

Standard 10

All people with diabetes should have regular checks of renal function (eGFR) and albuminuria or proteinuria (ACR or PCR) with appropriate management and/or referral if abnormal.

Key practice points

- Chronic kidney disease affects 10% of the population with a higher burden of disease in Māori, Pacific, Asian and South Asian populations.
- People with diabetes are at risk of developing renal disease.
- Early intervention slows progression to end stage renal failure.
- Albuminuria is a marker of renal damage, ranging from normoalbuminuria through microalbuminuria to macroalbuminuria and heavy proteinuria.
- There are minimum screening and monitoring requirements – refer to New Zealand Primary Care Handbook 2012 along with Kidney Health New Zealand and Best Practice Advocacy Centre NZ.

Read this standard in conjunction with the equality and diversity section in the Introduction to the Toolkit.

What the quality statement means for each audience

Service providers ensure that diabetes services recall and review people with diabetes for an assessment of renal function and albuminuria or proteinuria and provide resources to enable appropriate management.

Health care professionals ensure they are competent to assess people with diabetes for renal function and albuminuria or proteinuria, and manage them appropriately.

Planners and funders ensure they commission services that assess for renal function and albuminuria or proteinuria and manage them appropriately.

People with diabetes are assessed for renal function and albuminuria or proteinuria and, if these are present, they are properly managed.



Introduction

Chronic kidney disease (CKD) is a silent disease and a potential complication arising from diagnosis of diabetes. In New Zealand, at the end of 2012, 2469 patients were reported to be on dialysis with 1520 successfully transplanted patients (Australia & New Zealand Dialysis and Transplant Registry 2013). It is estimated that CKD affects approximately 10% of the population, with Māori, Pacific, Asian and South Asian people experiencing a higher burden of this disease (New Zealand Guidelines Group 2012; The Best Practice Advocacy Centre New Zealand 2009). Māori with diabetes are at least three times more likely to have renal failure than non-Māori with diabetes. Early identification of individuals at high risk of renal complication post diagnosis of diabetes is important (New Zealand Guidelines Group 2012) as,

‘early intervention slows progression of end-stage renal disease and decreases cardiovascular risk’ (The Best Practice Advocacy Centre New Zealand 2009, p 24).



Guidelines

There does not appear to be an overarching renal guideline for New Zealand; however, a national consensus statement is in development. Guidelines pertaining to CKD and renal function for diabetes type 1 and 2 are distributed across a number of national and international guidance documents:

- for identification of risk for diabetes-related complications and management *specific* to diabetes type 2 refer to **New Zealand Primary Care Handbook 2012** (pp 50–55)
- for documents that provide specific information about CKD and management refer to *Chronic kidney disease (CKD): Management in general practice – summary guide* (Kidney Health New Zealand 2013) or *Making a difference in chronic kidney disease: Part 1 and 2* (Best Practice Advocacy Centre New Zealand 2009)
- the Kidney Disease Improving Global Outcomes Guidelines (Kidney International 2013) are a useful guidance across a range of issues pertaining to kidney disease. These can be found at: <http://kdigo.org/home/>.



Implementation advice

Prevention

- Whānau Ora models of care applied in practice (Health Workforce New Zealand 2011).
- Continued education to increase public awareness of and motivation for adopting healthy lifestyles, importance of nutrition and physical activity, and reducing obesity (National Renal Advisory Board 2006).
- Changes to the environments that positively influence nutrition and physical activity in at risk groups (National Renal Advisory Board 2006).
- Improvements in health service responsiveness to at-risk populations (National Renal Advisory Board 2006).
- Public campaign to heighten public motivation to find out about CKD or to identify at an early stage if they have the disease (National Renal Advisory Board 2006).

Early intervention

- Continued early proactive intervention on blood pressure, microalbuminuria, lipid and glycaemic control in primary care settings (Health Workforce New Zealand 2011).
- Establishment of specialist nurse clinics and outreach nephrology clinics with emphasis on diabetic renal disease (Health Workforce New Zealand 2011).
- Targeted screening for young individuals and ethnic groups most affected by CKD (Health Workforce New Zealand 2011).
- Continued development of an appropriately enabled and multidisciplinary primary care workforce to deal with CKD in its earlier stages (National Renal Advisory Board 2006).

