

Visual Summary of Pathway for Managing and Treating Chronic Kidney Disease for Adults in Primary Care

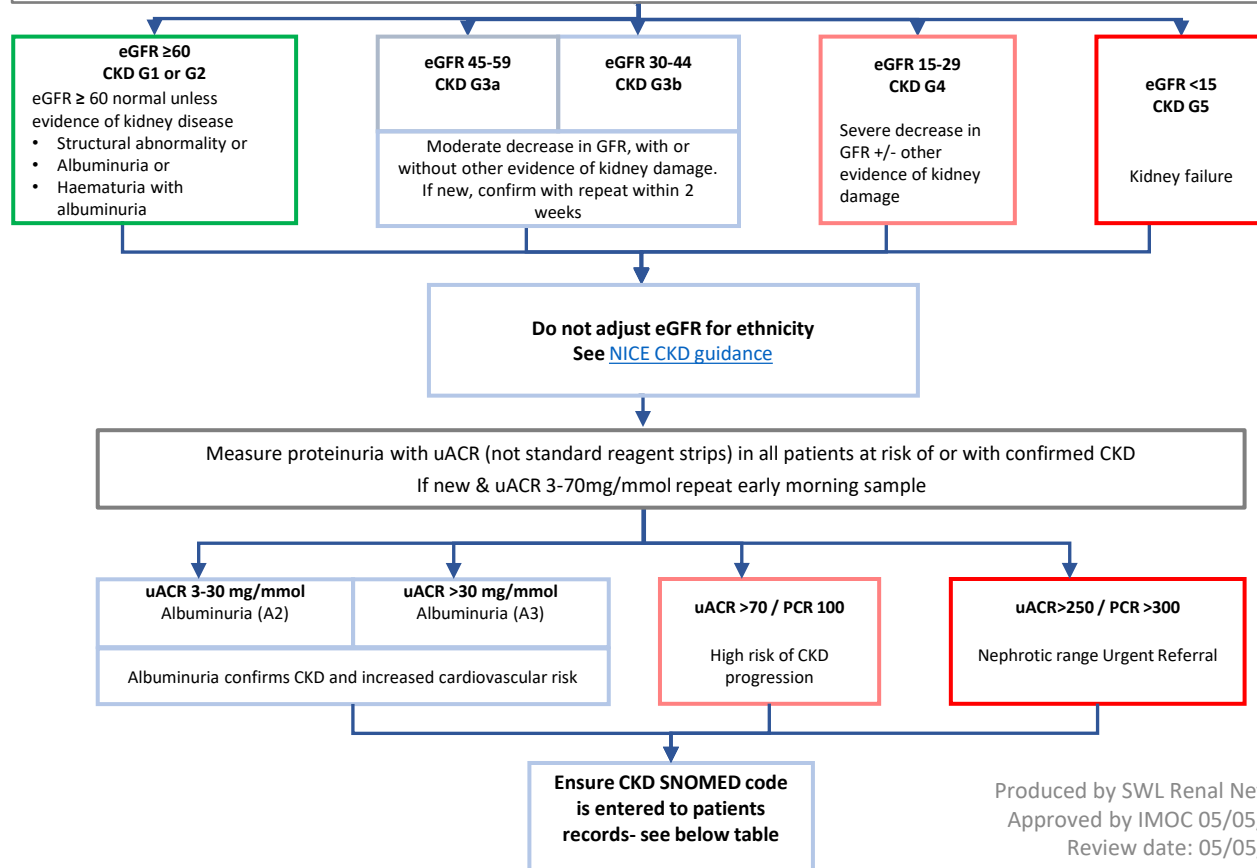
CKD Classification by eGFR and Albuminuria			
eGFR (mL/min/1.73 m ²)	Albuminuria categories (albumin : creatinine ratio)		
	A 1 < 3 mg/mmol	A 2 3–30 mg/mmol	A 3 > 30 mg/mmol
G1 ≥ 90	No CKD	G1 A2	G1 A3
G2 60–89	No CKD	G2 A2	G2 A3
G3a 45–59	G3a A1	G3a A2	G3a A3
G3b 30–44	G3b A1	G3b A2	G3b A3
G4 15–29	G4 A1	G4 A2	G4 A3
G5 < 15	G5 A1	G5 A2	G5 A3

