Chronic Kidney Disease

eLearning Modules

Z4-45191 | July 2022

Welcome

Welcome to the ‘Awareness of Chronic Kidney Disease’ eLearning modules.

Module 1

Understanding chronic kidney disease

- What is CKD?
- The link between CKD and CV risk
- CKD is associated with serious complications
- Screening tests for CKD
- CKD progression and staging
- CKD risk: A practice framework
- How early should CKD be screened?
- Case 1: Meet Alfred
- Identifying patients at risk
- Other important risk factors for CKD
- Holistic approach to CKD management
- A T2D treatment algorithm
- Revisiting patient Alfred
- Goals of therapy
- Module 1: Key learnings
- Learning quiz

Module 2

Identifying patients at risk of CKD

- Pharmacists’ role in patient identification
- Case 2: Meet Alma
- Step 1: Using the CKD risk assessment tool
- Step 2: Start a conversation
- Step 3: Take action on CKD with patients
- Step 4: Holistic advice for your at-risk patient
- Preparing for effective patient counselling
- Revisiting patient Alma
- Assessing Alma’s knowledge of her CKD risk
- Summarising the visit for your patient
- Collaborating with primary care
- Considerations in advanced pharmacy practice
- Goals of therapy
- Module 2: Key learnings
- Learning quiz

CKD, chronic kidney disease; CV, cardiovascular

Why is CKD important?

Chronic kidney disease (CKD) is a common yet vastly underdiagnosed progressive disease, which usually develops and presents with no symptoms in the early stages but generally becomes symptomatic when the disease progresses toward end-stage renal disease. CKD needs to be detected earlier so those who need treatment can get it.[1]

Patients living with common conditions such as diabetes, high blood pressure and cardiovascular disease put their kidneys at an increased risk of CKD but it often goes unnoticed[2]

Benefits and outcomes

Establishing a strong pathway for at-risk patients to be identified and referred for screening is important and will have numerous beneficial effects to both your pharmacy and the wider community.

Improving outcomes for your patients

Identifying at-risk patients usually results in earlier diagnosis and treatment. Early intervention can slow the progression of the disease with the goal of limiting further kidney damage. Raising awareness about CKD also helps to increase understanding across all patients and elevates the importance of the kidneys as vital organs

Supporting the growth of your pharmacy

CKD counselling will be an addition to your pharmacy's service offering, e.g. blood glucose monitoring. By expanding your service offering it will build strong local community relationships

Strengthening connections within your local community

Ongoing patient support for those at risk or those diagnosed is best provided in a familiar and local setting. You will strengthen your relationship with the local primary care services through collaboration and patient referral, creating more opportunities to work together

CKD, chronic kidney disease; ESRD, end-stage renal disease

1. World Kidney Day. Chronic kidney disease. Available at: https://www.worldkidneyday.org/facts/chronic-kidney-disease (Accessed July 2022).

2. American Kidney Fund (AKF). Chronic kidney disease (CKD). Available at: https://www.kidneyfund.org/kidney-disease/chronic-kidney-disease-ckd (Accessed July 2022).

Enhancing pharmacy services

The toolkit is designed for ease of use and seamless integration into your existing pharmacy services, without any additional burden on workload.

All materials have been developed for use by members of the pharmacy team, including qualified pharmacists and pharmacy assistants as appropriate.

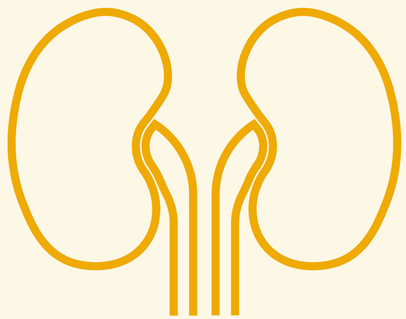
Full implementation of the toolkit will create counselling opportunities at key points of contact with patients and enhance existing services.

The toolkit can be integrated in, including but not limited to, the following:

- Dispensing and counselling
- Chronic disease diagnostic testing (e.g. blood pressure and glucose monitoring)
- Medication reviews
- Well-being and lifestyle services

Module 01

Understanding CKD



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Learning objectives

Upon successful completion of this continuing education learning module, you will be able to:

- Define what chronic kidney disease (CKD) is and how to screen for it
- Understand the relationship between CKD and cardiovascular (CV) disease
- Describe the progression and staging of CKD and a methodology to determine a patient's CKD risk
- Understand how early screening should occur for CKD
- Identify patients at risk in practice, especially those with common and related conditions
- Understand how patients with CKD are treated and managed
- Consider the holistic approach to CKD management
- Demonstrate proficiency in clinical cases by applying clinical reasoning

CKD, chronic kidney disease; CV, cardiovascular

01

What is CKD?

CKD is defined as abnormalities of kidney structure or function, including markers of kidney damage and a reduced glomerular filtration rate (GFR), which have been present for 3 months which have implications for health.[1]

In fact, CKD ranks 12th as a leading cause of death out of 133 conditions, marking a >41% increase since the 1990s.[2]

Despite these disturbing trends and owing to the commonly asymptomatic presentation of early CKD, people are often diagnosed with late-stage disease.[2] This puts them at higher risk of adverse outcomes – the risk of CVD is 10–20 times higher than in the general population[3] and around half of all deaths of patients with stage III or IV CKD are due to CVD.[4]

Currently CKD has no cure, treatments aim to not only slow progression of disease but to help effectively manage a patient's cardiovascular risk.[5]

Did you know?

In 2017, ~700 million cases of all-stage CKD were recorded, a number greater than diabetes, osteoarthritis, COPD, asthma and depressive disorders[2]

Early screening for renal function decline is important:

A person may accumulate a loss of up to **90%** of kidney function before showing symptoms[6]

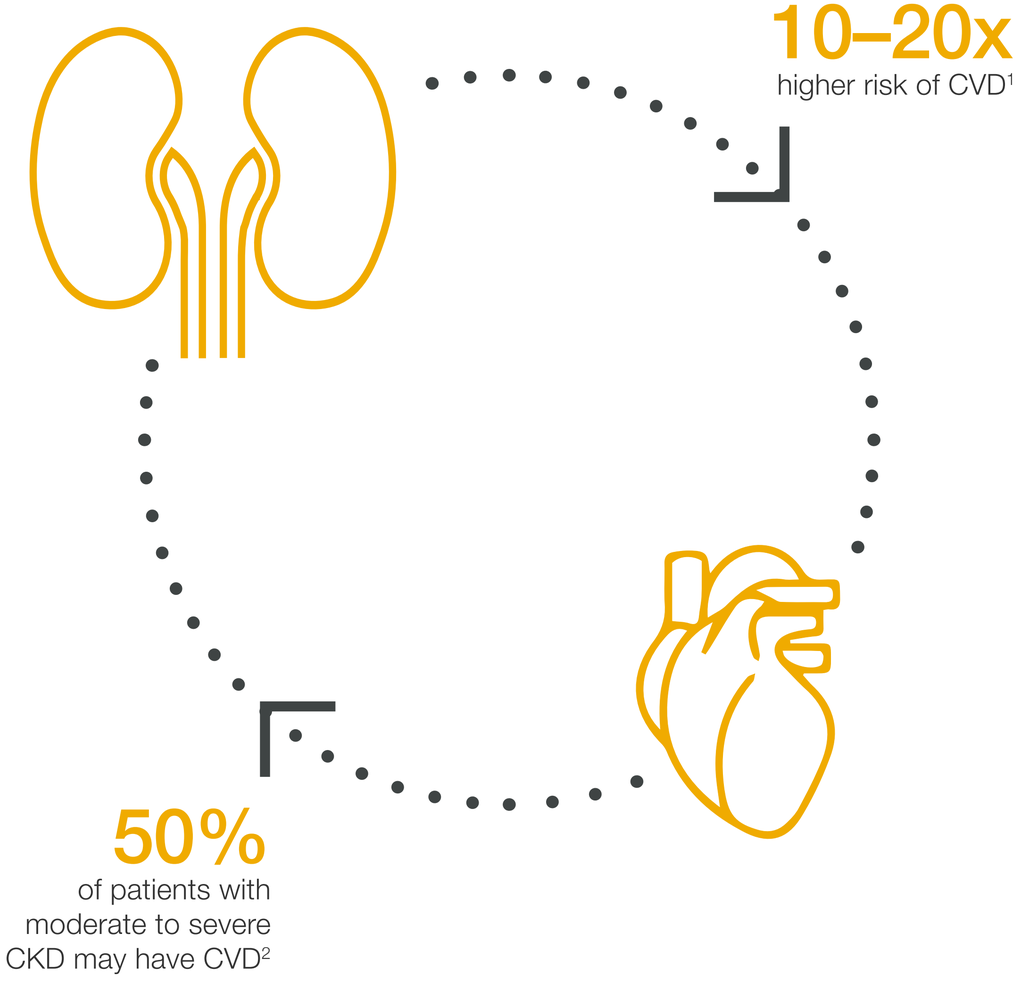
People with CKD are **5–10 times** more likely to die prematurely from CVD or a serious CV event, than they are to progress to end-stage renal disease. This increased risk of death rises exponentially as kidney function worsens[7]

Currently CKD has **no cure**, but treatments can reduce further kidney damage and slow progression of the condition[6]

CKD, chronic kidney disease; COPD, chronic obstructive pulmonary disease; CV, cardiovascular; CVD, cardiovascular disease; GFR, glomerular filtration rate

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease in adults. Available at: https://www.nice.org.uk/guidance/qs5 (Accessed July 2022).
2. Bikbov B *et al*. *Lancet* 2020; 395:709–733.
3. Parikh NI *et al. Arch Intern Med* 2006; 166:1884–1891.
4. Jankowski J *et al. Circulation* 2021; 143:1157–1172.
5. Vallianou NG *et al. Curr Cardiol Rev* 2019; 15:55–63.
6. World Kidney Day. Chronic kidney disease. Available at: https://www.worldkidneyday.org/facts/chronic-kidney-disease (Accessed July 2022).
7. National Institute for Health and Care Excellence (NICE). Chronic kidney disease: what are the complications? Available at: https://cks.nice.org.uk/topics/chronic-kidney-disease/background-information/complications (Accessed July 2022).

01 The link between CKD and CV risk



With the prevalence of cardiovascular disorder on the rise there is a proportional increase in the risk and incidence of CKD. These two conditions that are interrelated and co-progressive, if not managed early, mutually worsen and lead to serious and irreversible disease consequence and even death.[3]

Patients with coronary artery disease, heart failure (HF), stroke or peripheral vascular disease are all at higher risk and should be screened for CKD.[4] Ultimately these CV conditions can all affect the blood vessels of the kidney, causing damage.[5]

In turn damage to the kidney can lead to fluctuations in blood pressure and electrolyte control in the bloodstream, which is important for homeostasis and heart function.[6]

How many patients with CVD do you see regularly that could be at risk of CKD?

CKD, chronic kidney disease; CV, cardiovascular; CVD, cardiovascular disease; HF, heart failure

1. Parikh NI *et al. Arch Intern Med* 2006; 166:1884–1891.
2. Jankowski J *et al. Circulation* 2021; 143:1157–1172.
3. Vallianou NG *et al. Curr Cardiol Rev* 2019; 15:55–63.
4. Grill AK, Brimble S. *Can Fam Physician* 2018; 64:728–735.
5. American Kidney Fund (AKF). Chronic kidney disease (CKD). Available at: https://www.kidneyfund.org/kidney-disease/chronic-kidney-disease-ckd (Accessed July 2022).
6. Dhondup T, Qian Q. *Blood Purif* 2017; 43:179–188.