- Continued development of support/guidance from secondary care (National Renal Advisory Board 2006).
- Continued development of innovative approaches to primary/secondary consultation, such as greater ability of GPs to discuss issues with consultants. Other options in this area include enhanced capacity of nurse specialists and general practitioners working across the interface with secondary care; guidelines for managing people in this pre-RRT stage through primary care; and enhanced support services.
- Continued innovations connecting GPs with secondary care.
- Build a strong interface between the sectors.
- Continued workforce development/recruitment of GPs and practice nurses to meet the required need in primary care.
- There is consensus that CKD should be classified by stage 1 to 5 and as stable or progressive as management of CKD depends on stage, level of CVD risk and other indications for referral. Recommended ongoing investigations depend on CKD stage. **Minimum** frequency for tests is shown below (Best Practice Advocacy Centre 2009):
 - Stages 1 and 2 – annually
 - Stage 3 to 5 – three-monthly then six-monthly if stable.
- An information system that can provide:
 - access to complete data records by all health care providers involved in an individual's care
 - accurate reporting of CKD incidence/stage on database.

Management

Within the New Zealand Primary Care Handbook 2012 (p 54), specific recommendations for microalbuminuria: monitoring and management in the context of diagnosed diabetes are stated as:

- microalbuminuria is the earliest sign of diabetic kidney disease and should be treated promptly if identified
- younger people with type 2 diabetes have a higher lifetime risk of renal complications
- annual screening for microalbuminuria using albumin:creatinine ratio (ACR) measurement is recommended. More frequent monitoring of renal status is indicated for Māori, Pacific Island and South Asian peoples
- those at moderate to high risk of diabetes-related complications (see Figure 3) should have their ACR measured six-monthly
- patients with confirmed microalbuminuria should be treated with an angiotensin-converting-enzyme (ACE) inhibitor or angiotensin 2 receptor blocker (ARB) whether or not hypertension is present
- combination ACE inhibitor and ARB therapy should not be used without recommendation of a diabetes or renal specialist
- use of loop diuretics instead of or in combination with thiazide diuretics is considered appropriate for patients with significant renal impairment (eGFR <45 ml/min/1.73m²).

The **New Zealand Primary Care Handbook 2012** (Table 4, p 55) details the appropriate management of raised blood pressure and microalbuminuria in type 2 diabetes.

In the 'Management of chronic kidney diseases in primary care: A national consensus statement' (not yet publicly released), two strategies to effectively manage CKD in primary care are identified: 'Recent pilot projects have demonstrated the effectiveness of two complementary strategies to improve management of CKD in primary care through the actions listed above. The

first strategy, an electronic desktop tool, facilitates the detection and management of CKD management in a patient population in a primary care setting. The second, nurse-led clinics, involves intensive management of a group of identified high-risk CKD patients in a primary care setting’.

This strategy involves a nurse managing a group of high-risk CKD patients through regular clinics:

- identified in the primary care practice
- using an individualised programme with each patient
- supported by specialist secondary care nursing and medical expertise
- aiming to improve identified risk factors for the patients.

During the clinics the nurse oversees management of the high-risk CKD patients by:

- producing an individualised care plan based on a comprehensive assessment
- focusing on education of patients about their condition and management
- monitoring and follow-up to ensure management optimisation of key patient parameters such as BP, blood sugars, cholesterol
- regular review of progress toward clinical goals with the patient
- maintenance of patient database to enable audit of practice.

To be successfully used the nurse-led clinic needs to fit into current general practice work patterns through:

- systems able to readily identify suitable high-risk CKD patients and provide appropriate recall appointments
- access to resources for patient education and protocols for patient management
- integration with medical management of CKD in primary care
- availability of specialist nurses to work in primary care settings
- support from secondary renal and diabetes services.

Given the current configuration of primary and secondary care, challenges to implementation include:

- availability of specialist nurses and effective clinical support from secondary care renal and diabetes services to initiate clinics and upskill primary care nurses and GPs
- development of processes for mentoring practice nurses to upskill them to undertake clinics
- funding of practice nurse time for free clinics for patients
- adequate protocols to integrate with medical management in primary and secondary care.



Implementation examples / innovations



Derivation and validation of a renal risk score for people with type 2 diabetes

This could be used as a modelling tool for DHBs and can be accessed here:
<http://care.diabetesjournals.org/content/36/10/3113.full>

Improved risk stratification at baseline may thus help to identify earlier those at increased risk of ESRD as well as aid future research into new interventions to reduce progression. Renal risk models 2, 3, and 4 demonstrated excellent discrimination and calibration in the validation cohort. These models were able to discriminate risk of ESRD events more accurately than using eGFR or albuminuria alone. The choice of model used clinically would depend on the variables available although, where all are available, DCS model 4 is recommended. The models also performed rather better than internationally available renal risk models. This may have been due to the inclusion of ethnic groups relevant to NZ as ethnicity contributed significantly to the models. In 2010, the Ministry of Health established demonstration pilots to test interventions to improve management of chronic kidney disease. The final reports for Christchurch and Northland are available on the HIRC website if you have log-in access or from the Ministry of Health. An article describing the community based Hawkes Bay CKD pilot study is available here: www.renalsociety.org/Resources/Documents/RSAJ/2013.11/walker.pdf



