

# Safe Prescribing for Patients with Reduced Kidney Function Case Scenario

Ben, a 78 year old male, presents for a repeat of his scripts and a BP check. Ben has been a patient of your practice for many years. His long term GP recently retired, and this is the first time you have seen him. Ben is recently widowed and lives independently at home with family and community supports in place.

Ben's history includes type 2 diabetes, ischaemic heart disease (myocardial infarction with coronary artery stenting 12 years ago) and hypertension. He has osteoarthritis of his knees.

Ben is a reformed smoker (ceased 12 years ago), drinks alcohol occasionally and has no allergies.

On examination Ben appears overweight, weight 94 kg, height 176 cm, BMI 30.3. BP is 148/90 sitting. His heart sounds are normal. Chest is clear and there is no ankle oedema. He has crepitus and reduced range of motion in both knees.

During discussion, Ben states:

I have been feeling a bit more tired and getting more knee pain recently and have been using Nurofen® (ibuprofen 200 mg) every now and then.

Ben

## Current Medicines

- Metformin 500 mg tablet, 1 three times a day
- Empagliflozin 10 mg tablet, 1 daily in the morning
- Perindopril arginine 5 mg tablet, 1 daily in the morning
- Atenolol 50mg tablet, 1 daily in the morning
- Aspirin 100mg (enteric coated) tablet, 1 daily in the morning
- Rosuvastatin 20mg tablet, 1 daily in the morning
- Calcium/Colecalciferol (Ostelin®) 600mg/12.5microg tablet, 1 twice a day



There is no record of chronic kidney disease in the practice software.

### Activity

What reasons do you have to suspect that Ben could have reduced kidney function? (select all that apply) *Answers in footer*

- a. Diagnosed with CKD or other kidney abnormality
- b. Aged 60 years and older
- c. First Nations Australians aged 18 years or over
- d. BMI > 30 kg/m<sup>2</sup>
- e. Current or former smokers or vapers
- f. Family history of kidney failure
- g. History of diabetes
- h. History of hypertension
- i. History of established CVD
- j. History of AKI
- k. Recent acute illness
- l. Recent discharge from hospital
- m. Symptoms suggesting an adverse effect of a medicine

You see that Ben's last kidney health check was 2 years ago, so you ask him if he'd be happy to participate in one today. He agrees. >

### Knowledge check

Which of the following are the essential components of a kidney health check? (select all that apply) *Answers in footer*

- a. Blood pressure check
- b. Estimated glomerular filtration rate
- c. Urine albumin/creatinine ratio
- d. Urine microscopy

Activity answers: B, D, E, G, H, I. Knowledge check answers: A, B, C.



Ben's BP measurement today is 148/90 mmHg.

You talk to Ben about his use of ibuprofen and explain that it can cause problems in people who have high blood pressure and CVD if used regularly. He shares that he only uses it infrequently "when the weather turns cold". You advise him to come and see you again if he feels his pain is getting worse and recommend that he could try topical NSAIDs rather than oral if required.

You organize blood testing to assess full blood count, electrolytes and lipids, HbA1c and urine testing to assess uACR. >

### Blood testing

Biochemistry				
Test	Result	Units	Reference Interval	Comments
Sodium	138	mmol/L	135 - 145	
Potassium	4.8	mmol/L	3.5 - 5.5	
Chloride	99	mmol/L	95 - 110	
Bicarbonate	23	mmol/L	20 - 32	
Creatinine	148	umol/L	60 - 115	High
Urea	12.3	mmol/L	3.5 - 9.5	High
eGFR	37	mL/min	>59	Low

Glycosylated haemoglobin HbA1C				
Test	Result	Units	Reference Interval	Comments
HbA1c (NGSP)	70	mmol/mol	20-42	High
HbA1c (IFCC)	8.6	%	4.0-6.0	High

Haematology				
Test	Result	Units	Reference Interval	Comments
Haemoglobin	116	g/L	119 - 160	Low
White Cell Count	9.5	X10 <sup>9</sup> /L	4 - 11	
Platelets	387	X10 <sup>9</sup> /L	150 - 450	



Fasting lipids				
Test	Result	Units	Reference Interval	Comments
Cholesterol	5.2	mmol/L	3.5 – 5.5	
Triglycerides	0.8	mmol/L	0 – 1.5	
HDL Cholesterol	1.6	mmol/L	1 – 2.2	
LDL Cholesterol	3.2	mmol/L	0 – 2.5	High
Total Chol/HDL	3.0		0 – 4.5	
Non HDL Cholesterol	3.2	mmol/L	<3.9	

Urine ACR				
Test	Result	Units	Reference Interval	Comments
Albumin	61	mg/L	<15	High
Creatinine	21.6	mmol/L	4 - 25	
Albumin/Creatinine Ratio	2.8	mg/mmol	<2.5	High

You review Ben’s previous results. Testing two months ago showed normal potassium and sodium, with elevated creatinine and urea, and eGFR of 45mL/min/1.73m<sup>2</sup>. The last uACR two years ago showed a normal result.

### ✓ Get to know the resources available

[The Chronic Kidney Disease \(CKD\) Management in Primary Care 5th edition](#) provides guidance and clinical tips to help detect, manage, and refer patients with CKD in your practice.



Based on these results, you determine that Ben has reduced kidney function, classified as stage 3b CKD. You also have concerns regarding his BP and LDL given his history of ischaemic heart disease and diabetes. His diabetes management looks like it could also be improved.

