



# CHRONIC KIDNEY DISEASE: A FOCUS ON EARLY DETECTION AND MANAGEMENT

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Quality Use of Medicines  
Briefing Paper

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# EXECUTIVE SUMMARY

## Chronic kidney disease

Chronic kidney disease (CKD) is a major public health problem in Australia and costs the health system an estimated \$5.1 billion per year. CKD is often under-recognised and under-treated, particularly given the asymptomatic nature of the condition. The medical and financial burden of CKD and kidney failure continues to grow due to an aging population and the increasing prevalence of risk factors such as obesity, hypertension and diabetes. It is imperative to improve health outcomes for people with CKD through primary care interventions that target health professionals and consumers.

## About this quality use of medicines briefing paper

This briefing paper highlights key issues in the detection and management of CKD in primary care. The paper focuses on issues related to the awareness, screening, management, and quality use of medicines (QUM) for people at risk of, and those with, CKD. The paper proposes actions and interventions which could be developed in the future to address QUM issues for CKD. This paper is intended to be used by researchers, stakeholder organisations and policy makers working to improve CKD detection and management.

## NPS MedicineWise educational program

The insights shared in this paper were collected as part of the design and development of the NPS MedicineWise national program *Chronic kidney disease: early detection and management*. The program focuses on improving the awareness, screening, management, and QUM for people at risk of, and those with, CKD. The program is funded by the Australian Government Department of Health and Aged Care and developed in collaboration with key stakeholders including Kidney Health Australia and the National Aboriginal Community Controlled Health Organisation (NACCHO).

This multifaceted program is equipping health professionals and consumers with tools and resources that aim to reduce preventable hospitalisations and deliver improvements in health outcomes for people with CKD and its interrelated conditions of diabetes and cardiovascular disease (CVD). This program is also supporting the implementation of Kidney Health Australia's handbook, *Chronic kidney disease (CKD) management in primary care*.

## Key themes and barriers

Several themes and barriers to best practice were identified during consultation with key opinion leaders, experts and stakeholders, as part of the formative research and program design stage, including:

- ▶ low awareness of CKD among health professionals and consumers
- ▶ suboptimal diagnosis and detection of CKD in primary care
- ▶ suboptimal monitoring and management of CKD in primary care
- ▶ inappropriate prescribing/dosing of medicines for patients with CKD
- ▶ variation in health professional skills/knowledge identifying risk factors for CKD
- ▶ health professional knowledge gaps regarding medicines to prescribe, avoid, or taper
- ▶ GP uncertainty about referrals – when and what tests to use
- ▶ existence of multiple guidelines leading to confusion
- ▶ low levels of consumer health literacy and readiness to learn.

## Further action

The paper includes some proposed actions and interventions that could be developed in the future to address QUM issues for CKD. These include:

- ▶ data-driven audit and feedback interventions delivered via Primary Health Networks (PHNs)
- ▶ interventions to address multidisciplinary team care and communications for CKD prevention, early intervention and management
- ▶ interventions delivered by pharmacists utilising MedsChecks, medication reviews and My Health Records to monitor medicine prescribing according to kidney function
- ▶ interventions incorporating culturally relevant design and testing in collaboration with relevant culturally diverse communities
- ▶ consumer awareness campaigns targeting people at risk of CKD through partnerships with key stakeholders. These may include culturally appropriate campaigns targeting Aboriginal and Torres Strait Islander peoples at risk of CKD
- ▶ community-based consumer activities determined by individual communities targeting people at risk or those with CKD
- ▶ interventions to enhance communication between health professionals and people at risk, or those with CKD including:
  - conversation aids/resources
  - short health professional videos demonstrating effective communication using the teach-back methodology
  - utilising pharmacists in the general practice setting for communicating medicine-related changes and addressing related questions/conversations
  - linking with the [Good Medicine Better Health Program](#) and tailoring this to CKD.
- ▶ increasing health services capacity and consumer support to improve equity for people with CKD across all communities eg, supporting the increased use of recent telehealth opportunities with Medicare Benefits Schedule (MBS) rebates
- ▶ interventions targeting transition of care issues including:
  - improving communication following discharge of patients from hospital to primary care eg, through the provision of detailed information in post-discharge summaries
  - improving communication between nephrologists managing patients' kidney-related issues and GPs managing the rest of their care
  - integrating pharmacists in the aged care setting and utilising pharmacists as a tool to improve post-discharge communication.
- ▶ a broader system-wide approach to address fragmentation of care and inconsistencies in regular reviews and monitoring of patients with CKD
- ▶ activities targeting hospital pharmacists and junior/resident medical officers including:
  - case-based learning modules, such as the [National Prescribing Curriculum](#) and other online resources
  - targeted learning within the hospital setting in the form of small group meetings
  - case scenarios selected by more senior hospital staff to reinforce learnings related to dose adjustments for medicines cleared by the kidneys according to current kidney function.
- ▶ funding models of care that support multidisciplinary management of CKD in general practice eg, pharmacists working within general practices, case conferences with nephrologists in general practice.

# BACKGROUND

## Purpose of this document

This briefing paper highlights some of the key issues in diagnosing and managing CKD in primary care. The issues focus on the awareness, screening, management and quality use of medicines for people at risk of, and those with, CKD.

This paper is intended to be used by researchers, stakeholder organisations and policy makers working to improve CKD detection and management. The aim of the paper is to build momentum for shared action to address barriers by:

- ▶ sharing insights about the barriers to optimal detection and management of CKD in primary care
- ▶ raising awareness of the QUM issues relating to CKD diagnosis and management
- ▶ building a shared understanding of the QUM issues across key organisations and stakeholders.

## CKD is a complex condition with several underlying QUM issues

CKD is a major public health problem in Australia and costs the health system an estimated \$5.1 billion per year. Due to the asymptomatic nature of the condition, it is often under-recognised and under-treated.<sup>1</sup> In 2011-12, an estimated 11% of Australian adults aged 18 years and over had biomarkers indicating probable CKD, but less than one in 10 of these people were aware they may have the condition.<sup>2</sup> This suggests that most of these people (90%) are unaware they have probable CKD.

Prevalence of CKD has a socioeconomic gradient. Morbidity increases with remoteness and is highest for those with CKD living in remote areas of Australia compared to major cities.<sup>2</sup> Rates of CKD hospitalisation in 2019-20 were 2.2 times as high in the lowest socioeconomic areas compared with the highest, and 3.0 times as high in remote areas compared with major cities.<sup>3</sup>

For Aboriginal and Torres Strait Islander peoples, the prevalence may be even higher, affecting nearly one in five adults.<sup>4</sup> CKD was 2.1 times as prevalent among Aboriginal and Torres Strait Islander peoples compared with non-Indigenous Australians, based on data from the 2011-12 National Health Measures Survey and the 2012-13 National Aboriginal and Torres Strait Islander Health Measures Survey. The overall burden of disease was 7.8 times as high in Aboriginal and Torres Strait Islander peoples compared to non-Indigenous Australians.<sup>3</sup>

CKD rarely occurs in isolation and shares many treatment goals and management strategies with common chronic conditions such as diabetes and CVD. In 2020, CKD contributed to 11% of all deaths and was associated with 33% of all cardiovascular deaths in Australia.<sup>3</sup>

The medical and financial burden of CKD and kidney failure continues to grow due to an aging population and the increasing prevalence of risk factor trends in Australia such as obesity, hypertension and diabetes.<sup>5</sup> Treatment of the underlying cause is important along with control of hypertension, reduction in albuminuria (if present) and treatment of dyslipidaemia. All patients with CKD benefit from a healthy lifestyle including regular physical activity, avoiding smoking and obesity and limiting sodium intake.

COVID-19 infection is emerging as another risk factor for CKD. Acute kidney injury occurs frequently with COVID-19 infection. A recent University of Queensland-led study found that using the extended Kidney Disease Improving Global Outcomes (KDIGO) definition, 31% of people hospitalised with COVID-19 were diagnosed with acute kidney injury.<sup>6</sup> A significant proportion of those patients may develop CKD in the future, given that an episode of acute kidney injury increases the risk of developing CKD.<sup>7</sup>

Emerging evidence highlights the impact of CKD on poor outcomes of COVID-19. Patients with CKD and COVID-19 are at least 60% more likely to be hospitalised and almost 50% more likely to die.<sup>8</sup>

People with CKD are often prescribed a multitude of medicines to treat either the underlying cause of kidney disease, its complications, or comorbidities. Given the reduction in kidney function, doses of medicines cleared by the kidneys must be adjusted and nephrotoxic medicines avoided, as the pharmacokinetics and pharmacodynamics of many medicines are altered. These factors need to be taken into consideration when making prescribing and deprescribing decisions. The prevalence of inappropriate prescribing for these patients has contributed to poor patient outcomes including hospitalisations.<sup>9</sup>

Management of CKD is complex. The asymptomatic nature of the condition, challenges in determining the underlying cause, the presence of multiple co-morbidities, variations in consumer health literacy, care team silos, and a range of social and demographic factors impact on disease management. To reduce preventable hospitalisations and improve health outcomes for people with CKD, behaviour change interventions directed at primary care for both consumers and health professionals are needed, together with interventions to improve health literacy and consumer empowerment. A multidisciplinary approach to care is particularly important in rural, regional and remote areas.