01

CKD is associated with serious complications

As a chronic disease, CKD is a condition that patients must manage for the rest of their lives.[1] As CKD progresses and kidney damage accumulates, symptoms usually worsen. With further progression, kidney function usually continues to decline and may result in kidney failure.[1]

Table 1 | Interrelated and co-progressive complications associated with CKD

Relationship with CVD	The risk of cardiovascular disease (CVD) increases as CKD progresses – the cardiovascular mortality of patients with stage 3 CKD was two-fold higher compared to patients with normal renal function and three-fold higher in patients with stage 4 CKD[2]
Relationship with heart disease	50% of patients with moderate to severe CKD have CVD[3] and a significant number of these individuals will die within a year of diagnosis[4]
Overlapping risk factors	CVD and CKD have overlapping risk factors, including hypertension and diabetes[1]
Other complications	Other complications of CKD include infections, increased cholesterol, anaemia and metabolic bone disease (e.g. osteoporosis)[5,6]
Mental health	Depression is highly prevalent among patients with CKD and end-stage renal disease and is associated with poor quality of life and adverse outcomes for these patients[7]

CKD, chronic kidney disease; CVD, cardiovascular disease

1. American Kidney Fund (AKF). Chronic kidney disease (CKD). Available at: https://www.kidneyfund.org/kidney-disease/chronic-kidney-disease-ckd (Accessed July 2022).
2. Said S, Hernandez GT. *J Nephropathol* 2014; 3:99–104.
3. Jankowski J *et al. Circulation* 2021; 143:1157–1172.
4. Klindtworth K *et al. BMC Geriatrics* 2015; 15:125.
5. Levin A, Stevens PE. *Nat Rev Nephrol* 2011; 7:446–457.
6. Thomas R *et al. Prim Care* 2008; 35:329–344.
7. Shirazian S *et al. Kidney Int Rep* 2017; 2:94–107.
8. World Kidney Day. Chronic kidney disease. Available at: https://www.worldkidneyday.org/facts/chronic-kidney-disease (Accessed July 2022).

The goal of early detection is early initiation of treatment in order to slow disease progression and prevent complications as much as possible[8]

01

Screening tests for CKD

Guidelines recommend routine screening for CKD for those at risk, to enable earlier detection when there are no obvious symptoms and earlier intervention to prevent progression and complications.[1,2]

Diagnostic tests

In most cases, primary care physicians such as GPs can arrange for these tests.[3]

Blood

Steady-state renal function is best determined by estimation of GFR, which is derived from a measurement of serum creatinine that is adjusted for demographic information such as age. GFR and other markers of kidney damage are used to diagnose and stage CKD[1,4]

Urine

Proteinuria (protein in urine) or albuminuria (albumin in urine, a specific protein usually found in blood), haematuria (blood in urine) and urine sediment abnormalities[1]

Imaging

Ultrasound[2]

Relevant terms to understand:

eGFR
A kidney function blood test is used to measure the estimated glomerular filtration rate (eGFR). eGFR indicates how well the kidneys are working to remove waste from the blood.[3]

uACR
A kidney damage urine albumin–creatinine ratio (uACR) test measures the amount of protein (albumin) in the urine. Damaged kidneys leak albumin into the urine; it should be in the bloodstream.[3]

Practice tips +

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; GFR, glomerular filtration rate; uACR, urine albumin–creatinine ratio

1. Gaitonde DY *et al. Am Fam Physician* 2017; 96:776–783.
2. Kidney Disease Improving Global Outcomes (KDIGO). Clinical practice guideline for the evaluation and management of chronic kidney disease. Available at: http://kdigo.org/home/guidelines/ckd-evaluation-management (Accessed July 2022).
3. National Health Service (NHS). Chronic kidney disease: diagnosis. Available at: https://www.nhs.uk/conditions/kidney-disease/diagnosis (Accessed July 2022).
4. Levey AS. *Lancet* 2012; 379:165–180.

Practice tips

Pharmacists and their teams can play a vital role in helping to explain the key terms and tests that a patient may need.

The team can also help to guide patients to primary care services as needed.

01

CKD progression and staging

There are five stages of CKD progression, which are based on GFR and other markers of kidney damage being present for at least 3 months which have implications for health.[1]

Figure 1 | CKD staging based on percentage of kidney function

Stage	GFR (mL/min/1.73 m^2)	Description[1]	Symptoms[2,3]
1	>90	Normal or high GFR and other signs of kidney damage	Typically no symptoms
2	60–89	Mild reduction in GFR relative to the normal range for a young adult and other signs of kidney damage	Possibly none or non-specific symptoms, such as fatigue, itching, loss of appetite, sleep problems and weakness
3	30–59	Moderate reduction in GFR	Possibly none or as above, plus back pain, persistent itching, swelling of hands/feet, changes in urination frequency
4	15–29	Severe reduction in GFR	Symptoms as above, plus chest pain, decreased mental sharpness, muscle twitches/cramps, nausea, shortness of breath
5	<15	ESRD or kidney failure	Severe symptoms as above

CKD, chronic kidney disease; GFR, glomerular filtration rate; ESRD, end-stage renal disease

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease: assessment and management. Available at: https://www.nice.org.uk/guidance/ng203 (Accessed July 2022).
2. Healthline. Stages of chronic kidney disease. Available at: https://www.healthline.com/health/ckd-stages (Accessed July 2022).
3. American Kidney Fund (AKF). Stages of kidney disease. Available at: https://www.kidneyfund.org/kidney-disease/chronic-kidney-disease-ckd/stages-of-chronic-kidney-disease (Accessed July 2022).

Counselling tips +

Counselling tips

As pharmacists discuss early and late phases of CKD progression with patients, they should highlight and reinforce the following:

- Overt symptoms do not usually appear in early stages[2]
- Screening tests along with other measures will often be used to:[2]
    - Monitor the condition
    - Determine appropriate and early treatment to curb the progression of CKD

01

CKD risk
A practice framework

International guidelines outline a methodology to determine a patient's CKD risk based on combining blood (eGFR) and urine (uACR) test results.[1]

Figure 2 | **Prognosis of CKD by GFR and albuminuria categories: KDIGO 2012[1]**

GFR categories (mL/min per 1.73 m²) Description and range				Persistent albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–300 mg/g 3–30 mg/mmol	>300 mg/g >30 mg/mmol
	G1	Normal or high	>90	**Low risk** (if no other markers of kidney disease, no CKD)	**Moderately increased risk**	**High risk**
	G2	Mildly decreased	60–89	**Low risk** (if no other markers of kidney disease, no CKD)	**Moderately increased risk**	**High risk**
	G3a	Mildly to moderately decreased	45–59	**Moderately increased risk**	**High risk**	**Very high risk**
	G3b	Moderately to severely decreased	30–44	**High risk**	**Very high risk**	**Very high risk**
	G4	Severely decreased	15–29	**Very high risk**	**Very high risk**	**Very high risk**
	G5	Kidney failure	<15	**Very high risk**	**Very high risk**	**Very high risk**

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; GFR, glomerular filtration rate; KDIGO, Kidney Disease Improving Global Outcomes; uACR, urine albumin–creatinine ratio

1. Kidney International. KDIGO 2020 clinical practice guideline for diabetes management in chronic kidney disease. Available at: https://www.kidney-international.org/article/S0085-2538(20)30718-3/fulltext (Accessed July 2022).

01

How early should CKD be screened?

Frequency of testing should be discussed and agreed on by the patient and their healthcare professional (including pharmacists). For a patient at risk, this may be dependent on factors including their ongoing test results and the patient's other comorbidities. If diagnosed, kidney function is usually monitored at least once a year.[1,2]

When evaluating a patient's risk, it is at the discretion of the healthcare professional, based on guidelines and professional judgement, whether or not they would recommend testing and at which frequency. These decisions should then be discussed with the patient.

For which patients should screening be recommended?

Although there are many risk factors for CKD, they are complex and interact differently in every patient. It's important to be aware of all factors that may increase a person's risk, but it isn't appropriate to put every patient who exhibits risk factors forward for testing

There are guidelines supporting which patients would benefit most from being screened, as explained in more detail in Module 2[2]

Did you know? +

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; KDIGO, Kidney Disease Improving Global Outcomes

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease in adults. Available at: https://www.nice.org.uk/guidance/qs5 (Accessed July 2022).
2. National Institute for Health and Care Excellence (NICE). Chronic kidney disease: assessment and management. Available at: https://www.nice.org.uk/guidance/ng203 (Accessed July 2022).
3. Chu CD *et al. Kidney Med* 2021; 3:576–585.

Did you know?

Patients' awareness of their own CKD is extremely poor:

- As little as **5%–10%** of the general population are aware of CKD[3]
- Among stage 3 CKD patients (based on KDIGO guidelines) with an eGFR <60 mL/min/1.73 m^2, the awareness of CKD was as low as **12%**[3] on average **26.5%**

01

Case 1
Meet Alfred

Alfred presents at your pharmacy for a refill of his medications

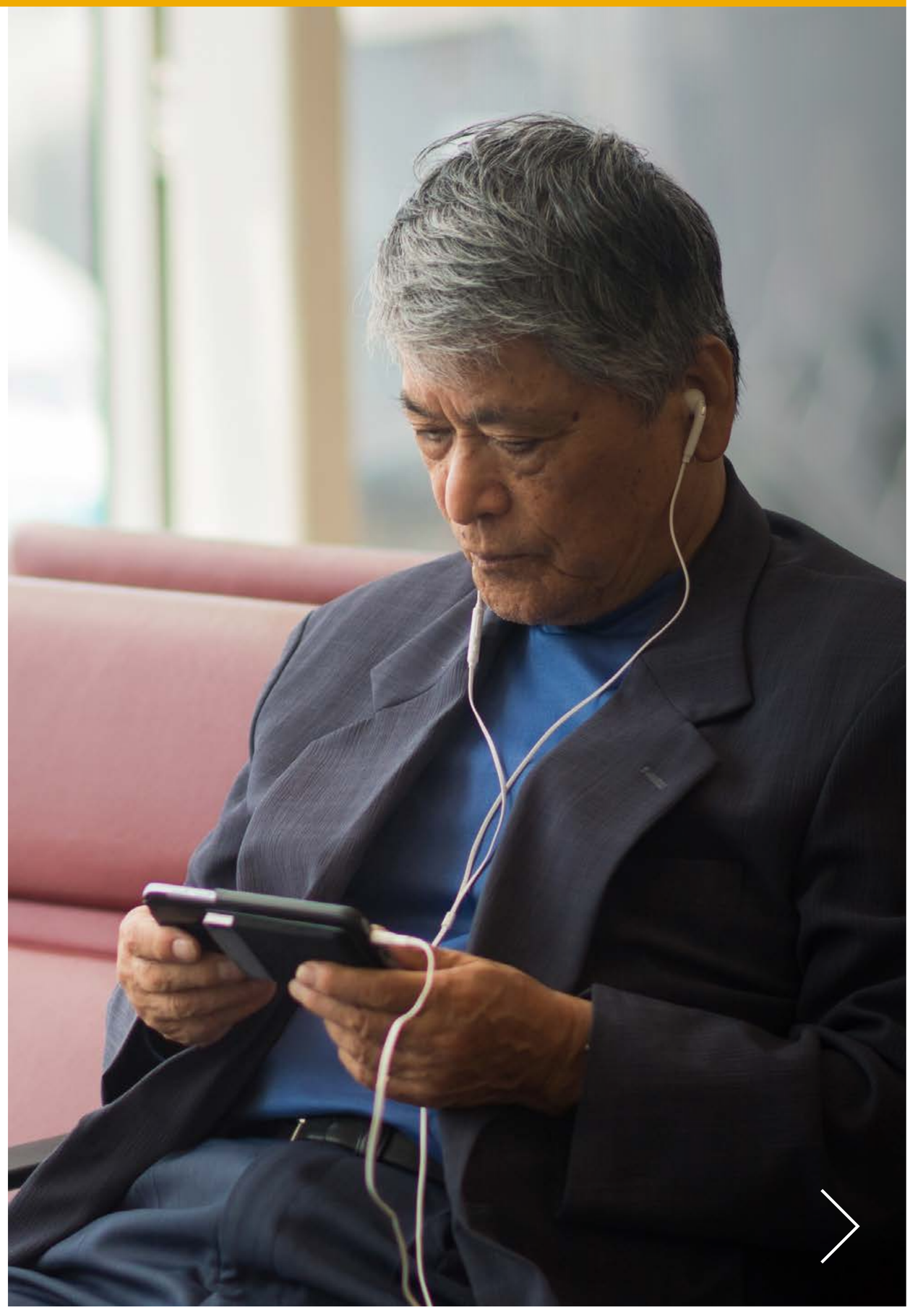
- He is 50 years old
- Living with type 2 diabetes for 6 years
- Currently taking metformin and glipizide
- You are not sure about his current diet
- He is not a smoker
- He is overweight
- You observe that he is 1 week late for his refill

Today, Alfred is at the pharmacy to pick up a refill

Practice considerations +

CKD, chronic kidney disease

1. Grill AK, Brimble S. *Can Fam Physician* 2018; 64:728–735.



Practice considerations

You see many similar patients to Alfred at your pharmacy who may be at risk of CKD, but have never been made aware.