Green: Low or no risk – test once/year
Yellow: Moderately increased risk: Test once/year
Orange: High risk – Test 2 times/year
Red: Very high risk – Test 3 times/year
Deep red: Extremely high risk – Test 4+ times/year

Chronic kidney disease is defined as abnormalities of kidney function or structure present for more than 3 months, with implications for health. This includes all people with markers of kidney damage and those with a glomerular filtration rate (GFR) of less than 60mL/min/1.73m² on at least 2 occasions separated by a period of at least 90 days (with or without markers of kidney damage)

Offer testing for CKD using estimated Glomerular Filtration Rate (eGFR), serum creatinine and urinary ACR (uACR) to people with any of the following risk factors (see CKD classification table above for eGFR testing frequency if CKD diagnosis confirmed). Confirm an eGFR result of less than 60 ml/min/1.73 m² in an adult not previously tested by repeating the test within 2 weeks. Allow for biological and analytical variability of serum creatinine (±5%) when interpreting changes in eGFR. If diagnosis confirmed, identify the rate of progression with a minimum of 3 GFR estimations over a period of not less than 90 days.

- Diabetes
- Hypertension –every 1-5 years, yearly if BP uncontrolled
- History of acute kidney injury (monitor for 3 years even if function back to baseline)
- Cardiovascular disease (ischaemic heart disease, chronic heart failure, peripheral vascular disease or cerebral vascular disease)
- Structural renal tract disease, recurrent renal calculi or prostatic hypertrophy
- Multisystem disease e.g., systemic lupus erythematosus (SLE)
- Family history of end-stage kidney disease (GFR category G5) or hereditary kidney disease
- Gout
- Incidental detection of haematuria or proteinuria
- On nephrotoxic agents such as, lithium, calcineurin inhibitors, sulphasalazine, long term chronic use of Non-steroidal anti-inflammatory drugs (NSAIDs)
- Solitary functioning kidney



Investigations

- All: Blood pressure, U&Es, eGFR, uACR, HbA1C (to exclude diabetes or assess control if known diabetes), Lipids
- FBC in CKD 3b-5 to check Hb in target 100-120 g/L. If below target exclude other causes including iron deficiency, folate/B12 deficiency, haemolysis

Is a renal ultrasound required?

Renal imaging is not routinely required in stable CKD

Criteria for ultrasound:

- Accelerated progression of CKD (fall in GFR by 25% or more in 1 year or by more than 15 mL/min/1.73m²)
- Consider if a new diagnosis of CKD G4 or G5 if not known to CKD services
- Visible or persistent invisible haematuria (see [SWL London Urology Pathways](#))
- Symptoms of urinary tract obstruction e.g. urinary retention, decreased or altered urine flow, hesitancy, loin pain increased urgency and nocturia, incontinence
- Family history of polycystic kidney disease and are older than 20 years old (advise adults with a family history of hereditary kidney disease about the implications of an abnormal result before a renal ultrasound scan is arranged for them)

Management in Primary Care

Agree self-management plan with patient which includes:

- Lifestyle advice: smoking cessation, maintain a health weight, exercise, healthy diet, salt reduction
- Controlling blood pressure: encourage Home BP Monitoring (HBPM). See [NHSE guidance on HBPM](#)
- Manage cardiovascular risks
- Stop/review nephrotoxic drugs such as NSAIDs, lithium, sulphasalazine
- Encourage vaccination: Influenza, Pneumococcal and COVID-19
- Consider risk of acute kidney injury, CKD progression and offer patient education
- Follow the [London Kidney Network's '3 within 3 - LKN CKD Optimisation Pathway'](#)
- See patient leaflets: [Kidney Care UK. Chronic kidney disease patient information booklet](#)

Cardiovascular risk

eGFR <60 mL/min/1.73 m² and/or albuminuria are significant risk factors for cardiovascular disease