Christchurch

Report on Chronic Kidney Disease Project, Langimalie Clinic. The report is available here:
<http://ndsig.hiirc.org.nz/assets/sm/Resource31333/attachments/ws37bzdqri/Final%20Report%20on%20Langimalie%20CKD%20Project.doc?download=true>



Northland

Final report: Diabetes and chronic kidney disease pilot – December 2010 to December 2012. The report can be accessed here:
<http://ndsig.hiirc.org.nz/assets/sm/Resource31331/attachments/er8n3tzqnm/Final%20Report%20on%20Northland%20CKD%20pilot.pdf?download=true>



Hawkes Bay

The abstract of an article describing a pilot study on improving self-management in chronic kidney disease (Walker et al 2013) follows:

The burden of diabetic kidney disease continues to escalate at significant cost to the patient and health care system. Health literacy and self-management are critical to improving the outcomes of chronic conditions such as chronic kidney disease (CKD). This paper describes a community-based CKD pilot study implemented in New Zealand (NZ) based on a self-management and educational model of care. The aim of the pilot study was to implement a collaborative, community-based intervention using specialist nephrology nursing support in a primary care setting, targeting people at increased risk of developing end-stage kidney disease. We have previously reported this pilot study to be effective in

clinical terms by reducing proteinuria, improving blood pressure control, and reducing five-year absolute cardiovascular risk and to improve some patient-centred outcomes, (patients' knowledge of their health condition and medications/treatments, medication compliance, and adherence to a healthy lifestyle). In this article, we report the effect of the pilot on a more extensive range of self-management and patient-centred outcomes, such as patient perceptions around shared decision-making, care that is appropriate to their cultural beliefs and values, their propensity to monitor and act upon medical early warning signs, and the impact of their condition upon daily physical activities, feelings, and social and family life. All but two of the domains showed significant improvement during this study, indicating the potential benefits of self-management models of care for patient-centred outcomes in CKD patients.



Blood pressure control in Māori and Pacific patients with type 2 diabetes

Optimising blood pressure control in Māori and Pacific patients with type 2 diabetes mellitus and established diabetic nephropathy in New Zealand: The Delay Future End-stage Nephropathy due to Diabetes (DEFEND) Study. Dr C Hotu. PhD Thesis.

Synopsis: In a randomised controlled trial 69 Māori and Pacific patients with type 2 diabetes, moderate CKD and hypertension were randomised to conventional care or nurse-led community care intervention for 12 months. Community care patients received monthly visits by a nurse-led Māori and Pacific health care assistant for blood pressure measurement, checking adherence to medication, medication side effects and significant clinical events. If the blood pressure was above the target of 130/80 mmHg, a study doctor altered antihypertensives following a set protocol. Transport was offered to the community group for prescription collection, blood tests and study clinic appointments. Routine care continued for both groups but the usual care group only received GP and outpatient clinic care. The DEFEND group clinicians saw these patients at baseline and 12 months only and made no blood pressure management decisions. The model of care proved to be more effective than conventional care in lowering systolic BP, 24-hour urine protein and delaying progression of cardiac and renal end-organ damage. The author concludes from this analysis that '... this model of health care delivery is significantly more effective than conventional care in lowering systolic BP, and reducing cardiac and renal end-organ damage in these high-risk patients' (Houtu 2013, ii).

Details can be found on the HIIRC site and is available to download and read in full text at: <https://researchspace.auckland.ac.nz/handle/2292/20586>.



Assessment tools

Structure

Evidence of local arrangements to ensure that people with diabetes have their renal function (eGFR) and albuminuria or proteinuria (ACR or PCR) assessed annually and that these are managed appropriately.

Process

The proportion of people with diabetes who have their renal function (eGFR) and albuminuria or proteinuria (ACR or PCR) assessed annually and are managed appropriately.

Numerator	The number of people in the denominator receiving an assessment for renal function and albuminuria or proteinuria during the previous 12 months and are managed appropriately
Denominator	The number of people with diabetes

Outcome

Reduction in the incidence of diabetic renal disease.

The **Best Practice Advocacy Centre** provides an audit tool for monitoring practice associated with Renal Function in Elderly People. This audit addresses the appropriate use of renal function tests in people aged over 75 years. It will allow practitioners to identify and assess those patients who have not received renal monitoring, eg, estimated glomerular filtration rate (eGFR) from serum creatinine or an albumin: creatinine ratio (ACR) or protein: creatinine ratio (PCR) during the previous year, and determine whether they should have it. (www.bpac.org.nz/Audits/renal-function.aspx).