This is your opportunity to further review Alfred's medication profile and conduct an early assessment of his CKD risk factors, including diabetes.[1]

It's important to be holistic in your approach.

01

Identifying patients at risk
Most common

These are 3 of the most common conditions that prematurely place patients at risk of CKD.

Table 2 | Common comorbidities and risks associated with the development of CKD

Comorbidities	Associated risks
Diabetes	• Leading cause of kidney disease; 30–40% of patients with T1 and T2 diabetes will develop CKD[1,2] • Increase vulnerability to acute complications from cardiovascular disease[2] • Higher risk of anaemia, metabolic bone disease, hospitalisation with infection and acute kidney injury[2]
Hypertension	• Around 30% of patients with hypertension also have CKD[3] • Complex pathophysiology due to the impact of both diseases on many common mechanisms such as sodium regulation, the sympathetic nervous system and the renin pathway[4,5] • Increases the risk of adverse cardiovascular events and cerebrovascular outcomes (i.e. stroke)[4,5]
CVD,* heart failure	• Associated with kidney function decline and development of CKD[6] • Risk factors for one another due to sharing many common traditional risk factors, such as diabetes and hypertension[6] • CVD can cause damage within the renal vasculature[6] • Associated with CKD progression[6] – CVD is the most common cause of death in patients on dialysis[7] • Heart failure (HF) can cause kidney perfusion complications[6]

CKD, chronic kidney disease; CVD, cardiovascular disease; HF, heart failure

*Also known as heart disease

1. Diabetes UK. Shared professional practice on kidney care and diabetes. Available at: https://www.diabetes.org.uk/professionals/resources/shared-practice/kidney-care (Accessed July 2022).
2. Winocour PH. *Diabet Med* 2018; 35:300–305.
3. Luyckx V *et al. Kidney Int Suppl* 2017; 7:71–87.
4. Phan O *et al. Eur Cardiol* 2014; 9:115–120.
5. Sata Y *et al. Front Med* 2018; 5:82.
6. Elsayed EF *et al. Arch Intern Med* 2007; 167:1130–1136.
7. American Kidney Fund (AKF). Heart disease and chronic kidney disease (CKD). Available at: https://www.kidneyfund.org/kidney-disease/chronic-kidney-disease-ckd/complications/heart-disease (Accessed July 2022).

01

Identifying patients at risk
Less common

There are other conditions for which kidney function should be closely monitored to support the identification of CKD early.

Table 3 | Less common comorbidities and risks associated with the development of CKD

Comorbidities	Associated risks
Kidney problems	• A history of acute kidney injury (AKI) and/or kidney stones are risk factors for CKD, as well as being associated with each other[1–3] • AKI and kidney stones share a number of causes and risk factors with CKD[2,3]
Other conditions	• Certain autoimmune conditions or multisystem diseases with potential kidney involvement are considered risk factors for CKD, as well as AKI: systemic lupus erythematosus, HIV, tuberculosis and hepatitis B and C[1,2] • Gout – those with CKD are at an increased risk of developing gout, which may be the only symptom[1]
Interactions between comorbidities	• Complex interplay between existing or historic conditions and the environmental and lifestyle factors for each of those, as with many other non-communicable diseases[4] • Alone, some of these risk factors do not confer a significantly increased risk but will modify other risk factors[4] – therefore, being able to identify these risk factors and take comprehensive histories is important when determining risk

AKI, acute kidney injury; CKD, chronic kidney disease; HIV, human immunodeficiency virus

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease in adults. Available at: https://www.nice.org.uk/guidance/qs5 (Accessed July 2022).
2. Luyckx V *et al. Kidney Int Suppl* 2017; 7:71–87.
3. National Kidney Foundation. Acute kidney injury. Available at: https://www.kidney.org/atoz/content/AcuteKidneyInjury (Accessed July 2022).
4. Peng S *et al. J Med Internet Res* 2019; 21:e14204.

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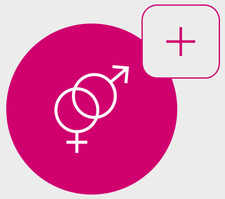
Beyond conditions

Other important risk factors for CKD

Other risk factors should be noted during the assessment of patients at risk of CKD.

Patient risk factors to assess when identifying patients at risk of CKD

Factor					
					
Medications	Family history	Age	Lifestyle	Ethnicity	Gender

Click to view associated risks

CKD, chronic kidney disease

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease in adults. Available at: https://www.nice.org.uk/guidance/qs5 (Accessed July 2022).
2. Luyckx V *et al. Kidney Int Suppl* 2017; 7:71–87.
3. National Kidney Foundation. Aging and kidney disease. Available at: https://www.kidney.org/news/monthly/wkd_aging (Accessed July 2022).
4. Kidney Research UK. Am I at risk? Available at: https://kidneyresearchuk.org/kidney-health-information/about-kidney-disease/am-i-at risk (Accessed July 2022).
5. National Kidney Foundation. Race, ethnicity & kidney disease. Available at: https://www.kidney.org/atoz/content/minorities-KD (Accessed July 2022).
6. National Kidney Foundation. Kidney failure risk factor: gender (sex). Available at: https://www.kidney.org/content/kidney-failure-risk-factor-gender-sex (Accessed July 2022).

Medications | Associated risks

Existing or historic exposure to certain medications with high nephrotoxicity:

Non-steroidal anti-inflammatory medications, calcineurin inhibitors (e.g. cyclosporin or tacrolimus), lithium, iodinated contrast media and chemotherapeutic medications.[1,2]

Family history | Associated risks

Family history of end-stage renal disease or hereditary kidney disease.[1]

Age | Associated risks

Being over 60 years of age may also increase risk of CKD as kidney function may gradually decline with age.[3]

Lifestyle | Associated risks

Certain populations of people are also found to have higher rates of kidney disease, including those who are obese, those who smoke and those who use illicit drugs.[4]

Ethnicity | Associated risks

Minority populations (such as Black and Hispanic) have much higher rates of high blood pressure, diabetes, obesity and heart disease, all of which increase the risk for kidney disease.[5]

Gender | Associated risks

Women may be more likely to have CKD due to the higher chance of getting a urinary tract infection, which can lead to kidney damage. Women also have increased risk for kidney damage due to problems with pregnancy, such as high blood pressure or eclampsia.[6]

01

Holistic approach to CKD management

Current treatment options for CKD revolve around management of risk factors and comorbidities, plus lifestyle changes to reduce the risk of CVD and improve general health.*[1,2]

- Ensuring healthy weight, blood pressure and glucose levels[1–3]
- Lifestyle changes, such as low fat and low salt diets, regular exercise, smoking cessation and limiting alcohol consumption[1,2]
- Limiting exposure to medications that can progress CKD (for example, NSAIDs)[4]
- Kidney dialysis or transplant[1]

Advances are being made to develop therapies that can be used to treat CKD directly.[5]

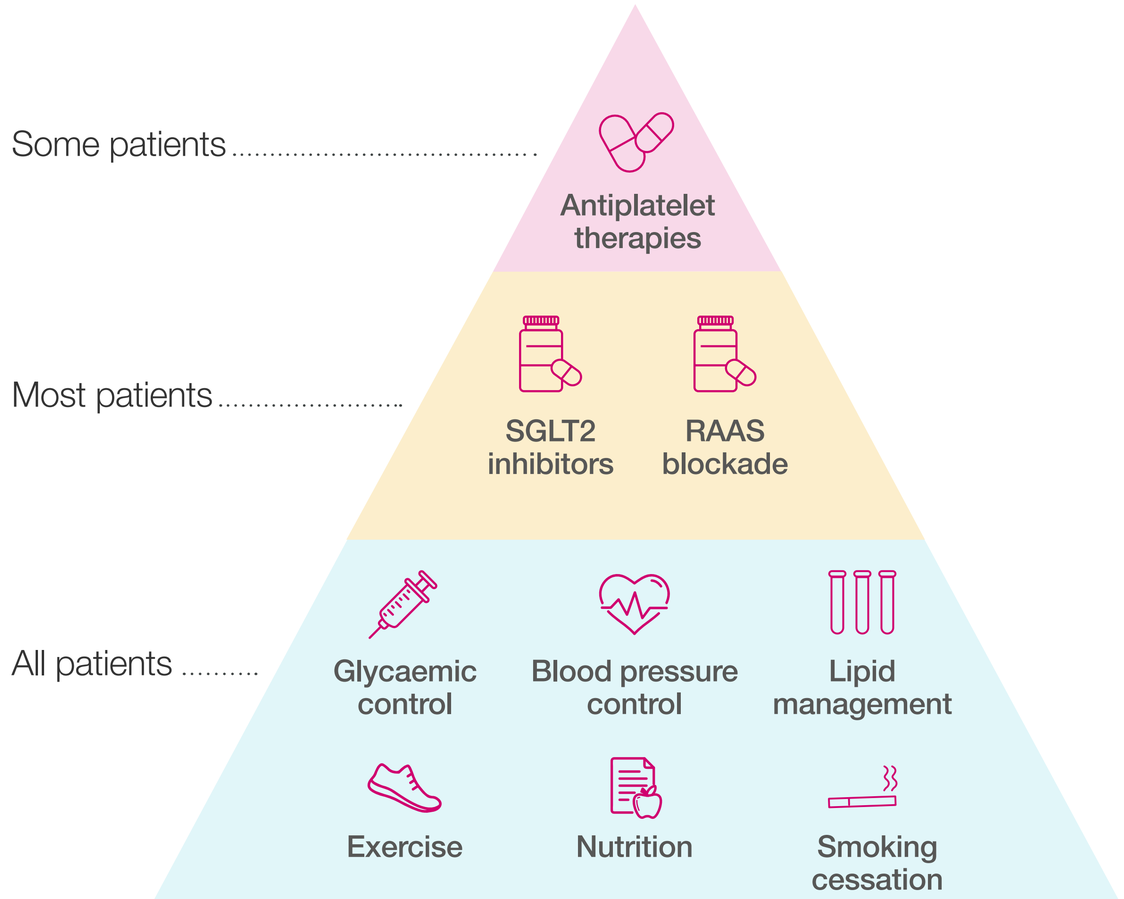
Earlier initiation of treatment has been found to delay the time to dialysis, allowing for better preparation and a slower rate of decline of eGFR, both of which are associated with improved survival.[4]

CKD, chronic kidney disease; CVD, cardiovascular disease; eGFR, estimated glomerular filtration rate; RAAS, renin-angiotensin-aldosterone system; SGLT2, sodium–glucose cotransporter-2; T2D, type 2 diabetes

*Always refer to local guidelines for CKD management algorithms approved and applicable to your market

1. American Kidney Fund (AKF). Chronic kidney disease. Available at: https://www.kidneyfund.org/kidney-disease/chronic-kidney-disease-ckd (Accessed July 2022).
2. National Institute of Diabetes and Digestive and Kidney Diseases. Preventing chronic kidney disease. Available at: https://www.niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease-ckd/prevention (Accessed July 2022).
3. National Kidney Foundation. Kidney disease: the basics. Available at: https://www.kidney.org/sites/default/files/web_kidneybasics_v4.pdf (Accessed July 2022).
4. Levin A, Stevens PE. *Nat Rev Nephrol* 2011; 7:446–457.
5. Food and Drug Administration (FDA). FDA approves treatment for chronic kidney disease. Available at: https://www.fda.gov/news-events/press-announcements/fda-approves-treatment-chronic-kidney-disease (Accessed July 2022).
6. Kidney International. KDIGO 2020 clinical practice guideline for diabetes management in chronic kidney disease. Available at: https://www.kidney-international.org/article/S0085-2538(20)30718-3/fulltext (Accessed July 2022).