## NPS MedicineWise program

In collaboration with health professionals, consumers and stakeholders, NPS MedicineWise has developed the program *Chronic kidney disease: early detection and management*. The program focuses on improving awareness, screening, management, and QUM for people at risk of, and those with, CKD. The program is funded by the Australian Government Department of Health and Aged Care. This program supports the implementation of Kidney Health Australia's handbook, *Chronic kidney disease (CKD) management in primary care* in partnership with Kidney Health Australia, a key stakeholder for the program. It also presents an opportunity to use a collective impact approach with other key stakeholders, such as the National Aboriginal Community Controlled Health Organisation (NACCHO) to develop a multifaceted program for delivering improvements to health outcomes, including a reduction in preventable hospitalisations for patients with CKD and its interrelated conditions of diabetes and CVD.

Program development included a comprehensive literature review, data analysis and qualitative interviews in addition to a structured co-design underpinned by evidence-based behaviour change implementation frameworks. For further information on the program development process, see [Appendix 1](#).



# KEY INSIGHTS INTO PRACTICE GAPS

This section summarises key findings from the brief literature search undertaken to identify key publications highlighting QUM issues, practice gaps, barriers and enablers around the diagnosis and management of CKD in Australia.

## Detection, diagnosis and monitoring in the management of CKD

### Low awareness/recognition of CKD among health professionals and consumers

- ▶ There is evidence of low awareness of CKD in the general public and among primary health professionals.<sup>7,10</sup>
- ▶ CKD is a silent disease that can remain asymptomatic until it reaches an advanced stage, therefore most people with CKD are unaware they have the condition.
- ▶ Among patients who have kidney failure requiring dialysis, many patients present to nephrologists late and require dialysis within 90 days, thereby having missed opportunities for timely intervention and prevention of further disease progression.

### Variations in GP skills/knowledge to identify risk factors for CKD

- ▶ Primary care professionals are not always fully aware of the guidelines for the screening and management of CKD. A substantial proportion of patients with CKD remain undiagnosed despite having abnormal kidney function.<sup>10</sup>

### Suboptimal detection of CKD in primary care

- ▶ The Kidney Health Australia *CKD Management in Primary Care handbook* notes that:
  - if CKD is detected early and managed appropriately, then the otherwise inevitable deterioration in kidney function can be halved and may even be reversible<sup>7</sup>
  - fewer than 10% of people with CKD are aware they have the condition. Late referral is common, with 18% of people commencing dialysis within 90 days of being referred to a renal service.<sup>7</sup>
- ▶ A recent 2021 evidence report by Kidney Health Australia – *Make the Link: Kidney, Diabetes and Heart* – highlights:
  - the high burden of CKD in Australia, the interrelationships between CKD, diabetes and CVD in the Australian population and the impact of these conditions on mental health, cognitive and economic outcomes<sup>11</sup>
  - prevention and detection as being particularly important; one in three Australian adults have risk factors for CKD.<sup>11</sup>

## Suboptimal monitoring in the management of CKD in primary care

- ▶ A 2017–18 MedicinesInsight report investigated monitoring in the management of people with CKD, using data from the MedicinesInsight program.<sup>12</sup>
- ▶ The report found sub-optimal monitoring of patients with CKD – only 44.7% of patients with any stage of CKD had complete monitoring (ie, at least one record of each of the assessments, urine albumin-creatinine ratio [ACR], estimated glomerular filtration rate [eGFR], blood pressure [BP] measurement, total cholesterol, HbA<sub>1c</sub> [if diabetic] and haemoglobin) during the 2-year study period.
- ▶ People with CKD who also had diabetes were two times more likely to have at least one record of each of the assessed observations and tests during the study period than those without diabetes (68.1% vs 28.1%).
- ▶ Patients with stage 1–2 CKD had a higher rate of complete monitoring of the selected tests and observations than those with stage 3–5 CKD (80.5% vs 40.9%), irrespective of diabetes status.
- ▶ The report findings suggest that there is room for improved monitoring of patients with early stage (1–3) CKD, particularly for those with no co-existing diabetes.<sup>12</sup>

## Patient-centred care

### Access to health services

- ▶ Some patients with CKD have limited access to health services such as home or community-based dialysis and transplantation, particularly those in remote areas.<sup>13</sup>
- ▶ The constant need for dialysis means that some patients have to relocate away from family or home to access dialysis services.<sup>13</sup>
- ▶ People often experience overwhelming loneliness, distress and isolation following relocation to access dialysis services.<sup>13</sup>

### Consumer information

- ▶ Available consumer information varies with respect to content, quality and readability<sup>14</sup>
- ▶ There is a lack of information about how renal health services operate, especially in remote areas.<sup>13</sup>

## Pharmacological management and QUM

### Inappropriate prescribing of medicines for patients with CKD

- ▶ A systematic review found that:
  - inappropriate prescribing was associated with adverse drug events such as increased hospital stay and elevated risk of mortality
  - polypharmacy, comorbidities and age were identified as predictors of inappropriate prescribing
  - prevalence of inappropriate prescribing ranged from 26% to 53% in the community setting.<sup>9</sup>
- ▶ A retrospective study using data from the MedicinesInsight general practice database found that:
  - approximately 35% of Australian general practice patients with CKD were prescribed at least one potentially inappropriate medicine
  - analgesics, followed by medications for diabetes, and beta-blockers, were the most frequent inappropriate classes of medicines prescribed
  - vildagliptin, followed by fenofibrate, were the medicines most often prescribed at inappropriate doses.<sup>15</sup>
- ▶ A cross-sectional study using MedicinesInsight data found that:
  - prescribing of non-insulin diabetes medicines at doses inconsistent with current Australian Diabetes Society (ADS) guideline recommendations for people with reduced kidney function was common

- the medicine most frequently prescribed at a dose not consistent with current ADS guidelines for those with reduced kidney function was metformin, followed by dipeptidyl peptidase-4 (DPP-4) inhibitors and sulfonylureas
- drug classes with the highest proportion of prescriptions with dosage not consistent with ADS guidelines were sodium-glucose co-transporter-2 (SGLT-2) inhibitors, followed by biguanides and DPP-4 inhibitors.<sup>16</sup>
- ▶ Another cross-sectional study of 9624 people with type 2 diabetes in the MedicinesInsight dataset investigated whether the prescribing of non-insulin diabetes medicines in Australian general practice is consistent with current guidelines for treatment of type 2 diabetes in people with reduced kidney function. The study found that:
  - nearly half of the people with type 2 diabetes and reduced kidney function were prescribed a non-insulin diabetes medicine at a dose inconsistent with current Australian guidelines, the majority of whom had an eGFR consistent with stage 3 CKD.<sup>17</sup>
- ▶ A MedicinesInsight report investigating the monitoring and management of people with CKD, using data from the MedicinesInsight program, found that:<sup>12</sup>
  - a small proportion of patients with CKD (any stage) were prescribed the combination of an angiotensin-converting enzyme (ACE) inhibitor/sartan, a diuretic and a non-steroidal anti-inflammatory drug (NSAID) – also known as the ‘triple whammy’ – in 2019 (1.5%) and at least once on the same day during the study (0.4%). The findings may be an underestimate due to lack of access to data on over-the-counter NSAIDs
  - some patients with stage 3 CKD were prescribed a potentially inappropriate high dose of the selected medicines sitagliptin, rivaroxaban, dabigatran and pregabalin
  - there was some level of potentially inappropriate prescribing for patients with stage 4 CKD, particularly sitagliptin, duloxetine and rosuvastatin
  - among patients with CKD (any stage) who had atrial fibrillation (but no deep vein thrombosis/pulmonary embolism), 31.6% had at least one prescription for apixaban, of whom 27 patients (1.1%) were prescribed a potentially inappropriate dose on their first prescription during the study.

# KEY THEMES FROM STAKEHOLDER CONSULTATIONS

This section summarises key themes from discussions with key opinion leaders, experts and stakeholders to understand the high-level gaps, barriers and opportunities around the diagnosis and management of CKD. In-depth discussions were conducted with two GPs, three nephrologists, two dietitians, one nurse practitioner, five pharmacists (including community, hospital and general practice pharmacists) and one consumer representative. The key themes represented below are summaries and are not considered exhaustive of every individual or stakeholder we engaged with. These insights reflect the opinions and perspectives of those interviewed and may not accurately reflect best practice.

## High-level themes (health professional perspectives)

### Settings to focus on

- ▶ Important to focus on primary care as it provides the greatest opportunity for impact and improved patient outcomes.
- ▶ CKD is most prevalent within low socioeconomic communities.
- ▶ An opportunity to work with PHNs using Pen CAT to scale up early diagnosis of CKD.