You ask Ben to come in for an appointment to complete his CKD diagnosis, discuss his kidney function and organise a Home Medicines Review (HMR). >

You provide Ben with a copy of the [Medicines review in chronic kidney disease](#) (CKD) brochure and explain the HMR process. He provides his consent. You send an HMR referral to the pharmacist that includes recent lab results and investigations and ask them to specifically review the appropriateness of Ben’s medications in the context of CKD.



Medicines review

Two weeks later you receive an HMR report from the pharmacist which includes the following recommendations:

Strategies to enhance medication management		
Medical Condition(s)/ Medication involved	Description	Recommendation(s)
<b>Diabetes and CKD/ Empagliflozin</b>	<p>Empagliflozin is an SGLT2 inhibitor which can slow the progression of CKD in addition to its use as a diabetes agent.</p> <p>Please note that the glucose lowering effect of empagliflozin decreases with reduced kidney function. If Ben’s kidney function continues to decline below 30ml/min/1.73m<sup>2</sup> empagliflozin is no longer considered effective for diabetes management.</p>	<p>The ongoing use of empagliflozin is indicated for CKD.</p> <p>If escalation in diabetes management is required, consider initiating a GLP-1 analogue as additional therapy which may also offer benefit in CVD and aid weight loss. E.g., Semaglutide SC 0.25mg once weekly injection. Monitor for GI effects and increase to 0.5mg weekly after 4 weeks if tolerated. Please note the combination of GLP-1A with SGLT2i will only qualify for PBS-subsidy if the empagliflozin is prescribed for CKD.</p>
<b>Diabetes/ Metformin</b>	<p>Ben is currently prescribed Metformin at a dose of 500mg tds which is considered high for his level of kidney function (de-indexed eGFR~44ml/min). This could be contributing to loose bowel motions which Ben states have been occurring frequently in recent months.</p>	<p>Reduce metformin dose to 500mg bd and monitor impact on GI symptoms. If symptoms persist, consider trialling a further reduction in dose, to 500mg daily.</p>
<b>CVD, HT and CKD/ Perindopril arginine</b>	<p>Perindopril is an ACE inhibitor which can slow CKD progression in addition to its benefit in CVD and hypertension. Recommendation in CVD and CKD management is to titrate to highest tolerated dose. Increasing the dose could have added benefit in BP reduction (most recently reported as 148/86mmHg).</p> <p>Please note that increasing the dose in the context of renal impairment can increase risk for hyperkalemia.</p>	<p>Consider gradually increasing perindopril from 5mg to a maximum of 10mg as tolerated. Monitor eGFR, BP and potassium.</p> <p>Increase in eGFR is expected after increasing the dose and usually stabilised within 2 months. If eGFR increase is &gt;25% consider reducing dose, ceasing or referring to a specialist</p>
<b>HT/ Atenolol</b>	<p>Atenolol is a renally cleared beta blocker. Reduced kidney function (eGFR &lt;60ml/min/1.73m<sup>2</sup>) could theoretically result in accumulation and dose related adverse effects. However, Ben does not report any adverse effects and appears to be tolerating his current dose.</p>	<p>Continue atenolol at current dose and further titrate to effect as needed.</p>
<b>CVD risk/ Rosuvastatin</b>	<p>Rosuvastatin is a renally cleared statin. Reduced kidney function (eGFR &lt;30ml/min/1.73m<sup>2</sup>) could theoretically result in accumulation and dose related adverse effects. However, Ben does not report any obvious adverse effects.</p> <p>Ben’s history of CVD, diabetes and most recent lipid studies suggest he could benefit from an escalation in his lipid management. Changing to an alternate high potency agent that is not renally cleared (e.g. atorvastatin) would allow his dose to be increased without increasing risk of accumulation. Rosuvastatin 20mg is approximately equivalent to 40mg atorvastatin.</p> <p>Adding ezetimibe to his existing statin therapy could also be considered to further reduce LDL (expect ~20% further reduction).</p>	<p>Consider changing rosuvastatin to atorvastatin 40 to 80mg daily and monitor for dose-related adverse effects (e.g. myalgia, myopathy, elevated CK, elevated aminotransferase). Muscle symptoms are most likely in the 4 to 6 weeks following dose increase.</p> <p>Alternatively, add ezetimibe 10mg daily to Ben’s existing rosuvastatin therapy. There is a combination product of rosuvastatin 20mg/ezetimibe 10mg available.</p>

## Activity

Consider the recommendations made in the HMR report – which of these recommendations (if any) would you incorporate into a medication management plan? What do you consider the highest priority for Ben’s medication management? Is anything missing that you think is important?

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For a list of useful links and reference list, please visit our website [MedicinesAdvice.net.au](https://www.MedicinesAdvice.net.au)

### Medicines Advice Initiative Australia (MAIA)

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**Supporting quality use  
of medicines.**

# Medicines and the Kidneys | Case Scenario

## Review your own performance

Find up to five of your patients with a diagnosis of hypertension, CVD or diabetes. For each patient, review their record for their most recent Kidney Health Check, eGFR result, and Medicines Review (see data collection template below).

Actions you could consider from the results of your mini-audit:

- If there is no Kidney Health Check documented within the past 2 years, consider offering them one.
- If a documented Kidney Health Check indicates CKD, make sure the CKD diagnosis has been coded into the practice software.
- If a recent eGFR is less than 60mL/min/1.73m<sup>2</sup>, consider if this is acute or chronic kidney impairment and review their currently prescribed medicines.
- If there is no medicines review (MBS items 900, 903, 245 and 249) within the past 12 months, consider referring for an HMR or RMMR.

Patient	Kidney Health Check completed within the past 2 years	Recent eGFR < 60mL/min/1.73m <sup>2</sup>	Medicines Review within the past 12 months	Notes
Patient 1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Patient 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Patient 3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Patient 4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	
Patient 5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	