Figure 4 | A treatment algorithm for the management of CKD risk in T2D[6]

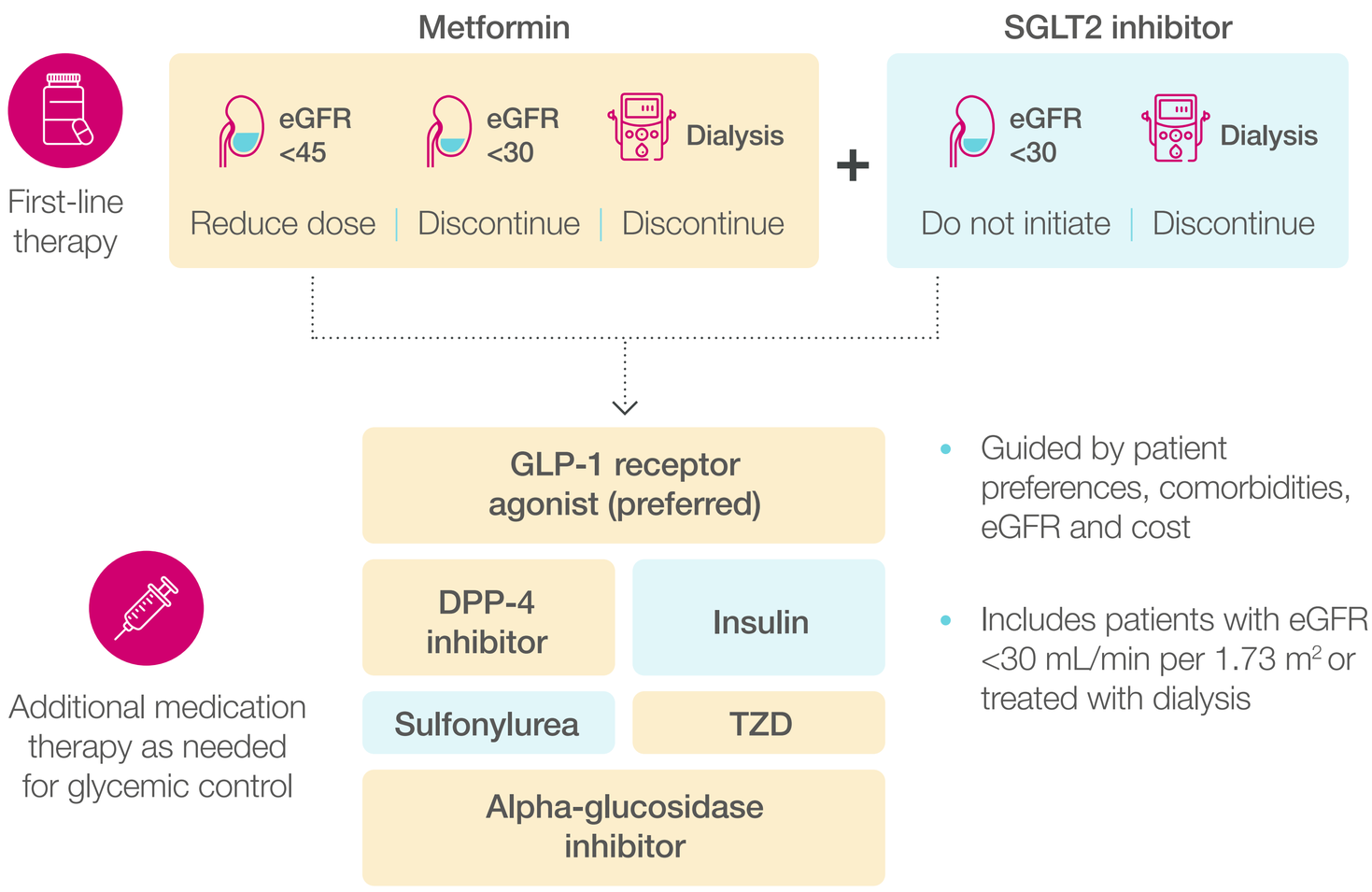


01

A T2D treatment algorithm

This schematic is **an example** of a treatment algorithm for selecting antihyperglycemic medications for patients with type 2 diabetes (T2D) and early management of CKD.*[1]

Figure 3 | A treatment algorithm for the management of CKD risk in T2D[1]



- Guided by patient preferences, comorbidities, eGFR and cost
- Includes patients with eGFR <30 mL/min per 1.73 m^2 or treated with dialysis

Did you know? +

Practice considerations +

CKD, chronic kidney disease; DPP-4, dipeptidyl peptidase-4; eGFR, estimated glomerular filtration rate; GLP-1, glucagon-like peptide-1; SGLT2, sodium–glucose cotransporter-2; T2D, type 2 diabetes; TZD, thiazolidinedione
Kidney icon indicates estimated glomerular filtration rate (eGFR: mL/min per 1.73 m^2); dialysis machine icon indicates dialysis
*Always refer to local guidelines for treatment algorithms approved and applicable to your market

1. Kidney International. KDIGO 2020 clinical practice guideline for diabetes management in chronic kidney disease. Available at: https://www.kidney-international.org/article/S0085-2538(20)30718-3/fulltext (Accessed July 2022).
2. National Kidney Foundation. Diabetes and chronic kidney disease. Available at: https://www.kidney.org/news/newsroom/factsheets/Diabetes-And-CKD#:~:text=Diabetes (Accessed July 2022).

Did you know?

Diabetes accounts for **44%** of new cases of kidney failure.[2]

Practice considerations

As the medication experts, pharmacists and their teams are in a unique position to support optimal therapy management of patients that are at high risk of CKD, including people with diabetes.

01

Revisiting patient **Alfred**

Your observations

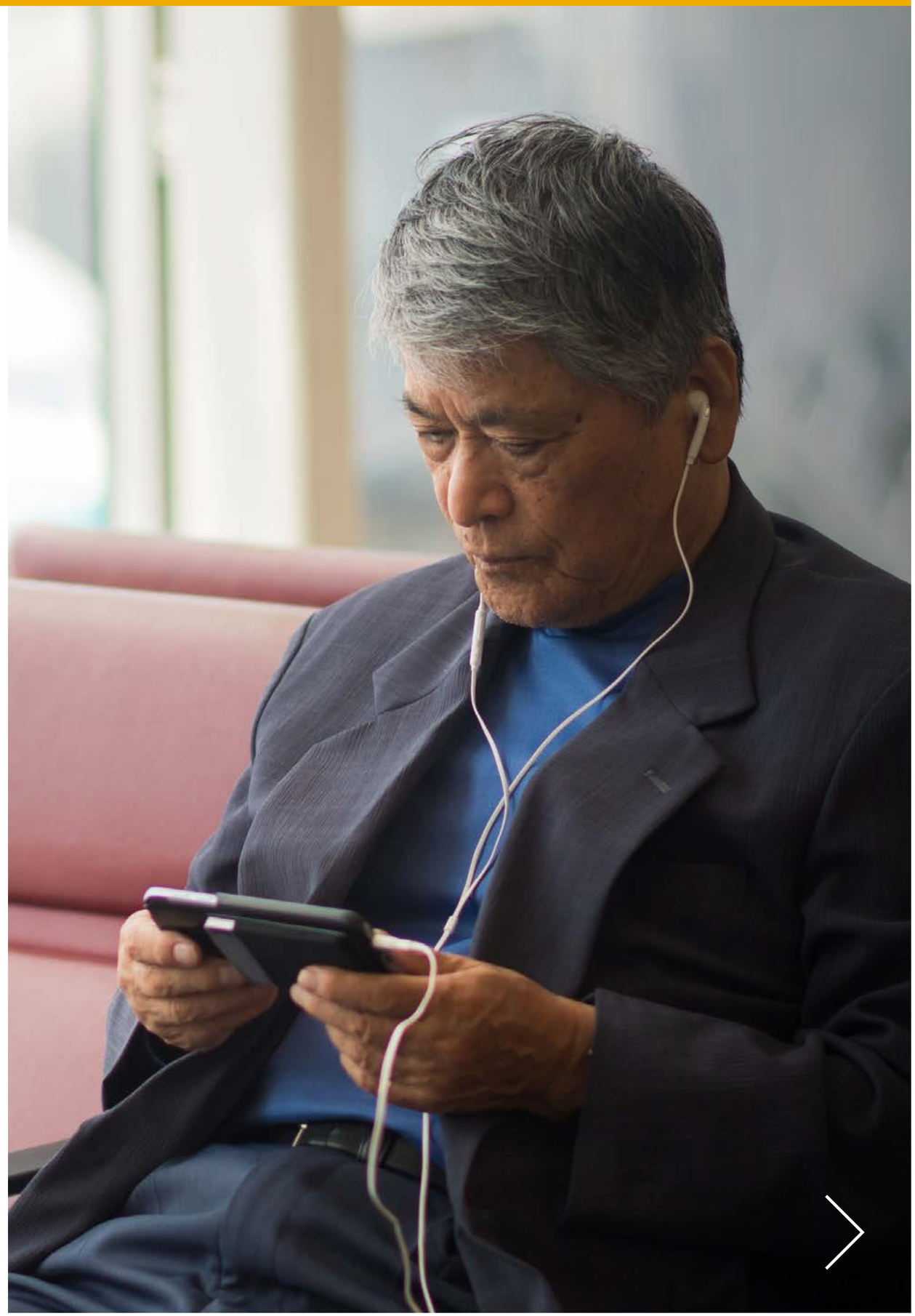
Alfred is 1 week late refilling his prescription for his diabetes medication. You also notice he is currently on a cholesterol-lowering medication which he has also yet to refill.

Considering Alfred's comorbidities, including diabetes, you observe that his current level of understanding of his risk of CKD is low.

You discover that Alfred has not been regularly monitored for CKD. When asked about his last visit to his doctor or other members of his extended healthcare team, he says, "*It's been a while and I'm not sure when my last blood work or urine test was*".

As part of your holistic approach to care you recognise that Alfred could benefit from coaching about a healthy lifestyle, particularly his eating and exercise habits as he is currently overweight.

Practice considerations +



CKD, chronic kidney disease

1. Grill AK, Brimble S. *Can Fam Physician* 2018; 64:728–735.

Practice considerations

Continuing the conversation

First of all, praise Alfred and commend him for taking positive action.

As you continue to gather additional history and information, ask Alfred when he last had blood work.

This is your opportunity to educate Alfred and other patients on the importance of continued kidney screening, as overt symptoms do not usually present early.[1]

Suggest that Alfred returns to see his doctor to discuss next steps regarding blood work and urine analysis.