### Diagnosis and screening

- ▶ Asymptomatic nature of CKD contributes to lack of consumer and health professional awareness of CKD. Several patients who are referred to a nephrologist to start dialysis have no prior knowledge of CKD.
- ▶ Importance of improving screening for CKD in asymptomatic patients via a 'Kidney Health Check' (BP, eGFR and urine ACR). This is recommended by the Kidney Health Australia CKD handbook to be done yearly for those with hypertension or diabetes and every 1-2 years for those with other known risk factors.
- ▶ Not all risk factors are considered during risk factor screening: obesity, hypertension and people from poorer social or economic circumstances are often missed.
- ▶ Incomplete diagnosis investigations in primary care ie, monitoring of BP and eGFR is done well in primary care but referral for ACR testing is an area to be improved.
- ▶ Many GPs lack confidence in diagnosing CKD and communicating the diagnosis of CKD to patients. Recording the diagnosis of CKD (including stage) in clinical information software is often inconsistent.

## Guidelines

- ▶ Multiple guidelines for CKD exist, causing some confusion in primary care.
- ▶ Current guidelines for Aboriginal and Torres Strait Islander peoples are inconsistent.
- ▶ Kidney Health Australia CKD handbook is a highly effective resource but may be underutilised in practice.
- ▶ GPs are often dissatisfied with the Australian Guidelines targets due to lack of relevance to patients, lack of ability to be individualised to patients and difficulty to achieve targets.

A list of current guidelines and resources for health professionals is provided in [Appendix 2](#) below.

## Management of CKD

- ▶ Sick day management, including dose adjustment during periods of acute illness, is not done well in primary care. A Kidney Action Plan with provision to plan for sick days and actions to take regarding the management of other progressive diseases eg, chronic obstructive pulmonary disease or diabetes was noted to be helpful.

## Complications and comorbidities

- ▶ Confusion regarding MBS rebates available for ACR tests in the absence of other conditions (such as type 2 diabetes).
- ▶ Need for health professionals and consumer education regarding the intersection between CKD and common comorbidities, namely diabetes and CVD.
- ▶ Iron deficiency can potentially be managed in primary care.
- ▶ Need for linking to resources to help GPs manage identified complications and comorbidities.

## Terminology

- ▶ Terminology 'kidney disease' frightens consumers. The term 'keeping kidneys healthy may be used instead'. GPs need to individualise how they speak to different patients and some discussions may necessitate the use of terms such as kidney disease.
- ▶ Referring to 'stages' of CKD is distressing to patients as they relate the term 'stages' to cancer treatment. Example 'stage 3 CKD sounds to patients like they are dying'. GPs can still use the standard accepted terms used in guidelines, which includes terms like stages, but they need to make sure they educate patients that this does not equate to cancer stages and is quite different.
- ▶ CKD has previously been referred to as renal impairment or renal insufficiency in medical notes/guidelines and may be confusing for medical students. Revised terminology is kidney impairment or kidney failure.
- ▶ GPs need assistance to increase their confidence as to how to communicate the diagnosis to patients. Barrier to providing the diagnosis is that GPs do not want to frighten their patients. GPs need to help consumers understand the seriousness of the condition and that there are treatments to improve or slow the progression of CKD and maintain kidney function. A positive approach in their communication is empowering for the patient.

## QUM

- ▶ Increasing knowledge of when and which medicines need dose adjustment with CKD is a key area for program focus.
- ▶ Gap in GP knowledge regarding key medicines to avoid or medicines that require dose adjustment eg, the triple whammy combination of over-the-counter or prescription NSAID + ACE inhibitor + thiazide diuretic may potentially harm kidney function.
- ▶ Reviews of medicines that are cleared by kidneys are often missed eg, gabapentinoids.
- ▶ Some GPs are hesitant to prescribe metformin in CKD for fear of developing lactic acidosis. As such there is a need to educate practitioners to prescribe metformin at appropriate doses for as long as possible in patients with CKD and diabetes.
- ▶ GPs lack knowledge around nephrotoxic medicines ie, the ones that should be avoided in CKD.
- ▶ Important to provide specific guidance around what medicines to use for CKD and how to use them – ACE inhibitors, angiotensin II receptor blockers (ARBs), as well as newer medications, particularly SGLT2 inhibitors, glucagon-like peptide-1 (GLP-1) receptor agonists and how to manage diuretics.
- ▶ SGLT2 inhibitors not used enough for kidney protection in patients without diabetes.
- ▶ Lack of knowledge around the use of SGLT2 inhibitors in combination with diuretics.
- ▶ GPs are often aware of the right medicines as a first-line option eg, initiate ACE inhibitor/ARBs for CKD + BP, but use of additional/second-line options eg, use of beta blocker or calcium channel blocker or spironolactone is a knowledge gap.
- ▶ Not all patients are prescribed the appropriate kidney protecting medicines of an ACE inhibitor or ARB if they have CKD, regardless of BP levels. The ACE inhibitor/ARBs are not recognised for their protective effects and ability to help control/decrease proteinuria.
- ▶ ACE inhibitors/ARBs are prescribed well in stage 3 and 4 CKD but not in stages 1-2. Lack of GP understanding regarding starting them early as soon as microalbuminuria is detected.
- ▶ When to use Cockcroft-Gault equation with creatinine clearance (CrCl) or eGFR is confusing for GPs.
- ▶ Confusion regarding different generic and/or original brands of the same medicines which adds to the confusion and can lead to medicine management problems.
- ▶ Reminding prescribers that as kidney function and weight decline (common as we age), some medicines cleared by the kidneys may become toxic if the dose is not reduced eg, digoxin. Often weight loss is masked in elderly patients, especially females, due to fluid retention in the legs/abdomen (may also have heart failure), so the need to reduce the medicine dose is missed. The need to reduce the dose of insulin as kidney function declines to prevent the patient experiencing hypoglycaemia is another common issue that causes the patient to present to the emergency department.
- ▶ Patients with CKD often have missing medicines such as ACE inhibitors/ARB and/or statins.

## Referrals

- ▶ Referral to nephrologist depends on GP confidence to manage stage of CKD and/or comorbidities.
- ▶ Gap in quality referrals to nephrologists as some GPs are uncertain about when referral is necessary and which tests/information should accompany the referral. NPS MedicineWise has an opportunity to improve the quality of nephrology referrals and to support GPs managing CKD in primary care.

## Health literacy

- ▶ Perception among some GPs that patients misunderstand or have minimal knowledge of CKD.
- ▶ Other comorbidities and concerns often take priority over CKD.
- ▶ An enabler to improve health literacy is for all health professionals to communicate using 'teach-back methodology' and to treat each patient individually and holistically.
- ▶ Consumer content developed must be based on what will improve consumer understanding/readability (ie, content should not be presented in column format, use minimal words and pictorials where possible, avoid medical jargon and abbreviations). Consumer content developed must be culturally appropriate for Aboriginal and Torres Strait Islander peoples.
- ▶ Patients do not realise the serious nature of CKD as they do not feel symptoms until it is too late and do not prioritise the benefit of medicines to slow the progression of CKD over other medicines. Helping consumers understand why they are taking their medicines would be helpful.

# High-level themes (consumer perspectives)

## Consumer representative themes

- ▶ Awareness of CKD and its associated risk factors is a significant issue among the general public, particularly since there are no symptoms.
- ▶ Understanding medicines in terms of generic vs brands can be quite confusing for consumers particularly in the context of CKD and other co-morbidities.
- ▶ Knowing where to go for information and resources can be a challenge, however Kidney Health Australia is helpful.
- ▶ There is a lot of information given at the beginning, following diagnosis, particularly if dialysis is required, and this can be overwhelming.
- ▶ Knowing from the outset what the treatment options are at each stage of kidney disease is important.
- ▶ Understanding kidney function and how to empower consumers with knowledge on how best to manage their kidney function and maintain kidney health is important.

# BARRIERS TO OPTIMAL DETECTION AND MANAGEMENT OF CKD

Several barriers to the optimal detection and management of CKD were identified during the development of the program, *Chronic kidney disease: early detection and management*. Barriers were identified from the literature review, in-depth discussions with key opinion leaders and experts (two GPs, three nephrologists, two dietitians, one nurse practitioner, five pharmacists [community, hospital and general practice pharmacists] and one consumer representative) and from the key informant interviews (one nephrologist, four GPs, three pharmacists and four consumer representatives). A snapshot of some of the common barriers is provided in Table 1 below.