Diabetic renal disease

Urinary ACR and a serum creatinine, with eGFR, are the recommended tests for assessing diabetic renal disease. General practitioners should aim to perform the tests on all patients with diabetes at diagnosis and then at diabetes check-ups at least annually.

Delay of progression of diabetic nephropathy

Created on 30 July 2012 by Primary Health Care Quality Research Unit, Wellington School of Medicine and Health Sciences, University of Otago.

This measure is one of two diabetes indicators that are intended to improve management of diabetic nephropathy in primary care. This measure identifies the proportion of patients with diabetes with proteinuria, or with two out of three abnormal albumin:creatinine ratio test results within 4 months that are prescribed an Angiotensin Converting Enzyme inhibitor or Angiotensin II antagonist. See more at: www.hqmnz.org.nz/measures/long-term-conditions.



Resources

Health professionals

Best Practice Advocacy Centre

Best Practice Journal making a difference in chronic kidney disease.

www.bpac.org.nz/BPJ/2009/July/kidney.aspx

Kidney Health New Zealand

Chronic kidney disease (CKD) management in general practice: summary guide.

www.kidneys.co.nz/resources/file/kidneyhealth_complete_pgs-2.pdf

Elley C, Robinson T, Moyes S, et al. 2013. Derivation and validation of a renal risk score for people with type 2 diabetes. *Diabetes Care* 36(10): 3113–20. Retrieved from: <http://care.diabetesjournals.org/content/36/10/3113.full>

The KHA-CARI Guidelines is an evidence-based project that began in 1999. This project is funded by the Kidney Health Australia and is managed by the CARI Guidelines Steering Committee, a sub-committee of Dialysis Nephrology & Transplantation (DNT) committee which reports to Kidney Health Australia and Australian and New Zealand Society of Nephrology (ANZSN).

Kidney Health Australia CARI guidelines – Chronic kidney disease guidelines. Retrieved from: www.cari.org.au/CKD/ckd_guidelines.html
KHA-CARI guideline research www.cari.org.au/kha-cari_research.html

Consumers

Diabetes and Kidney disease everybody.co.nz www.everybody.co.nz/page-a53665f1-9d59-43d4-9a94-89a27585ee73.aspx

Diabetes and your kidneys screening for early kidney disease is done on your urine, and is called microalbuminuria. You should have this test at least annually.
www.diabetes.org.nz/about_diabetes/complications_of_diabetes/kidneys National Kidney Disease Education Program (USA). Monitoring Your Kidney Health. Retrieved from: <http://nkdep.nih.gov/living/monitor-kidney-health.shtml>

Health Mentor Online

Online learning resource for people with diabetes: Healthmentoronline.com



References

Australia and New Zealand Dialysis and Transplant Registry 2013. Retrieved from: www.anzdata.org.au/v1/annual_reports_download.html.

Best Practice Advocacy Centre New Zealand. 2009. Mate takihi ukiuki: Making a difference in chronic kidney disease. *Best Practice Journal* 22(July), 24–37.

Health Workforce New Zealand. 2011. *Diabetes Workforce Service Review. Report of the Diabetes Care Workforce Service Review*. Retrieved from www.health.govt.nz/system/files/documents/pages/diabetes-workforce-service-review.pdf.

Houtu C. 2013. Optimising blood pressure control in Māori and Pacific patients with type 2 diabetes mellitus and established diabetic nephropathy in New Zealand. Doctoral Thesis. Retrieved from <https://researchspace.auckland.ac.nz/handle/2292/20586>.

Kidney Health New Zealand. 2013. *Chronic Kidney Disease (CKD): Management in general practice – summary guide*. Retrieved from www.kidneys.co.nz/resources/file/ckd_management_in_general_practice._2014_version.pdf.

Kidney International. 2013. *KDIGO 2012: Clinical practice guideline for the evaluation and management of chronic kidney disease*. Retrieved from www.kdigo.org/clinical_practice_guidelines/pdf/CKD/KDIGO_2012_CKD_GL.pdf.

National Renal Advisory Board. 2006. *Scoping paper: New Zealand's renal services: Towards a national strategic plan*. Wellington: Ministry of Health.

New Zealand Guidelines Group. 2012. *New Zealand Primary Care Handbook 2012* (3rd edition). Wellington: Ministry of Health. Retrieved from www.health.govt.nz/publication/new-zealand-primary-care-handbook-2012.pdf.

Walker R, Marshall MR, Polaschek N. 2013. Improving self-management in chronic kidney disease: a pilot study. *Renal Society of Australasia Journal* 9(3): 116–25.