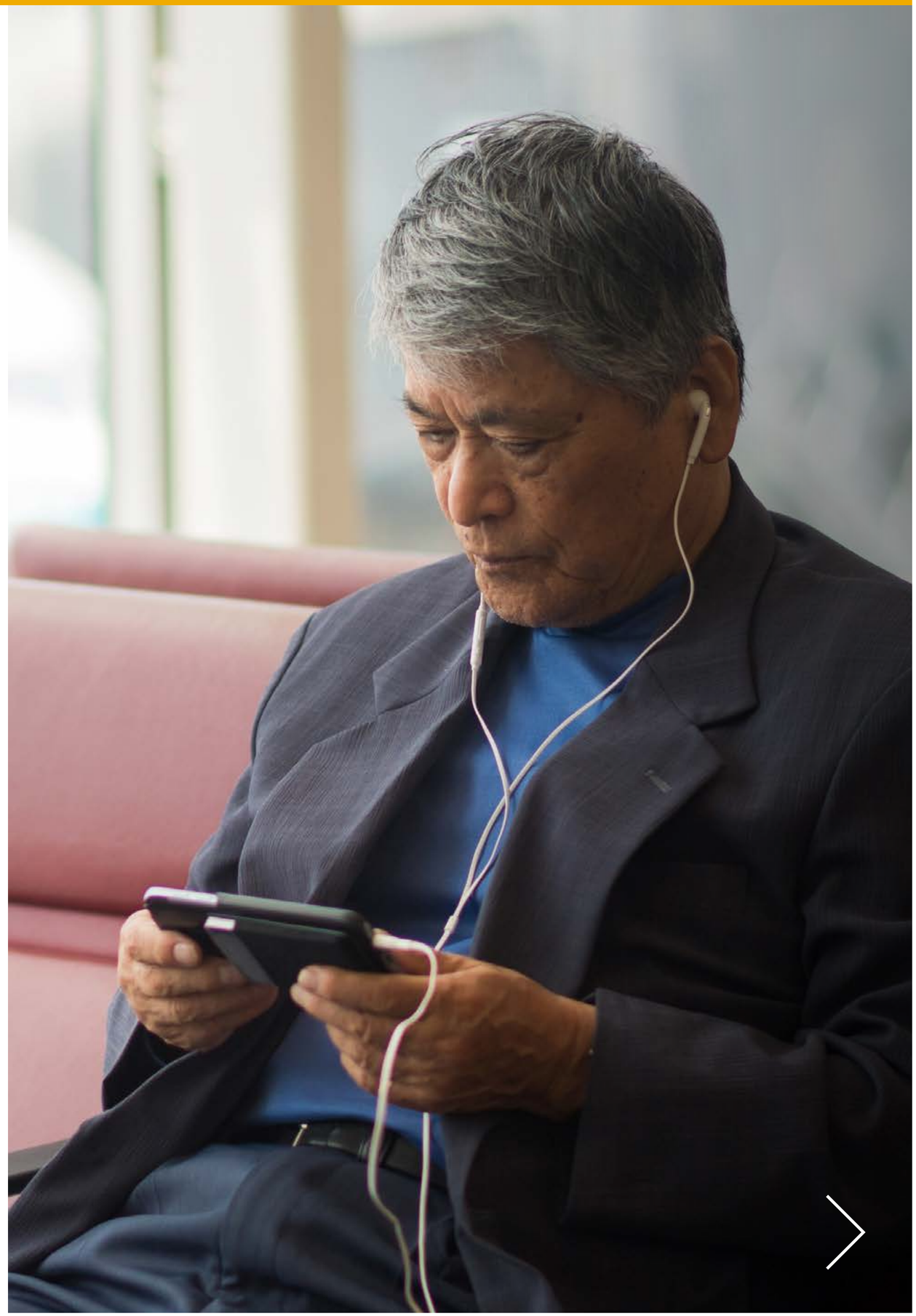
01

Goals of therapy

Ultimately the doctor will aim to reduce the risk and/or severity of disease for Alfred by helping to slow progression via these measures:

1. Renal and CV risk assessments
2. Review of glycaemic control and diabetes medication
3. Lifestyle modifications
4. Blood pressure considerations
5. Treatments to reduce CV risk or slow its progression e.g. RAAS inhibition, SGLT2 inhibitors
6. Treatment and monitoring schedule

Practice considerations +



CV, cardiovascular; RAAS, renin-angiotensin-aldosterone system; SGLT2, sodium–glucose cotransporter-2

1. Grill AK, Brimble S. *Can Fam Physician* 2018; 64:728–735.

Practice considerations

Knowing the goals of therapy can help educate the patient on what to expect from their doctor, and can create a better holistic health system approach to patient management.[1]

Consistent messaging from all of the patient's healthcare professionals, including you, can build trust and help motivate the patient to adhere to recommendations.

01

Module 1
Key learnings

Underdiagnosis of CKD as a life-threatening condition is a fact that threatens patient outcomes[1]

Often a silent disease: Most patients experience no symptoms until the disease has progressed, contributing to its underdiagnosis[2]

Risk factors: There are many CKD risk factors and understanding how they are related and how they can impact a patient, is vital to providing a personalised plan[1]

CKD and CV disease: Patients with CKD are 5x more likely to die from heart disease before they reach end-stage renal disease[3]

Early identification: Pharmacists and their teams have a unique role in identifying patients at risk due to comorbidities – especially those which are co-progressive, such as diabetes, hypertension and cardiovascular disease[1]

Education: Pharmacists and their teams can play a vital role in helping to explain the key terms and tests that a patient may need

Referral: The team can also help to guide patients to primary care services as needed

In Module 2, you will develop a clear understanding of who to refer for screening, how to identify at-risk patients and how to effectively counsel them.

To know more about CKD visit:
www.diagnose-ckd.com

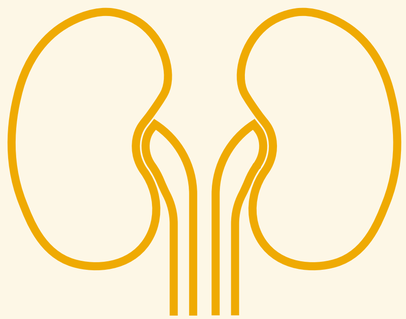
Intended for healthcare professionals

CKD, chronic kidney disease; CV, cardiovascular

1. Bikbov B *et al. Lancet* 2020; 395:709–733.
2. National Institute of Diabetes and Digestive and Kidney Diseases. Kidney disease statistics for the United States. Available at: https://www.niddk.nih.gov/health-information/health-statistics/kidney-disease (Accessed July 2022).
3. National Kidney Foundation. CKD patients more likely to die from heart disease than to develop kidney failure. Available at: https://www.kidney.org/news/newsroom/nr/77#:~:text=As%20a%20result%2C%20CKD%20patients,for%20those%20without%20the%20diagnosis (Accessed July 2022).

Module 01

Learning quiz



Q1

Learning checkpoint

Q1

Up to what level of remaining kidney function may a patient have and still be asymptomatic?

90%

50%

10%

1. Healthline. Stages of chronic kidney disease. Available at: https://www.healthline.com/health/ckd-stages (Accessed July 2022).

2. World Kidney Day. Chronic kidney disease. Available at: https://www.worldkidneyday.org/facts/chronic-kidney-disease (Accessed July 2022).

Incorrect

90%

The majority of patients with 90% of their kidney function are well and will lose much more functionality before showing symptoms.[1,2]

Incorrect

50%

Although some patients may have non-specific symptoms (fatigue, itching, loss of appetite, sleep problems, weakness) with only 50% kidney function, some may lose even more functionality before showing symptoms.[1,2]

Correct 10%

It is possible a patient can lose up to 90% of their kidney function before showing symptoms (as symptoms usually occur between the loss of 50–90% of kidney function). With only 10% function remaining, these patients are very close to end-stage renal failure, at which point symptoms will usually appear.[2]

Q1

Learning checkpoint

Q2

Which risk factor is the leading cause of kidney failure?

- Diabetes
- Hypertension
- CVD

CVD, cardiovascular disease

1. National Kidney Foundation. Diabetes and chronic kidney disease. Available at: https://www.kidney.org/news/newsroom/factsheets/Diabetes-And-CKD (Accessed July 2022).
2. American Heart Association (AHA). How high blood pressure can lead to kidney damage or failure. Available at: https://www.heart.org/en/health-topics/high-blood-pressure/health-threats-from-high-blood-pressure/how-high-blood-pressure-can-lead-to-kidney-damage-or-failure (Accessed July 2022).
3. American Kidney Fund (AKF). Heart disease and chronic kidney disease (CKD). Available at: https://www.kidneyfund.org/kidney-disease/chronic-kidney-disease-ckd/complications/heart-disease (Accessed July 2022).

Correct Diabetes

Diabetes accounts for 44% of new cases of kidney failure.[1]

Incorrect Hypertension

Hypertension is the second highest cause of kidney failure.[2]

Incorrect CVD

Although not the leading cause of kidney failure, cardiovascular disease is the leading cause of death amongst people on dialysis.[3]

Q1 Learning checkpoint

Q3

What percentage of patients are aware of CKD?

- 5%–10%
- 12%
- 95%

1. Chu CD *et al. Kidney Med* 2021; 3:576–585.

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; KDIGO, Kidney Disease Improving Global Outcomes

Correct

5–10%

As little as 5%–10% of the general population are aware of CKD.[1]

Incorrect

12%

Among patients with stage 3 CKD (based on KDIGO guidelines) with an eGFR <60 mL/min/1.73 m2, the awareness of CKD was as low as 12%.[1]

Incorrect

95%

As little as 5% of the general population are aware of CKD.[1]

Q1 Learning checkpoint

Q4

Alfred's case | Based on your observations, what would you discuss with Alfred as part of your counselling about his risk of CKD?

- Educate Alfred about the importance of visiting his doctor to get a blood and urine test to assess his CKD risk
- Educate on the importance of early identification of CKD, the options for early treatment and the consequences of taking no action
- Encourage him as a non-smoker but observing that he is overweight, advise him that other lifestyle habits such as his diet (i.e. excessive salt intake) and lack of exercise can increase his risk of CKD
- Advise that he likely has CKD because his diabetes puts him at a higher risk of developing it
- Check his blood pressure as part of completing a risk factor assessment

Next page >

CKD, chronic kidney disease

Q1 Learning checkpoint

Q4

Alfred's case | Based on your observations, what would you discuss with Alfred as part of your counselling about his risk of CKD?

- ✓ Educate Alfred about the importance of visiting his doctor to get a blood and urine test to assess his CKD risk
- ✓ Educate on the importance of early identification of CKD, the options for early treatment and the consequences of taking no action
- ✓ Encourage him as a non-smoker but observing that he is overweight, advise him that other lifestyle habits such as his diet (i.e. excessive salt intake) and lack of exercise can increase his risk of CKD
- Advise that he likely has CKD because his diabetes puts him at a higher risk of developing it
- ✓ Check his blood pressure as part of completing a risk factor assessment

CKD, chronic kidney disease

Module 02

Identifying patients at risk of CKD

02

Learning objectives

Upon successful completion of this continuing education learning module, you will be able to:

- Recognise the critical role that pharmacists can play in early intervention of CKD
- Identify opportunities to facilitate awareness and screening of CKD in at-risk patient groups
- Develop a clear understanding of who to refer for screening
- Provide effective counselling for at-risk patients
- Understand how to optimise collaboration opportunities with other healthcare professionals in the optimal management of CKD
- Demonstrate proficiency in clinical cases by applying clinical reasoning

CKD, chronic kidney disease

02

Pharmacists' role in patient identification

As one of the most accessible healthcare providers, pharmacists and pharmacy teams are well placed to identify patients who may benefit from further CKD testing and education.

There are many opportunities for making early interventions

Routine pharmacy services may reveal patient risk factors for CKD, making them ideal touchpoints for further patient counselling and referral

Pharmacists can provide initial counselling on what CKD is, the risks a patient may have of developing it and why it is important to get tested, as well as how they can do that

Pharmacists' role in identifying patients at risk of CKD

- Prescription dispensing
- OTC and non-prescription recommendations
- Blood pressure monitoring
- Blood glucose monitoring
- Community counsellor
- Identifying existing lifestyle and clinical risk factors
- Identifying exposure to nephrotoxic medications
- Advice to manage risk factors and reduce risk
- Advice on frequency of screening[1]
- CKD education and referral

CKD, chronic kidney disease; OTC, over the counter

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease in adults. Available at: https://www.nice.org.uk/guidance/qs5 (Accessed July 2022).

02

Case 2
Meet Alma

Alma is 57 years old

- Alma has been treated for hypertension for the last 7 years which has generally been under control
- She occasionally uses OTC medication to manage her osteoarthritis pain
- Alma has been a smoker for 19 years and has asked you about successful smoking cessation programmes
- She recently started feeling more tired during her walks and gets out of breath more easily that before

Practice considerations +

OTC, over the counter

Practice considerations

Now you are comfortable identifying patients at risk of CKD at your pharmacy and recognise moments where you can actively engage with patients and assess their current understanding of comorbidities that can negatively impact the health of their kidneys.

02

Step 1

Using the CKD risk assessment tool

Identifying those who may be at risk of or have CKD involves assessing risk factors, as well as identifying symptoms or conditions that may develop as a result of CKD.[1,2]

Due to the absence of symptoms, the risk factors may be the only indicator that the kidneys are in danger.[2] Using a guided assessment tool designed to be integrated within a typical pharmacy workflow can help streamline the process.