**TABLE 1: Common barriers grouped in themes (based on the RACGP quality framework)<sup>18</sup>**

| Themes   | Barriers to optimal detection and management of CKD  |
|--|--|
| <b>Clinical practice and quality of care</b>                                     | <ul style="list-style-type: none"> <li>▶ High burden of CKD in Australia</li> <li>▶ Tedious referral processes</li> <li>▶ Need for tools to be incorporated into clinical information systems that can help identify patients</li> <li>▶ Need for governance structures that support community ownership and culturally relevant care</li> <li>▶ Need for robust clinical systems that support communication, staff autonomy and capacity building</li> <li>▶ Recording CKD in clinical information systems not consistent</li> </ul>  |
| <b>Professional roles, interactions and relationships</b>                        | <ul style="list-style-type: none"> <li>▶ High prevalence of prescribing potentially inappropriate medicines and/or doses for patients with CKD</li> <li>▶ Suboptimal monitoring and management of patients with CKD</li> <li>▶ Substantial proportion of patients with CKD remain undiagnosed</li> <li>▶ Opportunity to scale up early diagnosis of CKD in general practice through screening for patients with risk factors</li> <li>▶ Poor role clarification with an overlap of treatment/screening roles</li> <li>▶ Poor discharge communication from tertiary to primary care</li> </ul>  |
| <b>Consumer/patient focus</b>  | <ul style="list-style-type: none"> <li>▶ Need to increase awareness related to the complications related to CKD that patients may experience eg, psychological distress, iron deficiency or bone disease</li> <li>▶ Need to increase patient awareness of the need to ask GPs about their kidney health</li> <li>▶ Need for flexible care that can meet the needs of people in their particular context</li> <li>▶ Low levels of health literacy and a low readiness to learn</li> <li>▶ For patients, other comorbidities often take priority over CKD</li> <li>▶ CKD terminology eg, stages of CKD, kidney disease etc. can be distressing to patients</li> <li>▶ Adherence to medicines for CKD is low</li> </ul> |
| <b>Capability and competence of health professionals to deliver quality care</b> | <ul style="list-style-type: none"> <li>▶ Variation in GP skills and knowledge for managing co-morbid diabetes and CKD</li> <li>▶ Lack of GP confidence in diagnosing CKD</li> <li>▶ Lack of GP confidence in communicating the diagnosis of CKD to patients</li> <li>▶ Sick day management (medicine management during periods of illness) is not done well in primary care</li> <li>▶ Confusion about MBS rebates available for ACR testing</li> </ul>  |



| Themes                                      | Barriers to optimal detection and management of CKD   |
|---|---|
|   | <ul style="list-style-type: none"> <li>▶ GP uncertainty about when referrals are necessary and which tests/information should accompany the referral. Opportunity to improve the quality of nephrologist referrals. Referral for ACR testing is an area to be improved</li> <li>▶ Kidney health often not considered for assessment when BP is measured</li> <li>▶ Need to raise awareness of screening and make sure that Kidney Health Checks remain front of mind for health professionals when doing overall health reviews</li> </ul>  |
| <b>Capacity of staff and systems</b>        | <ul style="list-style-type: none"> <li>▶ Difficulties accessing specialist services</li> <li>▶ Long waiting times for initial patient reviews by specialists</li> <li>▶ Time and resource constraints and competing priorities for health professionals</li> </ul>  |
| <b>Knowledge and information management</b> | <ul style="list-style-type: none"> <li>▶ Gap in GP knowledge about the definition of CKD</li> <li>▶ A lack of consensus on when to diagnose and educate patients</li> <li>▶ Multiple guidelines for CKD leading to confusion in primary care</li> <li>▶ Inconsistent guidelines for Aboriginal and Torres Strait Islander peoples</li> <li>▶ Kidney Health Australia CKD GP handbook underutilised in practice</li> <li>▶ GP dissatisfaction with existing guidelines due to difficult-to-achieve targets and lack of applicability to individual patients</li> <li>▶ Gap in GP knowledge regarding key medicines to avoid or medicines that require dose adjustment</li> <li>▶ Gap in pharmacists' knowledge regarding the less-well-known risk factors for CKD</li> <li>▶ Gap in pharmacist, GP and consumer knowledge regarding medicine management in the case of acute illness</li> <li>▶ Gap in pharmacist knowledge related to the kidney and cardiovascular protection provided by SGLT2 inhibitors aside from their glucose-lowering effect</li> <li>▶ Gap in pharmacist knowledge to make the link for patients with diabetes or hypertension with checking kidney function</li> <li>▶ Gap in pharmacist understanding of eGFR and CrCl when managing dose reduction of medicines cleared by the kidneys in CKD</li> <li>▶ Gap in practice nurse knowledge regarding best practice screening</li> <li>▶ Scope for improvement of the content and quality of consumer information websites</li> <li>▶ Need a sick day plan for patients with associated action plan that incorporates comorbidities/self-management strategies</li> <li>▶ Opportunity to promote Kidney Health Australia's action plan or a modified version that also includes a sick day plan</li> <li>▶ Need for education regarding the intersection between diabetes, CKD and CVD for health professionals and consumers</li> <li>▶ Need to provide specific guidance around what medicines to use for CKD and how to use them</li> <li>▶ Need for a list of common medicines that require dose reduction in CKD and kidney medicine doses based on eGFR (vs CrCl) would be a useful resource for GPs and pharmacists</li> <li>▶ Linking out to resources to help manage identified comorbidities eg, anticoagulation, bone disease and gout would be helpful for GPs</li> <li>▶ Most people with CKD are unaware they have the condition</li> <li>▶ Asymptomatic nature contributes to consumer and health professional lack of awareness of CKD</li> <li>▶ Confusion regarding different generic and/or original brands of the same medicines which can lead to medicine management problems</li> </ul> |
| <b>Funding, remuneration, costs</b>         | <ul style="list-style-type: none"> <li>▶ Costs of accessing medical services</li> <li>▶ Cost of medicines</li> <li>▶ Cost of travel and accommodation for people on dialysis</li> </ul>   |

# NPS MEDICINEWISE PROGRAM – BARRIERS AND TARGETED INTERVENTIONS

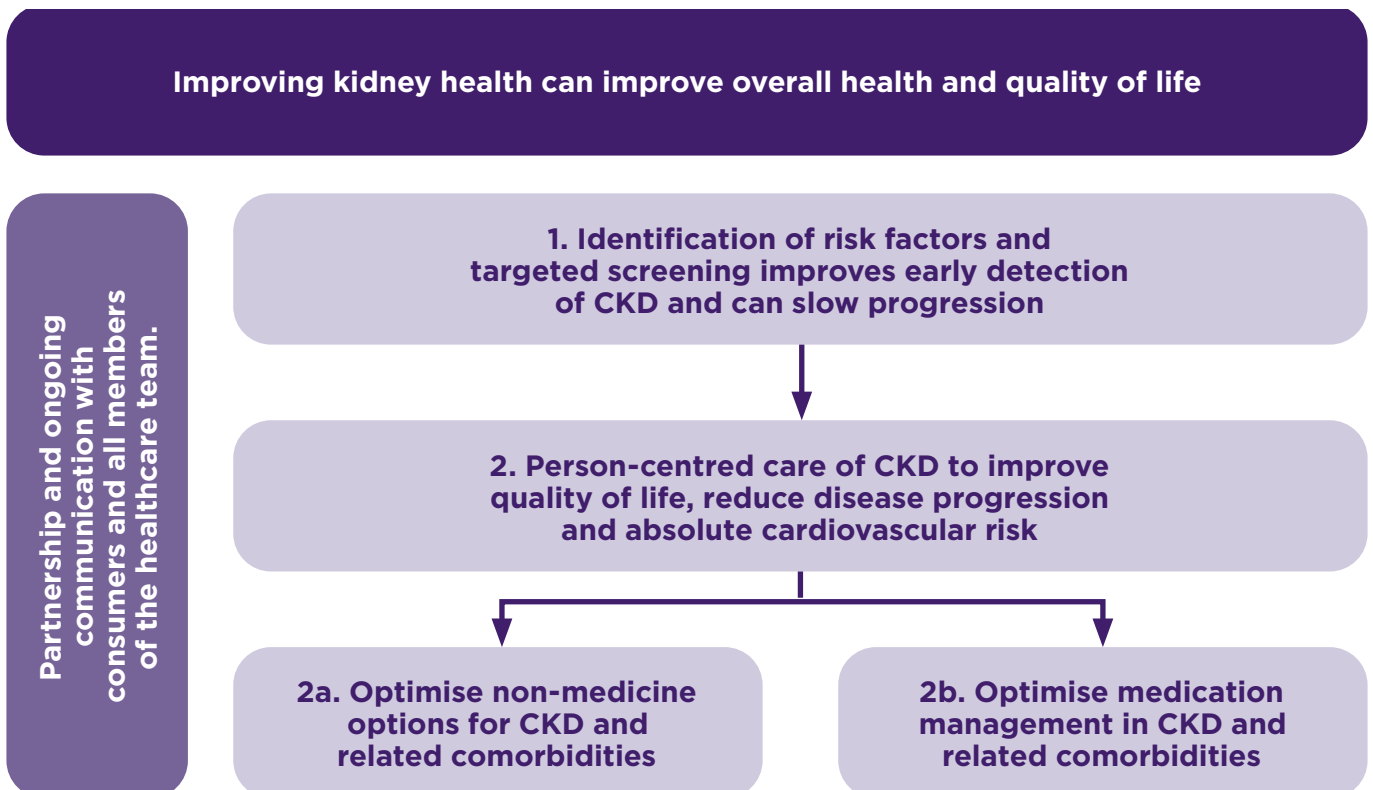
The *Chronic kidney disease: early detection and management* program is focused on improving early detection and slowing progression of CKD and providing person-centred care through optimising non-medicine options and medication management for CKD and related comorbidities (see Figure 1).

During the formative research and program design stage, key opinion leaders, experts and stakeholders repeatedly raised a range of QUM issues, including:

- ▶ low awareness of CKD among health professionals and consumers
- ▶ suboptimal diagnosis and detection of CKD in primary care
- ▶ suboptimal monitoring and management of CKD in primary care
- ▶ inappropriate prescribing of medicines for patients with CKD
- ▶ GP knowledge gaps regarding medicines to prescribe, avoid, dose reductions – sick day plans
- ▶ low GP knowledge about ACR tests
- ▶ GP uncertainty about referrals – when and what tests to accompany
- ▶ existence of multiple guidelines leading to confusion.

