diseases such as diabetic nephropathy can lose kidney function at a rate of 10-20 ml/min/year and can rapidly progress towards End Stage Kidney Disease (ESKD).[2]

In primary care, it is important to distinguish between patients who are either:

i. the majority with stable CKD, who require standard management of their blood pressure, blood glucose, care with medication dosing and attention to cardiovascular risk reduction, or
ii. the minority with or at high risk of progressive CKD who need to be closely and often intensively supervised.[2]

Albumin:creatinine ratio (ACR) testing is recommended in preference to protein:creatinine ratio (PCR) (mg/mmol) testing because ACR testing is considered to be a more sensitive and specific measure of changes in glomerular permeability than total urinary protein.[3]

Patients with diabetes and confirmed microalbuminuria should be treated with an ACE inhibitor or angiotensin II receptor blocker (ARB) whether or not hypertension is present.[4]

bpac^{nz} desktop decision support tool

To support the use of the Ministry's consensus statement, an electronic decision-support desktop tool will be available to help manage CKD in primary care. The tool is a clinical pathway, using a best practice approach informed by specialist expertise. It includes:

- staging of CKD and assessment of rate of change in renal function
- clinical advice on management of CKD, including blood pressure, anaemia, mineral metabolism, nephrotoxic medication adjustment
- recommended laboratory monitoring and clinical follow-up
- electronic referral to secondary care where necessary, populated from the electronic tool and PMS.[2]

Managing cardiovascular complications of CKD

Patients with CKD have risk factors for cardiovascular disease which are additional to those found in the general population, for example albuminuria, abnormal calcium and phosphate metabolism, elevated lipoprotein (a) and oxidative stress. The risk of a person experiencing a cardiovascular event increases as their renal function declines, with between 40 – 50% of people with advanced CKD more likely to die of ischaemic heart disease or congestive heart failure than end up on dialysis.[3, 4] Management of risk factors should begin as early as possible since timely intervention has been shown to substantially reduce the progression of renal failure, and can reduce cardiovascular risk by up to 50%.[5]

Medication-induced acute kidney injury

Some medicines are inherently nephrotoxic while other, more commonly prescribed medicines are frequently associated with medicine-induced acute kidney injury.

Examples of common medicines associated with nephrotoxicity[6]	Pathophysiologic mechanism
• aspirin / NSAIDs	• Chronic interstitial nephritis (CIN)
• lithium	• CIN, glomerulonephritis, rhabdomyolysis
• aciclovir	• Acute interstitial nephritis, crystal nephropathy
• aminoglycosides	• Tubular cell toxicity
• beta lactam antibiotics	• Acute interstitial nephritis, glomerulonephritis
• quinolones	• Acute interstitial nephritis, crystal nephropathy (ciprofloxacin)
• sulfonamides	• Acute interstitial nephritis, crystal nephropathy
• rifampicin	• Acute interstitial nephritis
• benzodiazepines	• Rhabdomyolysis
• ciclosporin / tacrolimus	• Altered intraglomerular haemodynamics
• diuretics – loop, thiazides	• Acute interstitial nephritis
• PPIs – omeprazole, pantoprazole	• Acute interstitial nephritis

The average time period between starting the medicine and the appearance of renal manifestations is 10 days, although it can be as short as one day (some antibiotics) or as long as several months (NSAIDs). Use alternative non-nephrotoxic drugs whenever possible; assess baseline renal function before initiating therapy, use dose adjustments; monitor renal function during therapy, and avoid nephrotoxic drug combinations eg ACE inhibitor + NSAID + thiazide diuretic.[6] Most episodes of drug-induced renal impairment are reversible; however some guidelines recommend monitoring patients for the development or progression of CKD for at least 2-3 years after AKI, even if serum creatinine has returned to baseline.[8]

References:

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