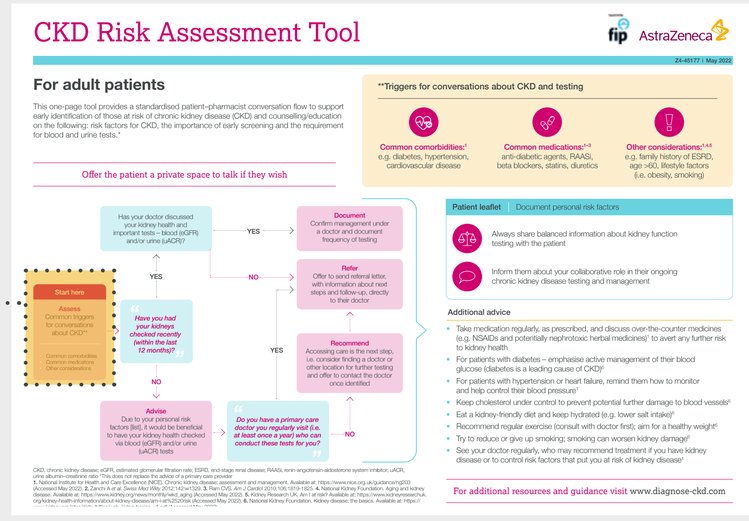
Confirm that the patient presents with a risk factor

Routine pharmacy services that may highlight risk factors include:

- Blood glucose level checks
- Medicine dispensing
- Medication reviews

Refer to the following sections in Module 1 for risk factors:

Common conditions as risk factors
Less common conditions as risk factors
Other medication and lifestyle risk factors



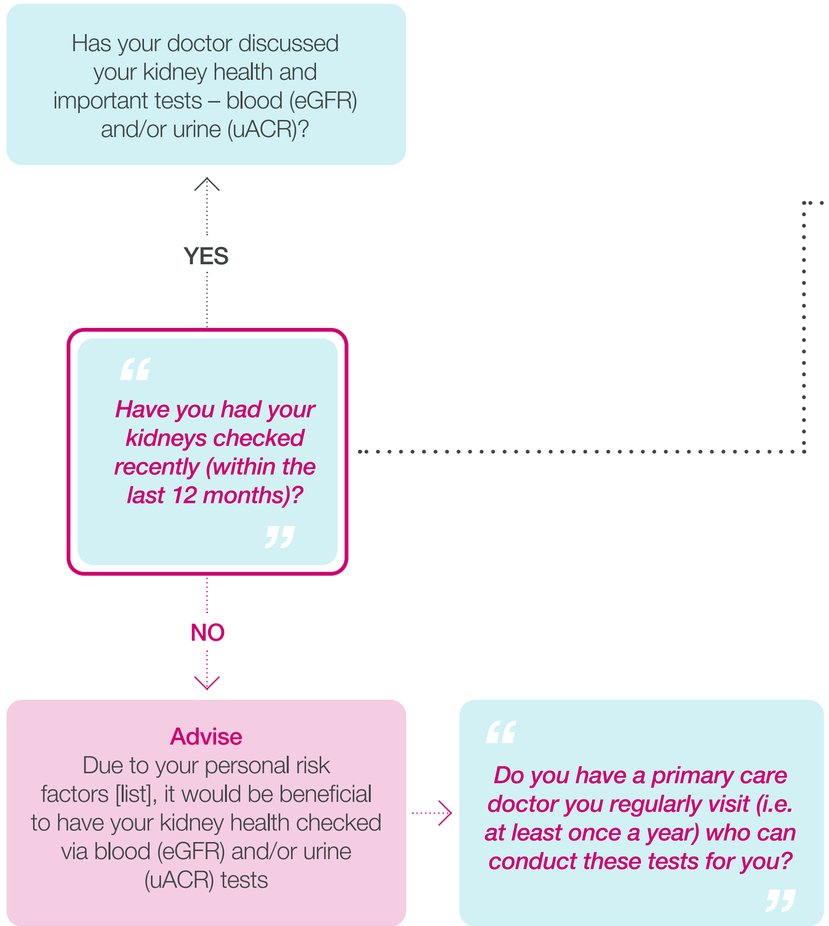
CKD, chronic kidney disease

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease: assessment and management. Available at: www.nice.org.uk/guidance/ng203 (Accessed July 2022).
2. Kidney Research UK. Am I at risk? Available at: https://kidneyresearchuk.org/kidney-health-information/about-kidney-disease/am-i-at risk (Accessed July 2022).

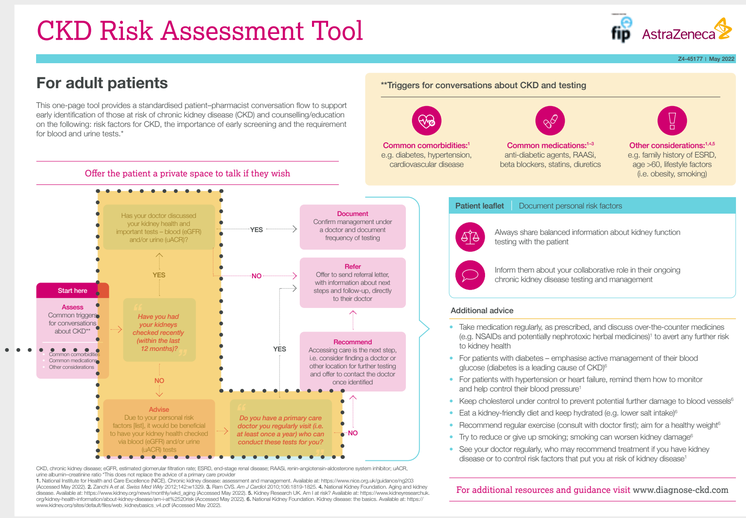
02

Step 2
Start a conversation

After identifying a patient with CKD risk factors, it's important to follow up with them to ask about their kidneys. This can be done via a simple question such as the following:



CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; uACR, urine albumin–creatinine ratio



CKD Risk Assessment Tool

fip AstraZeneca

Z4-46177 | May 2022

For adult patients

This one-page tool provides a standardised patient–pharmacist conversation flow to support early identification of those at risk of chronic kidney disease (CKD) and counselling/education on the following: risk factors for CKD, the importance of early screening and the requirement for blood and urine tests.[1]

****Triggers for conversations about CKD and testing**

- **Common comorbidities:**[2] e.g. diabetes, hypertension, cardiovascular disease
- **Common medications:**[1–3] anti-diabetic agents, RAASi, beta blockers, statins, diuretics
- **Other considerations:**[1,4,5] e.g. family history of ESRD, age >50, lifestyle factors (i.e. obesity, smoking)

Offer the patient a private space to talk if they wish

Start here

Assess Common triggers for conversations about CKD**: Common comorbidities; Common medications; Other considerations

Has your doctor discussed your kidney health and important tests – blood (eGFR) and/or urine (uACR)?

YES → **Document** Confirm management under a doctor and document frequency of testing

NO → **Refer** Offer to send referral letter, with information about next steps and follow-up, directly to their doctor

Have you had your kidneys checked recently (within the last 12 months)?

YES → **Recommend** Accessing care is the next step, i.e. consider finding a doctor or other location for further testing and offer to contact the doctor once identified

NO → **Advise** Due to your personal risk factors [list], it would be beneficial to have your kidney health checked via blood (eGFR) and/or urine (uACR) tests

Do you have a primary care doctor you regularly visit (i.e. at least once a year) who can conduct these tests for you?

NO

Patient leaflet | Document personal risk factors

- Always share balanced information about kidney function testing with the patient
- Inform them about your collaborative role in their ongoing chronic kidney disease testing and management

Additional advice

- Take medication regularly, as prescribed, and discuss over-the-counter medicines (e.g. NSAIDs and potentially nephrotoxic herbal medicines)[1] to avert any further risk to kidney health
- For patients with diabetes – emphasise active management of their blood glucose (diabetes is a leading cause of CKD)[2]
- For patients with hypertension or heart failure, remind them how to monitor and help control their blood pressure[1]
- Keep cholesterol under control to prevent potential further damage to blood vessels[4]
- Eat a kidney-friendly diet and keep hydrated (e.g. lower salt intake)[5]
- Recommend regular exercise (consult with doctor first); aim for a healthy weight[4]
- Try to reduce or give up smoking; smoking can worsen kidney damage[2]
- See your doctor regularly, who may recommend treatment if you have kidney disease or to control risk factors that put you at risk of kidney disease[1]

For additional resources and guidance visit www.diagnose-ckd.com

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; ESRD, end-stage renal disease; RAASi, renin-angiotensin-aldosterone system inhibitor; uACR, urine albumin–creatinine ratio. *This does not replace the advice of a primary care provider

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease: assessment and management. Available at: https://www.nice.org.uk/guidance/ng203 (Accessed May 2022). 2. Zanchi A et al. *Swiss Med Wkly* 2012;142:w13325. 3. Ren CVS. *Am J Cardiol* 2010;106:1819-1825. 4. National Kidney Foundation. Aging and kidney disease. Available at: https://www.kidney.org/news/monthly/wkd_aging (Accessed May 2022). 5. Kidney Research UK. Am I at risk? Available at: https://www.kidneyresearchuk.org/kidney-health-information/about-kidney-disease/am-i-at%2Drisk (Accessed May 2022). 6. National Kidney Foundation. Kidney disease: the basics. Available at: https://www.kidney.org/sites/default/files/web_kidneybasics_v4.pdf (Accessed May 2022).

Practice considerations +

Practice considerations

Visits the pharmacy to pick up a prescription or a refill for diabetes, hypertension or cardiovascular disease (dispensing and counselling).

Requests a glucose measurement or to look at their at-home results (chronic disease diagnostic testing).

Requests a blood pressure measurement (pharmacy services).

Visits for their medication review (monitoring comorbidities)

02

Step 3
Take action on CKD with patients

As you learn more about your at-risk patient, their risks and their knowledge of CKD, you can start to form a plan and take action through documenting, recommending, referring and collaborating with other healthcare professionals as required.

> *"Has your doctor discussed your kidney health and important tests – blood (eGFR) and/or urine (uACR)?"*

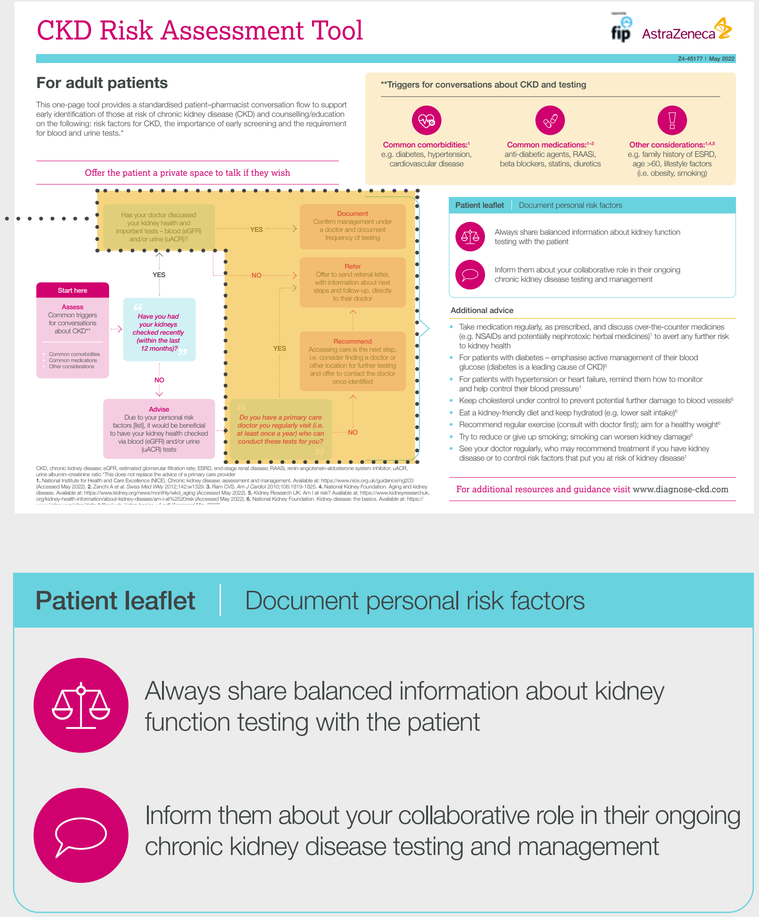
YES → **Document**
Confirm management under a doctor and document frequency of testing

> *"Do you have a primary care doctor you regularly visit (i.e. at least once a year) who can conduct these tests for you?"*

NO → **Recommend**
Accessing care is the next step, i.e. consider finding a doctor or other location for further testing and offer to contact the doctor once identified

YES → **Refer**
Offer to send referral letter, with information about next steps and follow-up, directly to their doctor

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; uACR, urine albumin–creatinine ratio