## Key messages

FIGURE 1: Key messages for the program



Audiences for the *Chronic kidney disease: early detection and management* program include:

- ▶ consumers, including people at risk of CKD, people with a diagnosis of CKD and family and carers
- ▶ GPs working in primary care
- ▶ nurses working in primary care
- ▶ pharmacists working in primary care
- ▶ Aboriginal and Torres Strait Islander Health Workers and Health Practitioners.

## Calls to action for program audiences

Calls to action for program audiences were identified and have been detailed in Table 2 below.

**TABLE 2:** Calls to action for program audiences

| Key message  | GP   | Consumer   | Other health professional  |
|--|--|--|--|
| <b>1. Identification of risk factors and targeted screening improves early detection of CKD and can slow progression</b>     | <ul style="list-style-type: none"> <li>▶ Identify patients with risk factors for CKD and conduct targeted screening, including a Kidney Health Check every 1–2 years</li> <li>▶ Communicate and discuss level of kidney function, diagnosis and prognosis with patients, carers and other supports</li> <li>▶ Accurately record diagnosis, including stage and underlying cause of kidney disease, in the clinical information system</li> </ul> | <ul style="list-style-type: none"> <li>▶ Be aware of the risk factors for CKD</li> <li>▶ If you have any risk factors for CKD, request a Kidney Health Check if not already done within the previous 1–2 years</li> <li>▶ Ask your GP clarifying questions if unsure of your Kidney Health Check results and/or diagnosis</li> </ul> | <ul style="list-style-type: none"> <li>▶ Know the risk factors for CKD</li> <li>▶ Prompt consumers identified with risk factors to ask their GP for a Kidney Health Check</li> </ul> |
| <b>2. Person-centred care of CKD to improve quality of life, reduce disease progression and absolute cardiovascular risk</b> |  |  |  |
| <b>2a. Optimise non-medicine options for CKD and related comorbidities</b>   | <ul style="list-style-type: none"> <li>▶ Collaborate with patients to develop and monitor an individualised person-centred kidney health plan that addresses their treatment goals and targets in line with guideline recommendations (as per Kidney Health Australia handbook)</li> </ul>   | <ul style="list-style-type: none"> <li>▶ Work together with your healthcare team to find out what you can do to improve or stop further damage</li> <li>▶ Contact Kidney Health Australia for support and information</li> </ul>   | <ul style="list-style-type: none"> <li>▶ Support consumers with identified modifiable risk factors to adhere to a healthy lifestyle to improve kidney and heart health</li> </ul>    |

| Key message  | GP  | Consumer  | Other health professional   |
|--|---|---|---|
| <b>2b. Optimise medicine management in CKD and related comorbidities</b> | <ul style="list-style-type: none"> <li>▶ Optimise medicines shown to slow progression of CKD, and manage related comorbidities</li> <li>▶ Avoid/cease medicines known to worsen kidney function for patients with CKD</li> <li>▶ Adjust dose of kidney-cleared medicines according to current kidney function or during periods of illness</li> </ul> | <ul style="list-style-type: none"> <li>▶ Understand why medicines have been prescribed to manage kidney health</li> <li>▶ Take medicines as prescribed to manage kidney health</li> <li>▶ Talk to doctor, nurse, or pharmacist before starting a medicine purchased over the counter to avoid unintended injury to kidneys</li> <li>▶ Develop a plan with doctor that includes any dose adjustments needed when unwell</li> </ul> | <ul style="list-style-type: none"> <li>▶ Effectively communicate to consumers and their carers the role of medicines shown to improve kidney and heart health</li> <li>▶ Identify and make appropriate recommendations regarding the use of medicines that may worsen kidney function</li> <li>▶ Use eGFR results to recommend medicine dose adjustments of kidney-cleared medicines according to guideline or product information (pharmacists)</li> </ul> |

## Program interventions

The program interventions are presented in Table 3.

**TABLE 3:** NPS MedicineWise program interventions

| Intervention   | Audience  | Barriers addressed  |
|--|---|---|
| <p><b>Educational outreach for general practices</b><br/>(Face-to-face and/or virtual)</p> <ul style="list-style-type: none"> <li>▶ one-on-one: a 30-minute in-practice discussion for GPs, tailored to individual learning needs</li> <li>▶ small group: a 1-hour facilitated group discussion for GPs, pharmacists and nurses</li> </ul> | <ul style="list-style-type: none"> <li>▶ Primary: GPs, pharmacists and nurses in a general practice setting (targeted visits)</li> </ul>  | <ul style="list-style-type: none"> <li>▶ Theme 1 – Clinical variation and quality of care</li> <li>▶ Theme 4 – Capability and competence of health professionals to deliver quality care</li> <li>▶ Theme 6 – Knowledge and information management</li> </ul> |
| <p><b>Web content for health professionals</b><br/>(Online)</p> <p>A clinical hub that houses the program and external content, resources and links out to relevant resources from other organisations</p>   | <ul style="list-style-type: none"> <li>▶ Primary: GPs, pharmacists (various settings; hospital, community/accredited or in a general practice), nurses, other health professionals</li> </ul> | <ul style="list-style-type: none"> <li>▶ Theme 6 – Knowledge and information management</li> </ul>  |
| <p><b>MedicineWise News articles</b><br/>(Online and as a PDF)</p> <p>News articles written from the perspective of a health professional to emphasise particular clinical practice points</p>   | <ul style="list-style-type: none"> <li>▶ Primary: GPs</li> <li>▶ Secondary: Other health professionals</li> </ul>   | <ul style="list-style-type: none"> <li>▶ Theme 1 – Clinical variation and quality of care</li> <li>▶ Theme 6 – Knowledge and information management</li> </ul>  |

| Intervention  | Audience   | Barriers addressed  |
|---|--|---|
| <p><b>Podcast with persuasive peer-to-peer communication using conversational style and tone</b><br/>(Audio)</p> <p>An opportunity for discussion between a nephrologist and GP on the challenges and the role of GPs in managing CKD in primary care</p>   | <ul style="list-style-type: none"> <li>▶ Primary: GPs</li> <li>▶ Secondary: Other health professionals</li> </ul>  | <ul style="list-style-type: none"> <li>▶ Theme 1 – Clinical variation and quality of care</li> <li>▶ Theme 2 – Professional roles, interactions and relationships</li> </ul>  |
| <p><b>MedicineInsight practice report, aggregate report, and patient list</b></p> <p>MedicineInsight is a large-scale primary care data set of longitudinal de-identified electronic health records in Australia. It collects general practice data to support quality improvement in Australian primary care and post-market surveillance of medicines. The data are analysed, and insights provided to practices through educational visits as:</p> <ul style="list-style-type: none"> <li>▶ an Aggregate Data Handout: aggregated summary of national general practice data.</li> <li>▶ a MedicineInsight Practice Report: information based on practice's own data</li> <li>▶ patient lists based on risk factors for targeted screening to initiate a Kidney Health Check</li> </ul> | <ul style="list-style-type: none"> <li>▶ Primary: GPs</li> <li>▶ Secondary: pharmacists and nurses in a general practice setting (targeted visits)</li> </ul>      | <ul style="list-style-type: none"> <li>▶ Theme 1 – Clinical variation and quality of care</li> <li>▶ Theme 4 – Capability and competence of health professionals to deliver quality care</li> </ul>   |
| <p><b>Webinar with persuasive peer-to-peer communication using panel format (including a consumer, GP, pharmacist and CKD nurse practitioner among panel members)</b><br/>(Live and on demand)</p> <p>An opportunity for a multidisciplinary approach to CKD with a focus on medicines</p>  | <ul style="list-style-type: none"> <li>▶ Primary: GPs, nurses, pharmacists (various settings; hospital, community/ accredited or in a general practice)</li> </ul> | <ul style="list-style-type: none"> <li>▶ Theme 2 – Professional roles, interactions and relationships</li> <li>▶ Theme 6 – Knowledge and information management</li> </ul>  |
| <p><b>Educational outreach for Aboriginal Community Controlled Health Organisations (ACCHOs) and other Aboriginal health services</b><br/>(Group discussion face-to-face and/or virtual)</p>  | <ul style="list-style-type: none"> <li>▶ Aboriginal and Torres Strait Islander Community Controlled Health Services</li> </ul>                                     | <ul style="list-style-type: none"> <li>▶ Theme 1 – Clinical variation and quality of care</li> <li>▶ Theme 4 – Capability and competence of health professionals to deliver quality care</li> <li>▶ Theme 6 – Knowledge and information management</li> </ul> |