- Angiotensin-converting enzyme (ACE) inhibitor (e.g. ramipril) and angiotensin-receptor blockers (ARB) (e.g. Losartan/irbesartan) prevent scarring and should be used preferentially in people with CKD and proteinuria
- Maximise ACE inhibitor or ARB in people with diabetes if uACR ≥ 3mg/mmol OR in people without diabetes if uACR ≥ 70 mg/mmol
- Maximise ACE inhibitor or ARB in people with hypertension and uACR ≥ 30 mg/mmol
- Do not combine ACE inhibitor and ARB for treatment of CKD due to increased risk of hyperkalaemia and deterioration in kidney function and AKI. See [MHRA Drug Safety Update](#)
- Offer dapagliflozin as an add-on to optimised standard care including the highest tolerated licensed dose of ACE inhibitors or ARBs in people who meet the NICE TA775 criteria:
 - have an eGFR of 25 mL/min/1.73 m² to 75 mL/min/1.73 m² at the start of treatment and
 - who have type 2 diabetes or have a urine albumin-to-creatinine ratio (uACR) of ≥22.6 mg/mmol. See [TA775 Dapagliflozin for treating chronic kidney disease](#)
 - If patient already established on another SGLT2inhibitor for type 2 diabetes or heart failure (e.g. canagliflozin or empagliflozin), switching to dapagliflozin is not recommended. Refer to [SPC](#) to ensure SGLT2inhibitor dose is adjusted for renal impairment
- Counsel patients on dapagliflozin risks including hypoglycaemia, diabetic ketoacidosis (in patients with diabetes) and UTI/fungal infections and Fournier's gangrene. Counsel on sick day rules for ACE inhibitor /ARB/SGLT2inhibitors. See [SWL Dapagliflozin information sheet](#)
- Routine checking of Creatinine (Cr) and eGFR is not recommended after SGLT2 inhibitor initiation. A dip in GFR is a haemodynamic effect of SGLT2inhibitors

Statins:

- Offer all patients with CKD atorvastatin 20mg once daily for the primary or secondary prevention of CVD
- Increase dose if a greater than 40% reduction in non-HDL cholesterol is not achieved. If patient unable to tolerate higher dose, consider dose reduction and seek specialist advice.

Blood pressure control

- Monitor BP at least annually
- Target BP:
 - <140/90 mmHg (uACR <70)
 - <130/80 mmHg (uACR ≥ 70)
 - < 150/90 mmHg (for over 80s)
- Tolerate a degree of systolic hypertension in the elderly and those at increased risk of falls
- If uACR ≥ 30g/mmol or patient has diabetes: offer ACEi or ARB first line (avoid if Potassium (K⁺) >5 mmol/L)
- A small rise in creatinine (Cr) or a mild fall in eGFR values is expected with ACEi/ARB therapy.
 - Check Cr, eGFR and K⁺ before start, 1-2 weeks after starting and after a dose change
- If Cr increases by ≥ 30% or eGFR falls by ≥ 25% during first 2 weeks on ACEi/ARB, repeat tests, stop drug, consider other causes (e.g. volume depletion, concurrent NSAID usage) and seek specialist advice- Follow [SWL Hypertension Guidance](#)

Mineral metabolism

- Mineral metabolism is disturbed in most patients with advanced CKD (G4 and G5)**
- PTH and Vit D level testing is not recommended in primary care unless requested by a specialist
- Metabolic acidosis:**
- Consider starting sodium bicarbonate 500mg twice daily if acidaemia present (serum bicarbonate <20 mmol/L) and eGFR <30 mL/min. Recheck level at next routine CKD check

Hyperkalaemia

- If K⁺ > 6 mmol/L check no haemolysis refer to [UKKA Management of hyperkalaemia in the community](#)
- Check diet and offer [lifestyle-diet, fluids and exercise sheet](#) | [Kidney Care UK](#)
- Stop NSAIDs and LoSalt. Stop K⁺ retaining diuretics such as spironolactone
- Consider reducing the dose of ACEi/ARB but the benefits of continuing the drugs may outweigh the potential risks of mild-moderate high K⁺)
- Seek specialist advice if serum potassium persistently >6 mmol/L
- Potassium binders may be initiated and continued in secondary care in patients with CKD 3b to G5 in line with local prescribing guidelines and NICE recommendations

Reasons for Referral to Nephrology

Refer adults with CKD for specialist assessment (considering their wishes and comorbidities) if they have any of the following:

- **5-year risk of needing renal replacement therapy of greater than 5%** (measured using the [4-variable Kidney Failure Risk Equation](#) (KFRE). KFRE is also available as an [Excel calculator](#).)
- **Rapidly progressive fall in eGFR**
 - a sustained decrease in eGFR of 25% or more and a change in eGFR category within 12 months
 - a sustained decrease in eGFR of 15 ml/min/1.73 m² or more per year
- **Proteinuria:**
 - ACR of 70 mg/mmol or more, unless known to be caused by diabetes and already appropriately treated
 - ACR of more than 30 mg/mmol (ACR category A3), together with nonvisible haematuria. If urological investigations not indicated/negative and uACR ≤ 30 mg/mmol then monitor and manage as CKD in primary care
- **Uncontrolled hypertension:** Remains poorly controlled (above the person's individual target) despite the use of at least 4 antihypertensive medicines at therapeutic doses (see [SWL hypertension guideline](#))
- **Suspected renal artery stenosis:** If ACEi or ARB induced fall in eGFR (eGFR falls by ≥ 30% or creatinine rises by ≥ 30%) during first 2 weeks on ACEi/ARB, repeat tests, stop drug, consider other causes (volume depletion, concurrent NSAID use) and seek specialist advice. If no other cause of deterioration identified, refer for further investigation of possible renal artery stenosis
- **Known or suspected rare or genetic causes of CKD** e.g. autosomal dominant polycystic kidney disease, SLE, vasculitis, myeloma

Coding of CKD in Primary Care

eGFR/uACR	Description ID	SNOMED code
eGFR>90ml/min/1.73m2 and uACR<3mg/mmol 3<uACR<30mg/mmol uACR>30mg/mmol	Chronic kidney disease stage 1 (interim if non-proteinuric markers of CKD) CKD G1A1 (if non-proteinuric markers of CKD) CKD G1A2 CKD G1A3	2767383018 2426331000000114 2426381000000113 2426511000000114
60<eGFR<90ml/min/1.73m2 and uACR<3mg/mmol 3<uACR<30mg/mmol uACR>30mg/mmol	Chronic kidney disease stage 2 (interim if non-proteinuric markers of CKD) CKD G2A1 (if non-proteinuric markers of CKD) CKD G2A2 CKD G2A3	2767384012 2426601000000111 2426691000000116 2426821000000118
45<eGFR<60ml/min/1.73m2 and uACR<3mg/mmol 3<uACR<30mg/mmol uACR>30mg/mmol	Chronic kidney disease stage 3 (interim) CKD G3aA1 CKD G3aA2 CKD G3aA3	2773184015 2427381000000110 2427401000000110 2427451000000111
30<eGFR<45ml/min/1.73m2 and uACR<3mg/mmol 3<uACR<30mg/mmol uACR>30mg/mmol	Chronic kidney disease stage 3 (interim) CKD G3bA1 CKD G3bA2 CKD G3bA3	2773184015 2427751000000117 2427801000000112 2427851000000113
15<eGFR<30ml/min/1.73m2 and uACR<3mg/mmol 3<uACR<30mg/mmol uACR>30mg/mmol	Chronic kidney disease stage 4 (interim) CKD G4A1 CKD G4A2 CKD G4A3	2767385013 2428021000000111 2428091000000114 2428141000000115
eGFR<15ml/min/1.73m2 and uACR<3mg/mmol 3<uACR<30mg/mmol uACR>30mg/mmol	End stage renal disease OR Chronic kidney disease stage 5 OR CKD G5A1 CKD G5A2 CKD G5A3	3517959016 2767154014 2428191000000113 2428281000000117 2428331000000110
3<uACR<30mg/mmol uACR>30mg/mmol	Albuminuria (interim) Grade A3 albuminuria (interim)	410631017 3515025016

References and links:

1. [NICE guideline \[NG203\] Chronic kidney disease: assessment and management](#). Published: 25 August 2021. Last updated: 24 November 2021.
2. [NHSE guidance on home blood pressure monitoring](#)
3. [Kidney Care UK, the UK's leading kidney patient support charity | Kidney charity](#)
4. [Combination use of medicines from different classes of renin-angiotensin system blocking agents: risk of hyperkalaemia, hypotension, and impaired renal function—new warnings - GOV.UK \(www.gov.uk\)](#) Published December 2014. Available via
5. [NICE Technology appraisal guidance \[TA775\]. Dapagliflozin for treating chronic kidney disease](#). Published: 09 March 2022.
6. [Summary of product characteristics \(SPC\) for Forxiga® \(Dapagliflozin\) 10 mg film-coated tablets](#). Last updated on emc: 19 May 2022.
7. [Lowering your potassium levels | Kidney Care UK](#) Accessed 10/05/2023
8. Refer to current [BNF](#) or [Summary of Product Characteristics \(SPC\)](#) for full medicines information.