CKD Risk Assessment Tool

fip AstraZeneca

Z4-4617 | May 2022

For adult patients

This one-page tool provides a standardised patient–pharmacist conversation flow to support early identification of those at risk of chronic kidney disease (CKD) and counselling/education on the following: risk factors for CKD, the importance of early screening and the requirement for blood and urine tests.*

****Triggers for conversations about CKD and testing**

- **Common comorbidities:**[2] e.g. diabetes, hypertension, cardiovascular disease
- **Common medications:**[1–3] anti-diabetic agents, RAASi, beta blockers, statins, diuretics
- **Other considerations:**[1,4,5] e.g. family history of ESRD, age >60, lifestyle factors (i.e. obesity, smoking)

Offer the patient a private space to talk if they wish

Has your doctor discussed your kidney health and important tests – blood (eGFR) and/or urine (uACR)? — YES → **Document** Confirm management under a doctor and document frequency of testing

NO → **Refer** Offer to send referral letter, with information about next steps and follow-up, directly to their doctor

Start here

Assess Common triggers for conversations about CKD**
- Common comorbidities
- Common medications
- Other considerations

"*Have you had your kidneys checked recently (within the last 12 months)?*"

NO → **Advise** Due to your personal risk factors [list], it would be beneficial to have your kidney health checked via blood (eGFR) and/or urine (uACR) tests

YES → "*Do you have a primary care doctor you regularly visit (i.e. at least once a year) who can conduct these tests for you?*"

NO → **Recommend** Accessing care is the next step, i.e. consider finding a doctor or other location for further testing and offer to contact the doctor once identified

Patient leaflet | Document personal risk factors

- Always share balanced information about kidney function testing with the patient
- Inform them about your collaborative role in their ongoing chronic kidney disease testing and management

Additional advice

- Take medication regularly, as prescribed, and discuss over-the-counter medicines (e.g. NSAIDs and potentially nephrotoxic herbal medicines)[1] to avert any further risk to kidney health
- For patients with diabetes – emphasise active management of their blood glucose (diabetes is a leading cause of CKD)[2]
- For patients with hypertension or heart failure, remind them how to monitor and help control their blood pressure[1]
- Keep cholesterol under control to prevent potential further damage to blood vessels[2]
- Eat a kidney-friendly diet and keep hydrated (e.g. lower salt intake)[2]
- Recommend regular exercise (consult with doctor first); aim for a healthy weight[4]
- Try to reduce or give up smoking; smoking can worsen kidney damage[2]
- See your doctor regularly, who may recommend treatment if you have kidney disease or to control risk factors that put you at risk of kidney disease[2]

For additional resources and guidance visit www.diagnose-ckd.com

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; RAASi, renin–angiotensin–aldosterone system inhibitor; uACR, urine albumin–creatinine ratio. *This does not replace the advice of a primary care provider

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease: assessment and management. Available at: https://www.nice.org.uk/guidance/ng203 (Accessed May 2022). 2. Zanchi A et al. *Swiss Med Wkly* 2012;142:w13529. 3. Rem CVS. *Am J Cardiol* 2010;106:1819-1825. 4. National Kidney Foundation. Aging and kidney disease. Available at: https://www.kidney.org/news/monthly/wfw2_aging (Accessed May 2022). 5. Kidney Research UK. Am I at risk? Available at: https://www.kidneyresearchuk.org/kidney-health-information/about-kidney-disease/am-i-at%25ef%25bf%25bdat-risk/ (Accessed May 2022). 6. National Kidney Foundation. Kidney disease: the basics. Available at: https://

Patient leaflet | Document personal risk factors

- Always share balanced information about kidney function testing with the patient
- Inform them about your collaborative role in their ongoing chronic kidney disease testing and management

Practice considerations +

Practice considerations

Providing a leaflet can help to reinforce the valuable information you shared about CKD. The leaflet can also help summarise the CKD risk assessment that you conducted.

More information to come on best practices to personalise the patient leaflet.

02

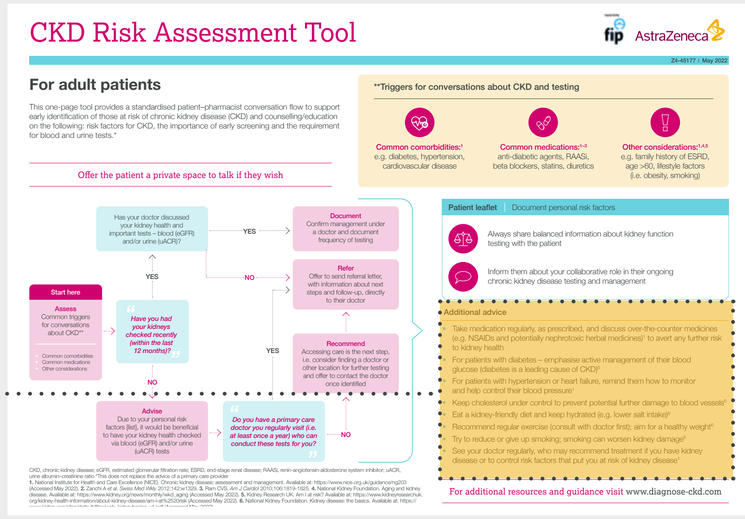
Step 4
Holistic advice for your at-risk patient

Provide a personalised educational leaflet along with holistic advice to the patient while they are waiting for their next steps. The assessment and conversation will likely involve a significant amount of education and require communicating many key recommendations.

Additional advice

- Take medication regularly, as prescribed, and discuss over-the-counter medicines (e.g. NSAIDs and potentially nephrotoxic herbal medicines)[1] to avert any further risk to kidney health
- For patients with diabetes – emphasise active management of their blood glucose (diabetes is a leading cause of CKD)[2]
- For patients with hypertension or heart failure, remind them how to monitor and control their blood pressure[1]
- Keep cholesterol under control to prevent potential further damage to blood vessels[2]
- Eat a kidney-friendly diet and keep hydrated (e.g. lower salt intake)[2]
- Recommend regular exercise (consult with doctor first); aim for a healthy weight[2]
- Try to reduce or give up smoking; smoking can worsen kidney damage[2]
- See your doctor regularly, who may recommend treatment if you have kidney disease or to control risk factors that put you at risk of kidney disease[2]

Visit www.diagnose-ckd.com for additional information to support your recommendations



Practice considerations +

CKD, chronic kidney disease; NSAID, non-steroidal anti-inflammatory drug

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease: assessment and management. Available at: https://www.nice.org.uk/guidance/ng203 (Accessed July 2022).
2. National Kidney Foundation. Kidney disease: the basics. Available at: https://www.kidney.org/sites/default/files/web_kidneybasics_v4.pdf (Accessed July 2022).

Practice considerations

Keep any additional advice simple and actionable; consider spreading out your recommendations over several visits or upon each refill if necessary.

Document the conversation.

02

Preparing for effective patient counselling

The aim of the conversation with an at-risk patient at this stage is to inform them of their risks and reassure them testing is available to them. Once the patient is identified as at risk and the ‘break the ice’ question has been answered, follow these key steps for effective counselling:

Table 4 | Key steps to effective patient counselling

Friendly environment	• Offer the patient a more private space to talk if they wish • Offer them a seat if available • Ensure a caregiver or chaperone is present if required
Clear communication	• Explain in a way the patient will understand, adjusting according to the patient’s needs • Ensure medical terms are clear (e.g. ‘chronic’)[1] • Use visual support tools as required to ensure understanding
	• Clarify the importance of the patient being tested, without causing anxiety
	• Provide all information the patient needs to make an informed decision[1,2]
Closing for success	• Summarise the information and check patient understanding (teach-back technique can be used – asking the patient to repeat the important information)
	• Provide a summary for the patient to take home with them
	• Ask the patient if they have any questions before they leave

1. National Institute for Health and Care Excellence (NICE). Shared decision making. Available at: https://www.nice.org.uk/guidance/ng197 (Accessed July 2022).
2. National Institute for Health and Care Excellence (NICE). Patient experience in adult NHS services: improving the experiences of care for people using adult NHS services. Available at: https://www.nice.org.uk/guidance/cg138 (Accessed July 2022).

02

Revisiting patient **Alma**

Consider Alma's risks	What we know
Smoking for 19 years	Already has a cardiovascular diagnosis
Hypertension	Alma's blood pressure is 155/90 at the pharmacy today and has been consistently higher than normal during the past few visits to the pharmacy
OTC pain medication use	Alma switches between paracetamol and ibuprofen 4–5 times a week
New symptoms of fatigue	She experiences this most when she is doing a physical activity

Practice considerations +

OTC, over the counter

Practice considerations

Alma has multiple risk factors that require addressing.
Consider having conversations with Alma over multiple visits to ensure she is not overwhelmed.

02

Assessing Alma’s knowledge of her CKD risk

CKD risk assessment tool

> *Are you aware that high blood pressure, years of smoking and your regular ibuprofen use may put you at risk of developing CKD?*
>
> *In addition, your recent symptoms of fatigue should be investigated for cardiovascular disease and may also be related to your kidney health.*

> *Have you had your kidneys checked in the last 12 months?*

Alma’s responses

Alma communicates that she was unaware of her CKD risk, and that her previous pharmacist and current doctor haven’t spoken to her about it

Alma is not aware of any blood or urine kidney tests in the last year

Practice considerations +

CKD, chronic kidney disease

Practice considerations

As you have determined, Alma has multiple risk factors and was not aware of kidney function decline.

You recognise her need for further education on the topic of CKD to prepare her for a conversation with primary care.

Alma agrees to have you communicate with her doctor directly and she commits to a follow-up with you in 1 month.

02

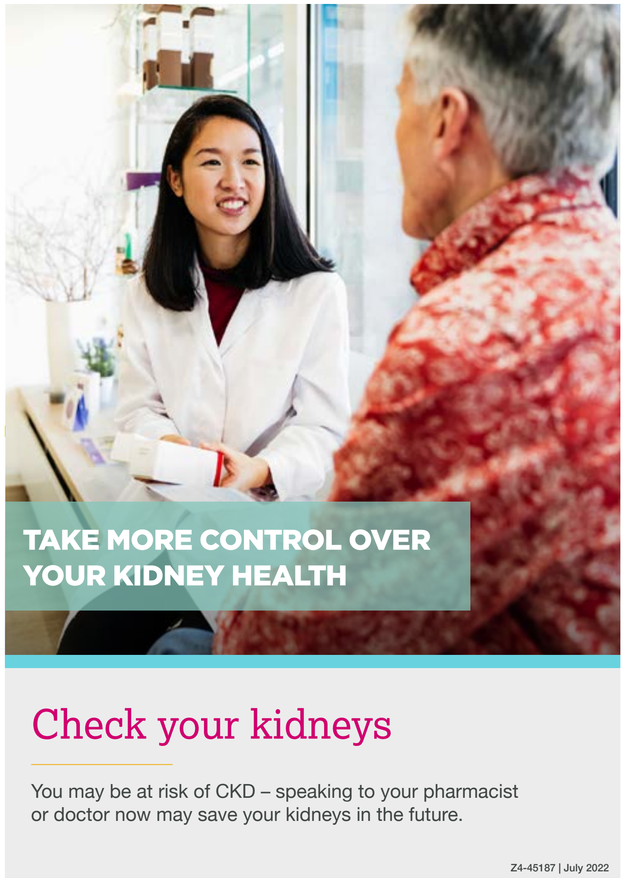
Summarising the visit for your patient

In order to ensure that your patient can receive the most benefit from the CKD risk assessment and counselling, provide the patient with a personalised summary.

The summary should capture these key points:

- Briefly explain what CKD is and how, if left untreated, there can be serious complications in the future
- Why they are at risk and to what degree
- Why it's important to be tested if they are at risk, and what is involved in testing
- The importance of blood and urine testing through their local primary care provider
- The next steps to keeping their kidneys healthy

Practice considerations +



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CKD, chronic kidney disease

Practice considerations

Encourage the patient to share the leaflet with their primary care provider and suggest a timeframe in which you will follow up with them.

02

Collaborating with primary care

As a pharmacist, communicating and collaborating with the primary care provider can be one of the most important steps to optimise care for your patients at risk of CKD.

Effectively and efficiently documenting your assessment and key recommendations can help build a strong collaborative care partnership and promote a seamless experience for your at-risk patients.