| Intervention   | Audience  | Barriers addressed   |
|--|---|--|
| <p><b>Web content for consumers</b><br/>(Online)</p> <p>Web content that includes information and links related to kidney health, including links to relevant external resources from Kidney Health Australia</p>  | <ul style="list-style-type: none"> <li>▶ Primary: Consumers at risk of, and those with, CKD</li> <li>▶ Secondary: Families, carers, and other supports</li> </ul> | <ul style="list-style-type: none"> <li>▶ Theme 3 – Consumer/patient focus</li> </ul> |
| <p><b>Consumer resources – adaptation of risk matrix</b><br/>(Online and as a PDF)</p> <p>Designed to be used by health professionals to discuss CKD diagnosis and prognosis</p>   | <ul style="list-style-type: none"> <li>▶ Primary: People with CKD</li> <li>▶ Secondary: Families, carers, and other supports</li> </ul>                           | <ul style="list-style-type: none"> <li>▶ Theme 3 – Consumer/patient focus</li> </ul> |
| <p><b>Podcast with persuasive peer-to-peer communication using conversational style and tone</b><br/>(Audio)</p> <p>An opportunity for discussion between a GP, a person living with CKD and their carer, about the daily challenges in managing CKD, highlighting positive steps that improve their quality of life</p> | <ul style="list-style-type: none"> <li>▶ Primary: People with CKD</li> <li>▶ Secondary: Families, carers, and other supports</li> </ul>                           | <ul style="list-style-type: none"> <li>▶ Theme 3 – Consumer/patient focus</li> </ul> |
| <p><b>Consumer resources – Clinical Patient Action Plan</b><br/>(Online and as a PDF)</p> <p>Individualised patient action plan that focuses on kidney health and other comorbidities. Health professional mediated.</p>   | <ul style="list-style-type: none"> <li>▶ Primary: People with CKD</li> <li>▶ Secondary: Families, carers, and other supports</li> </ul>                           | <ul style="list-style-type: none"> <li>▶ Theme 3 – Consumer/patient focus</li> </ul> |
| <p><b>MedicineWise app</b><br/>(Push notifications and featured resources)</p>   | <ul style="list-style-type: none"> <li>▶ Primary: People at risk of, and those diagnosed with CKD</li> <li>▶ Secondary: Carers</li> </ul>                         | <ul style="list-style-type: none"> <li>▶ Theme 3 – Consumer/patient focus</li> </ul> |
| <p><b>Translated and culturally appropriate information for culturally and linguistically diverse (CALD) Communities</b><br/>(Translated information handout)</p>  | <ul style="list-style-type: none"> <li>▶ Primary: CALD communities</li> </ul>   | <ul style="list-style-type: none"> <li>▶ Theme 3 – Consumer/patient focus</li> </ul> |
| <p><b>Culturally appropriate information for Aboriginal and Torres Strait Islander Communities</b><br/>(Information handout)</p>   | <ul style="list-style-type: none"> <li>▶ Primary: Aboriginal and Torres Strait Islander communities</li> </ul>  | <ul style="list-style-type: none"> <li>▶ Theme 3 – Consumer/patient focus</li> </ul> |
| <p><b>Consumer experience video</b><br/>(Video)</p> <p>Empowering depiction of consumers with lived experience of CKD discussing their diagnosis and prognosis of kidney disease</p>   | <ul style="list-style-type: none"> <li>▶ Primary: People with CKD</li> <li>▶ Secondary: Families, carers, and other supports</li> </ul>                           | <ul style="list-style-type: none"> <li>▶ Theme 3 – Consumer/patient focus</li> </ul> |

# POTENTIAL INTERVENTIONS TO FURTHER ADDRESS QUM ISSUES FOR CKD

This section includes additional potential interventions that were beyond the scope of the current *Chronic kidney disease: early detection and management* program, but which could be developed in the future to address QUM issues for CKD. Some of these interventions were identified during the research and design phase of the program while others were identified through discussions with the SRG members.

## Theme 1 – Clinical practice and quality of care

### Data-driven audit and feedback intervention

A potential intervention could include supporting a pilot in a PHN with an audit and feedback data tool with an educational visiting component. This could utilise data reports for practices with Pen CAT and using the CKD reporting tab. Potential audiences could include GPs, practice nurses and general practice pharmacists.

## Theme 2 – Professional roles, interactions and relationships

### Interventions to address multidisciplinary teams and communications

Multidisciplinary team approaches/interventions are particularly important in rural, regional and remote areas. Including interventions and products to support and reinforce multidisciplinary team care for chronic disease prevention, early intervention and management are important. Including other health professionals, in addition to GPs, pharmacists and practise nurses, should be encouraged where possible.

One of the interventions developed in the current NPS MedicineWise CKD program addresses this area. The October webinar, *CKD – a multidisciplinary team approach to reducing risk by individualising medicine management* was open to GPs, nurses and pharmacists. It also involved a consumer living with CKD bringing their insights.

### Specific interventions delivered by pharmacists

Pharmacists have significant potential to reduce the number of medication-related hospital admissions and adverse medication events in Australia. Specific interventions delivered by pharmacists could utilise MedsChecks, medication reviews and My Health Records to monitor medicine prescribing according to kidney function, potentially reducing inappropriate prescribing and medication-related hospital admissions and adverse events.

## Theme 3 – Consumer focus

### Culturally relevant care

This was an area noted to be important by key stakeholders. Stakeholders emphasised that any translated health-related resources and materials must be co-designed and tested with relevant culturally diverse communities.

The recently launched Australian Multicultural Health Collaborative aims to work at the national level to give a voice to the broad health and wellbeing needs, including research, of Australia's culturally, ethnically and linguistically diverse (CALD) communities. The Collaborative was identified as an opportunity for integrating social and cultural determinants of health and prevention in the development of policy, programs, service delivery and research.

Stakeholders also noted the [announcement](#) by the Minister for Immigration, Citizenship, Migrant Services and Multicultural Affairs, regarding an agreement on appropriate national standards for cultural and linguistic diversity and the collection of ethnicity data as part of measuring diversity in Australia.

## Community-based consumer activity

Potential interventions could be determined by individual communities and target people at risk of CKD and/or diagnosis of CKD and communities at greater risk of CKD or poorer health outcomes. This approach could potentially target two QUM issues related to kidney disease (eg, kidney protective medicines and medicines to avoid).

## Consumer awareness campaign

Potential interventions could utilise modes such as electronic direct mail, digital content or social media for targeting consumers at risk of CKD. This could be done through partnerships with key stakeholders such as Kidney Health Australia, utilising their collateral/assets to develop communications/awareness campaigns targeting people at risk of CKD, designed to increase health literacy regarding kidney disease. These may also include culturally appropriate campaigns targeting Aboriginal and Torres Strait Islander peoples at risk of CKD.

# Theme 4 – Capability and competence

## Communication between health professionals and patients

Stakeholders highlighted the need for improved communication between health professionals and people at risk, or those with CKD. The need for providing appropriate language services or interpreters for patients with CKD wherever required was also noted.

Particular areas where effective communication between GPs and people with or at risk of CKD is needed: explaining why patients are taking certain medicines and how that may help their long-term outcomes; and making the link between the prescribed medicines (eg, their BP or diabetes medicines) and their benefit for kidney disease, which often tends to get missed in conversations. Kidney Health Australia is in the process of developing a conversation aid/resource to address this area of need. In addition to prescribed medicines, the role of complementary medicines and CKD also needs to be considered in these conversations.

A series of short health professional videos demonstrating effective communication using the teach-back method between a GP and consumers (people with CKD and their carers) could be developed to address this area.

The Choosing Wisely framework can also be used to improve these conversations between GPs and patients.

Another potential intervention could make use of pharmacists in the general practice setting for communicating medicine-related changes and addressing related questions/conversations.

Another opportunity would be to link with the *Good Medicine Better Health* Program, a QUM program to upskill Aboriginal and Torres Strait Islander Health Workers and Practitioners, and potentially tailor this to CKD.



## Theme 5 – Capacity of staff and systems

### Increasing health services capacity and consumer support

There is a need to increase health services capacity and consumer support to improve equity for people with CKD across all communities in Australia (eg, people living in rural and remote regions and Aboriginal and Torres Strait Islander peoples). A potential intervention could include supporting the increased use of recent telehealth opportunities with MBS rebates.

### Transition of care

Stakeholders noted that during post-hospital discharge following an acute kidney injury, information is often not communicated back to the GP, which increases kidney disease risks. The importance of including this information in the post-discharge summaries was emphasised by stakeholders.

Another issue flagged was the lack of communication and disconnect with GPs when patients get referred to a renal (kidney) unit and come under the care of a nephrologist. So, while the nephrologists are managing their kidney-related issues and GPs are managing the rest of their care, information is not consistently communicated back to GPs.

Integrating pharmacists in the aged care setting and utilising pharmacists as a tool to improve post-discharge communication were noted as potential opportunities to address transition of care issues.

### Fragmentation of care

Fragmentation of care was another system-related issue noted by stakeholders. One issue highlighted was that many patients with CKD do not see the same health provider consistently, leading to inconsistencies in regular reviews, monitoring and continuity of care in these patients. A broader system-wide approach/intervention would be needed to improve care for these patients.

## Theme 6 – Knowledge and information management

### Activities targeting hospital pharmacists and junior/resident medical officers

Case-based learning modules, such as the [National Prescribing Curriculum](#), and other online resources could be developed for hospital-based health professionals to improve management and communication across transitions of care.

Targeted learning could be undertaken regularly in the hospital setting in the form of small group meetings. Case scenarios could be selected by more senior hospital staff to reinforce learnings related to dose adjustments for medicines cleared by the kidneys according to current kidney function.

## Theme 7 – Funding, reimbursement, cost

### Funding models of care that support multidisciplinary management

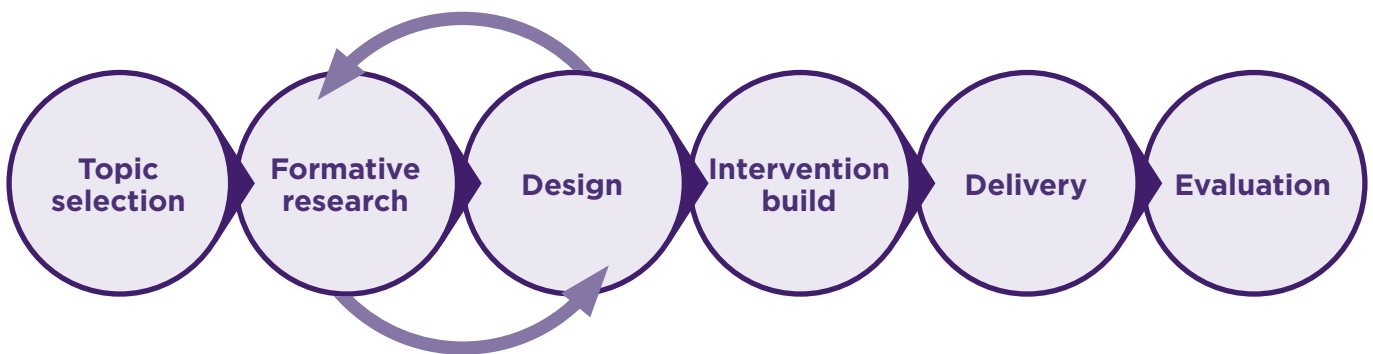
Funding models of care that support multidisciplinary management of chronic conditions, such as CKD, in general practice eg, support for pharmacists working within general practices and case conferences with nephrologists in general practice.

# APPENDIX 1: PROGRAM DEVELOPMENT PROCESS

## Overview

The development of the *Chronic kidney disease: early detection and management* program follows the below NPS MedicineWise process (Figure 2).

**FIGURE 2:** NPS MedicineWise process for the development of educational programs



## Topic selection

A systematic approach is taken to identify potential program topics by drawing on multiple resources, including horizon scanning. Internal and external expert advisors and key stakeholders are engaged to provide context around issues relevant for each topic area. This enables strategic decisions about which program areas will have the potential for significant impact on QUM and medical tests.

The *Chronic kidney disease: early detection and management* program was identified through the topic nomination process, where a range of complex and related QUM issues were raised by stakeholders.

## Formative research and program design

The formative research and design process for the program is an iterative process of gathering and refining information to inform the program direction. This breaks down the program and intervention design into smaller components that can be drafted and revisited as new information from formative research comes to light.

### Formative research

The formative research component of a program is a rigorous, systematic process drawing information from an assessment of QUM gaps and undertaking targeted research to provide sufficient understanding of potential issues with the health and policy sector for a particular topic area and how these can be addressed. Formative research activities are conducted iteratively based on prioritisation of research questions by the program team and in view of feedback from stakeholders and others. The findings identified in this report are not intended to be exhaustive and have focused on high-level areas that are most likely to be addressed through NPS MedicineWise interventions. Research activities conducted for this program are outlined below.

## Desktop research

A targeted literature search is conducted to identify key Australian publications highlighting QUM issues, practice gaps, barriers and enablers around the diagnosis and management of CKD.

## Environmental scan

An environmental scan to identify relevant tools, resources and initiatives published by key stakeholders that focus on the diagnosis and management of CKD.

## Key informant interviews with health professionals

In-depth qualitative interviews with four GPs and three pharmacists were conducted to explore their knowledge, behaviours and attitudes on the diagnosis and management of CKD.

Interviews with health professionals were conducted by an experienced qualitative research officer from the Formative Research team and were conducted in concordance with our current RACGP National Research and Evaluation Ethics Committee program ethics approval (Application ID: RG02310).

## Key informant interviews with consumers

In-depth qualitative interviews with four consumers were undertaken to explore their experiences with health professionals, current medicines and non-medicine alternatives, as well as experiences with existing resources. Consumers were recruited through key consumer stakeholder groups and social media channels.

## Key opinion leader interviews

In-depth discussions were conducted with key opinion leaders and experts in the field, including GPs, pharmacists, nurses and nephrologists, to understand the high-level gaps, barriers and opportunities around the diagnosis and management of CKD.

## Designing the program

This stage of design is represented in the green boxes in Figure 2 above. It includes identifying the overall direction and messaging of the program to ensure that all components contribute to identified outcomes and support the achievement of the intended objectives. It also includes the selection of interventions based on an assessment of barriers to, and drivers for, best practice, as well as behavioural change techniques in addressing these factors.

The development process for this stage included:

- ▶ early review of research to understand the therapeutic topic, current guidelines, current policy and environment
- ▶ input and discussion with key stakeholders, such as:
  - Australian Government Department of Health and Aged Care
  - Kidney Health Australia
  - National Remote Health Alliance
  - Royal Australian College of General Practitioners
  - Society of Hospital Pharmacists of Australia
  - Pharmaceutical Society of Australia
  - National Aboriginal Community Controlled Health Organisation
  - Consumer Health Forum
  - Federation of Ethnic Communities Council of Australia
  - Council on the Ageing
  - Consumers, key opinion leaders and experts as part of the Expert Working Group and other informant interviews.

- ▶ Expert Working Group meetings to discuss and agree on the objectives, scope (conditions, medicines, and audiences) focus areas and key messages and interventions
- ▶ review of existing health professional and consumer resources and training materials available from external organisations.

## Expert Working Group

The purpose of the Expert Working Group (EWG) is to provide advice to inform the research, design and development of the program's interventions. The group consisted of individuals with relevant experience in CKD, including:

- ▶ two consumer representatives with lived experience in the topic area
- ▶ two GPs with experience in general practice; one being an RACGP representative
- ▶ two nephrologists, three pharmacists, one nurse practitioner with extensive experience in the topic area
- ▶ two representatives of Kidney Health Australia.

We held two meetings of the EWG (16 March and 25 March 2022) to discuss and agree on the objectives, scope (conditions, medicines and audiences), focus areas and key messages and interventions. We also held several out-of-session meetings with individual members of the group to follow up on additional interventions that were proposed, and to clarify any outstanding individual ideas/concerns/questions.

## Stakeholder Reference Group

The purpose of the Stakeholder Reference Group (SRG) is to provide strategic and expert advice for the development and implementation of the CKD program. The SRG was formed following initial conversations with key stakeholders as per the stakeholder engagement plan. It consists of nominees of key stakeholder organisations and currently includes:

- ▶ Kidney Health Australia
- ▶ Federation of Ethnic Communities' Councils of Australia
- ▶ The National Aboriginal Community Controlled Health Organisation
- ▶ Consumers Health Forum of Australia
- ▶ Pharmaceutical Society of Australia
- ▶ National Rural Health Alliance
- ▶ Society of Hospital Pharmacists of Australia
- ▶ Gold Coast PHN
- ▶ Council on the Ageing (observer member).

We held the initial meeting with the SRG on 22 March 2022 to provide an overview of the formative research and program design process and to gain members' feedback about the scope, focus and interventions of the program. A subsequent meeting was held on 8 April 2022.

## Clinical Intervention Advisory Group (CIAG)

We presented the program overview, intended scope and key stakeholders to collaborate with as part of the intended program to CIAG members at the February CIAG meeting. Feedback from group members was used to further refine the program scope and intended audiences and consult with additional key stakeholders.

# APPENDIX 2: COMPLEMENTARY PROGRAMS AND RESOURCES IN AUSTRALIA

This section focuses on the other programs and work being undertaken in CKD as well as resources available for health professionals and consumers in Australia. The NPS MedicineWise program aims to complement and strengthen the work of existing organisations by delivering key messages directly to general practice to support health professionals' understanding and knowledge of this area.