Practice considerations +

Referral Letter

Pharmacy name:
Pharmacy address:
Pharmacy phone number:
Pharmacy email address:
Pharmacy fax number:
Pharmacy logo/stamp:

Date: ☐☐ / ☐☐ / ☐☐☐☐

Dear Dr.....

My name is ..... and I am a local pharmacist. Our pharmacy is involved in chronic kidney disease (CKD) awareness, whereby we are identifying pharmacy patients potentially living with undiagnosed CKD or those at risk of developing the disease in the future. As part of this initiative we are especially focused on high-risk patients (e.g. those with diabetes, hypertension or heart disease), and we are asking them to follow up with their doctors for further advice and screening if considered advisable.

This letter is in regard to a recent discussion I had with our mutual patient, after conducting a review of their current medication and their health history:

Patient's full name:
Patient's DOB: ☐☐ / ☐☐ / ☐☐☐☐
Patient's address (optional):

Due to the outlined assessment of risk factors for CKD (page 2), they may benefit from kidney function testing for early detection of CKD (i.e. blood serum creatinine and/or albuminuria).

I have shared a leaflet with the patient, with an explanation of CKD and why I conducted an assessment, and will follow up with the patient in ..... (weeks/months) as required.

Thank you for your consideration and please do not hesitate to reach out to me directly if you require any additional clarification. I look forward to hearing from you.

Sincerely,

Your patient care partner

Pharmacist name: .....

Designations: .....

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CKD, chronic kidney disease

1. National Institute for Health and Care Excellence (NICE). Chronic kidney disease in adults. Available at: https://www.nice.org.uk/guidance/qs5 (Accessed July 2022).
2. National Institute for Health and Care Excellence (NICE). Chronic kidney disease: assessment and management. Available at: www.nice.org.uk/guidance/ng203 (Accessed July 2022).

Monitor and follow-up

- Patients identified as at risk should discuss and agree on a frequency of testing

- Testing can happen once a year or less frequently

- If a patient has been found to have CKD, it is recommended that their kidneys are checked between once a year and two or more times a year depending on, among other things, their stage of disease and comorbidities[1,2]

02

Considerations in advanced pharmacy practice

In some advanced markets, the pharmacist's scope has expanded to allow for access to lab test results, order lab tests and even initiate and prescribe treatments in some cases. In these instances, the pharmacist may have access to blood and urine test results. Figure 2 was shared in Module 1 and should be the basis for advising the doctor on the level of risk that the patient may have, based on eGFR and uACR results.

Could the pharmacist suggest something more for Alma?

Figure 2 | Prognosis of CKD by GFR and albuminuria categories: KDIGO 2012[1]

GFR categories (mL/min per 1.73 m²) Description and range				Persistent albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30–300 mg/g 3–30 mg/mmol	>300 mg/g >30 mg/mmol
	G1	Normal or high	>90	**Low risk** (if no other markers of kidney disease, no CKD)	**Moderately increased risk**	**High risk**
	G2	Mildly decreased	60–89	**Low risk** (if no other markers of kidney disease, no CKD)	**Moderately increased risk**	**High risk**
	G3a	Mildly to moderately decreased	45–59	**Moderately increased risk**	**High risk**	**Very high risk**
	G3b	Moderately to severely decreased	30–44	**High risk**	**Very high risk**	**Very high risk**
	G4	Severely decreased	15–29	**Very high risk**	**Very high risk**	**Very high risk**
	G5	Kidney failure	<15	**Very high risk**	**Very high risk**	**Very high risk**

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; GFR, glomerular filtration rate; KDIGO, Kidney Disease Improving Global Outcomes; uACR, urine albumin–creatinine ratio

1. Kidney International. KDIGO 2020 clinical practice guideline for diabetes management in chronic kidney disease. Available at: https://www.kidney-international.org/article/S0085-2538(20)30718-3/fulltext (Accessed July 2022).

Advanced practice considerations +

Advance practice consideration

If Alma's tests resulted in an eGFR or uACR falling in the yellow to red ranges of the figure, the pharmacist would identify her risk level as requiring follow-up with primary care.

An evidence-based treatment and monitoring schedule should be adopted to help reduce the risk of CKD or slow its progression.

02

Goals of therapy

Ultimately the doctor will aim to reduce the risk and/or severity of disease for Alma by helping to slow progression via these measures:

1. Renal and CV risk assessments
2. Lifestyle modifications
3. Blood pressure considerations
4. Treatments to reduce CV risk or slow its progression e.g. RAAS inhibition, SGLT2 inhibitors
5. Treatment and monitoring schedule

Practice considerations +

CV, cardiovascular; RAAS, renin-angiotensin-aldosterone system; SGLT2, sodium–glucose cotransporter-2

1. Grill AK, Brimble S. *Can Fam Physician* 2018; 64:728–735.

Practice consideration | Remember

Knowing the goals of therapy can help educate the patient on what to expect from their doctor, and can create a better holistic health system approach to patient management.[1]

Consistent messaging from all of the patient's healthcare professionals, including you, can build trust and help motivate the patient to adhere to recommendations.

02

Module 2
Key learnings

As the most accessible healthcare provider, pharmacists and pharmacy teams are well placed to identify patients who may benefit from further CKD education and testing.

- **Assess**: Consider all of the risk factors that can lead to the development of CKD, and which of your patients are most at risk
- There are several key moments to identify and counsel at-risk patients in your practice through a few simple questions
- **Advise**: When counselling at-risk patients at this stage, your key role is to inform them of their risks and reassure them that testing is available to them
- **Document**: Collecting information can support your ongoing monitoring of the patient
- **Refer**: Collaborate with other primary healthcare professionals to promote better outcomes for the patients most at risk of CKD
- **Recommend**: You have a vital role in helping patients access appropriate care and screening (i.e. tests) for CKD

Practice considerations +

CKD, chronic kidney disease

To know more about CKD visit:
www.diagnose-ckd.com

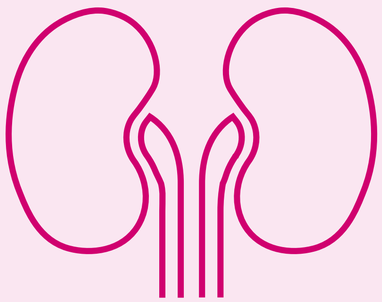
Intended for healthcare professionals

Practice consideration | Remember

There are many tools available to support you – CKD risk assessment tool, patient leaflet, a referral letter, in-pharmacy posters and a toolkit guide.

Module 02

Learning quiz



02

Learning checkpoint

Q1

There are daily opportunities in the pharmacy to make early interventions and identify patients at risk of CKD. Which apply?

- While dispensing prescriptions and OTC
- Via blood pressure and blood glucose measurements
- Pharmacy screening days where you identify existing lifestyle and clinical risk factors

Next page >

CKD, chronic kidney disease; OTC, over the counter

02

Learning checkpoint

Q1

There are daily opportunities in the pharmacy to make early interventions and identify patients at risk of CKD. Which apply?

- ✓ While dispensing prescriptions and OTC
- ✓ Via blood pressure and blood glucose measurements
- ✓ Pharmacy screening days where you identify existing lifestyle and clinical risk factors

Feedback +

CKD, chronic kidney disease; OTC, over the counter

Feedback

As one of the most accessible healthcare providers, pharmacists and pharmacy teams are well placed to identify patients who may benefit from further CKD testing and education. Routine pharmacy services may reveal patient risk factors for CKD, making them ideal touchpoints for further patient counselling and referral.

Learning checkpoint

Q2

After identifying a patient with risk factors, a simple question such as “Have you had your kidneys checked within the last 12 months?” provides tremendous insight into the patient’s current kidney health.

True

False

Correct Feedback

Asking the patient if they have had their kidneys checked, will allow you to understand their knowledge about their kidney health, awareness of CKD and their risk of CKD, providing advice accordingly.

Incorrect

False

Asking the patient if they have had their kidneys checked, will allow you to understand their knowledge about their kidney health, awareness of CKD and their risk of CKD, providing advice accordingly.

Q2

Learning checkpoint

Q3

Which of the following recommendations are appropriate when counselling the patient?

- Remind the patient to always take their medication as prescribed
- Advise the patient on how to keep cholesterol under control and how to eat healthier and reduce salt intake
- Recommend that the patient exercises regularly (consult with doctor first) and aims for a healthy weight

Next page >

Learning checkpoint

Q3

Which of the following recommendations are appropriate when counselling the patient?

- ✓ Remind the patient to always take their medication as prescribed
- ✓ Advise the patient on how to keep cholesterol under control and how to eat healthier and reduce salt intake
- ✓ Recommend that the patient exercises regularly (consult with doctor first) and aims for a healthy weight

Feedback +

Feedback

A reminder the module suggested keeping conversation and recommendations simple and actionable; consider spreading out your recommendations over several visits or upon each refill if necessary.

Remember to document the conversation.

02

Learning checkpoint

Q4

What are the key elements in effective patient counselling?

A Sharing personal patient information in the open and while in the presence of others

B A friendly environment, clear communication and closing for success

C Not allowing your patient to ask questions about medication and only offering one-sided communication

Incorrect

Answer A

Personal patient information should not be shared to others due to patient confidentiality.

Correct

Answer B

Offer the patient a more private space to talk and explain information in a way the patient will understand, adjusting according to the patient's needs.

Summarise the information and check patient understanding.

Lastly, ask the patient if they have any questions before they leave.

Incorrect

Answer C

Not allowing your patient to ask questions can lead to different interpretations of the information provided, leading to medication not being taken correctly and therefore not producing the desired outcomes.

02

Learning checkpoint

Recap of Alma's risks		What we know
	Smoking for 19 years	Already has a cardiovascular diagnosis
	Hypertension	Alma's blood pressure is 155/90 at the pharmacy today and has been consistently higher than normal during the past few visits to the pharmacy
	OTC pain medication use	Alma switches between paracetamol and ibuprofen 4–5 times a week
	New symptoms of fatigue	She experiences this most when she is doing a physical activity

OTC, over the counter

02

Learning checkpoint

Q5 Consider Alma’s case – select all appropriate answers to provide the best care for her CKD journey

- Alma has new symptoms of fatigue that could be a sign of heart-related problems that require further assessment and diagnosis from a primary care provider
- Alma’s OTC pain medication use is appropriate at this time and does not require any further intervention
- Alma’s fatigue could also be related to her kidney function. This should be further screened via appropriate blood tests (eGFR) and urine tests (uACR). The purpose of these tests should also be explained to her
- Alma’s higher than normal blood pressure may be putting pressure on her kidneys and her adherence to her current medication and potential need for additional medication (RAASi optimisation) should be reassessed
- The key steps in helping to manage Alma’s CKD risk and guiding her for appropriate further care are Assess, Advise, Document, Refer and Recommend

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CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; OTC, over the counter; RAASi, renin-angiotensin-aldosterone system inhibitor; uACR, urine albumin–creatinine ratio

02

Learning checkpoint

Q5

Consider Alma’s case – select all appropriate answers to provide the best care for her CKD journey

- ✓ Alma has new symptoms of fatigue that could be a sign of heart-related problems that require further assessment and diagnosis from a primary care provider
- Alma’s OTC pain medication use is appropriate at this time and does not require any further intervention
- ✓ Alma’s fatigue could also be related to her kidney function. This should be further screened via appropriate blood tests (eGFR) and urine tests (uACR). The purpose of these tests should also be explained to her
- ✓ Alma’s higher than normal blood pressure may be putting pressure on her kidneys and her adherence to her current medication and potential need for additional medication (RAASi optimisation) should be reassessed
- ✓ The key steps in helping to manage Alma’s CKD risk and guiding her for appropriate further care are Assess, Advise, Document, Refer and Recommend

Feedback +

CKD, chronic kidney disease; eGFR, estimated glomerular filtration rate; OTC, over the counter; RAASi, renin-angiotensin-aldosterone system inhibitor; uACR, urine albumin–creatinine ratio

Feedback

Alma's use of ibuprofen should be further investigated and she should be educated on the potential additional kidney injury that ibuprofen could be causing.

There should also be further investigation of her osteoarthritis to reassess her need for pain management and and choose medications that are not associated with nephrotoxicity.

Supported by

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