## Environmental scan and policy resources

**TABLE 4:** Government and policy-related programs and reports

| Title  | Organisation  | Date       | Update  |
|--|---|------------|---|
| <a href="#"><u>Make the Link: Kidney, Diabetes And Heart</u></a>   | Kidney Health Australia   | 2021       | This evidence report provides a summary of the key statistics and information regarding CKD, diabetes and cardiovascular disease in Australia   |
| <a href="#"><u>National Strategic Action Plan for Kidney Disease</u></a>   | Kidney Health Australia on behalf of the Australian Government Department of Health | early 2020 | The action plan articulates a national vision for preventing kidney disease and improving the lives of those affected by kidney disease, underpinned by the effective use of research, evidence and data. The action plan aligns with the 2017 National Strategic Framework for Chronic Conditions, with its emphasis on prevention, efficient, effective and appropriate care, and support and targeting priority populations. The action plan identifies three priority areas: 1) Prevention, detection and education 2) Optimal care and support and 3) Research and data. |
| <a href="#"><u>Catching some Air - asserting Aboriginal and Torres Strait Islander information rights in renal disease: the final report</u></a> | Menzies School of Health Research   | 2019       | The report provides community-informed recommendations to inform the development of kidney health guidelines for best practice clinical care and data use which advances health for Aboriginal and Torres Strait Islander people  |
| <a href="#"><u>Medicine Safety: Take Care</u></a>  | Pharmaceutical Society of Australia   | 2019       | This report details the extent of harms in Australia as a result of medicine use.   |
| <a href="#"><u>Chronic Kidney Disease web report</u></a>   | Australian Institute of Health and Welfare (AIHW)                                   | 2020       | The AIHW has developed core monitoring information on the prevalence, incidence, hospitalisation and deaths from CKD in Australia. This is updated on a regular basis on the AIHW website to ensure that current information and trends are readily available.  |

## Consumer resources

TABLE 5: Consumer resources

| Resource   | Type  | Organisation  |
|--|---|---|
| <b>General information on CKD (including treatment options)</b>                      |   |   |
| <a href="#">Check my kidneys: don't be blind to kidney disease: are you at risk?</a> | Online test   | Kidney Health Australia   |
| <a href="#">The Kidney Failure Risk Equation</a>                                     | An online checker with four and eight factor risk equations. Also shared decision-making resources (2018)   | Seven Oaks Chronic Disease Innovation Centre  |
| <a href="#">My kidneys My health: Living with early-stage chronic kidney disease</a> | Handbook and mobile phone app (2015)  | Kidney Health Australia   |
| <a href="#">All about chronic kidney disease</a>                                     | Fact sheet  | Kidney Health Australia   |
| <a href="#">Understanding kidney disease</a>   | This video explains what your kidneys do, what kidney disease is, what puts you at risk of kidney disease and how to keep your kidneys healthy.   | Kidney Health Australia   |
| <a href="#">Common kidney disease symptoms and management fact sheet</a>             | Fact sheet  | Kidney Health Australia   |
| <a href="#">Kidney disease</a>   | Web page  | Diabetes Australia  |
| <a href="#">What is home dialysis?</a>   | Web page  | Dialysis Australia  |
| <a href="#">Kidney disease</a>   | Web page with downloadable fact sheets  | Better Health Channel   |
| <b>Information about medicines</b>   |   |   |
| <a href="#">Medications &amp; kidney disease</a>                                     | Medication management and sick-day management tool for consumers with CKD   | Kidney Health Australia   |
| <a href="#">Deprescribing resources</a>  | Consumer resources including videos, guides for specific meds, summaries of factors favouring discontinuation and deprescribing   | Primary Health Network Tasmania   |
| <a href="#">Resources for safer medication use</a>                                   | Consumer information, PIs, notes about risk and tapering guides   | Department of Family Medicine: Mc Master University, American Society of Consultant Pharmacists and TaperMD |
| <b>Resources for Aboriginal and Torres Strait Islander peoples</b>                   |   |   |
| <a href="#">Aboriginal and Torres Strait Islander peoples resources library</a>      | Various resources including booklets and fact sheets  | Kidney Health Australia   |
| <a href="#">Kidney stories toolkit (health professional mediated)</a>                | A series of resources designed to educate Aboriginal people in the NT about CKD. They include diet, how kidneys work, living with CKD, treatment options, dialysis access, transplant stories and palliative care | Kidney Health Australia   |

| Resource   | Type  | Organisation   |
|--|---|--|
| <a href="#">Live well and take care: Protect yourself from a melioidosis infection (Part 1)</a>                      | Video/DVD and Audio   | Menzies School of Health Research                                  |
| <a href="#">Melioidosis and haemodialysis</a>  | Video/DVD and Audio   | Menzies School of Health Research                                  |
| <a href="#">Caring for your kidneys to slow down kidney disease progression in Stages 2 to 3a</a>                    | Illustrated booklets (PDFs)   | QLD Aboriginal and Islander Health council                         |
| <a href="#">Aboriginal and Torres Strait Islander peoples resources</a>  | Various resources: audio-visual resources, brochures, handbooks                                   | HealthInfoNet  |
| <b>Resources for people from CALD communities</b>  |   |  |
| <a href="#">Success App (Pilot stage)</a>  | Mobile phone app providing simplified patient information, skills training and communication tool | Nepean Blue Mountains Local Health District – funded by NSW Health |
| <a href="#">Translations resource library</a>  | Translated fact sheets on several topics in many languages  | Kidney Health Australia  |
| <a href="#">Translated videos: Understanding kidney disease video</a> (Arabic, Greek, Italian, Mandarin, Vietnamese) | Translated videos on kidney disease in many languages   | Kidney Health Australia  |

## Health professional resources

**TABLE 6:** Health professional resources

| Resource  | Type  | Organisation   |
|---|---|--|
| <b>General information on CKD (including treatment options)</b>                         |   |  |
| <a href="#">Chronic kidney disease: early detection and management</a>                  | Various resources for health professionals  | NPS MedicineWise   |
| <a href="#">Chronic Kidney Disease Management handbook</a>                              | The handbook is an evidence-based source of information, providing guidance and clinical tips to help health professionals detect, manage and refer patients with CKD   | Kidney Health Australia  |
| <a href="#">CARI guidelines</a>   | These guidelines aim improve the quality of care and outcomes for patients with kidney disease in Australia and New Zealand by facilitating the development and implementation of trustworthy clinical practice guidelines based on the best available evidence | CARI Guidelines is an externally funded research program within the University of Sydney. CARI Guidelines is supported by Australia New Zealand Society of Nephrology, Kidney Health Australia and the Australian Living Evidence Consortium |
| <a href="#">Case study webinar – Audrey – early detection of chronic kidney disease</a> | Webinar (earns CPD points for GPs)  | Kidney Health Australia  |

| Resource   | Type  | Organisation  |
|--|---|---|
| <b>Information about medicines</b>   |   |   |
| <a href="#">Chronic Kidney Disease Management handbook</a>                 | The handbook provides a list of medications that may need to be reduced or ceased and commonly prescribed meds that may adversely affect kidney function  | Kidney Health Australia   |
| <a href="#">RACGP aged care clinical guide (Silver Book): polypharmacy</a> | Clinical guidelines on polypharmacy and meds to use with caution in older people. Links to several tools included   | RACGP   |
| <a href="#">Veterans' MATES - Think 'kidney function' when prescribing</a> | This brochure provides guidance and practical advice on which medicines GPs need to keep front of mind and actions to take when prescribing for veterans with age-associated kidney function decline.                         | Veterans' MATES   |
| <a href="#">The Renal Drug Handbook</a>                                    | A universally trusted resource, this fourth edition of The Renal Drug Handbook contains over 800 drug monographs comprising prescribing information for clinical and medicines information pharmacists. Requires subscription | The information is validated and governed by the UK Renal Pharmacy Group (UKRPG). |
| <a href="#">The Renal Drug Database</a>                                    | The Renal Drug Handbook is now available in database format. Requires subscription  | The information is validated and governed by the UK Renal Pharmacy Group (UKRPG)  |
| <b>Key journal articles</b>  |   |   |
| <a href="#">Prescribing and deprescribing in chronic kidney disease</a>    | This article includes a list of commonly prescribed medicines that may require dose reduction or cessation for people with CKD  | Australian Journal of General Practice  |
| <a href="#">Prescribing for older people with chronic renal impairment</a> | This article presents an overview of prescribing considerations in primary care for older patients with CKD   | Australian Family Physician   |
| <a href="#">How to adjust doses in chronic kidney disease</a>              | This article describes factors to consider when prescribing medicines cleared by the kidneys to patients with CKD such as dose amount and dose interval. Guidance on when automated eGFR may need to be adjusted is provided  | Australian Prescriber   |



| Resource   | Type   | Organisation   |
|--|--|--|
| <b>Resources for treating Aboriginal and Torres Strait Islander peoples</b>  |  |  |
| <a href="#"><u>Diagnostic pathway for CKD in The Kimberley</u></a>   | PDF document/poster  | Kimberley Renal Services                                   |
| <a href="#"><u>Chronic Kidney Disease (CKD)</u></a>  | Downloadable booklet for Aboriginal Health Workers, nurses, physicians   | Kimberley Aboriginal Medical Services Council (KAMS)       |
| <a href="#"><u>Aboriginal and Torres Strait Islander peoples resources</u></a>   | Various resources: audio-visual resources, brochures, handbooks for clinicians   | HealthInfoNet  |
| <a href="#"><u>National guide to a preventive health assessment for Aboriginal and Torres Strait Islander people. Chapter 13: Chronic kidney disease prevention and management</u></a> | RACGP recommendations for CKD prevention and management  | RACGP  |
| <a href="#"><u>Standard Treatment Manual (7th edition)</u></a>   | This manual includes a collection of protocols for the management of common conditions seen in remote (mainly Aboriginal) health practices. It is an essential tool to support evidence-based practice in remote and Aboriginal and Torres Strait Islander health services | Central Australian Rural Practitioners Association (CARPA) |
| <a href="#"><u>Kidney stories</u></a>  | A series of resources (books, brochures and posters) designed to educate Aboriginal people in the Northern Territory about CKD   | Menzies School of Health Research                          |

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