West Yorkshire Health and Care Partnership

NHS West Yorkshire Integrated Care Board

West Yorkshire Guideline for the Management of Chronic kidney Disease (CKD) for Adults

Think **C**ardiovascular	Think **K**idneys	Think **D**iabetes

What is CKD?

CKD is the presence of one of the following for >3 months

Markers of Kidney Damage (one or more)	• Albuminuria (uACR ≥3 mg/mmol) confirmed on an early morning urine sample if uACR <70mg/mmol. • Urine sediment abnormalities e.g., presence of red (could indicate glomerular disease) or white blood cells (could indicate interstitial nephritis or infection e.g. pyelonephritis) , tubular epithelial cells (could indicate parenchymal disease) • Electrolyte and other abnormalities due to tubular disorders • Abnormalities detected by histology. • Structural abnormalities detected by imaging. • History of kidney transplantation
Decreased eGFR	eGFR of <60 ml/min/1.73 m2 (eGFR categories G3a–G5)

Offer Screening for CKD using eGFR, serum creatinine and urine Albumin: Creatinine Ratio (uACR) to people with any of the following risk factors:

- All people living with diabetes at least annually
- For those with an eGFR<60ml/min/1.73m^2
- Hypertension–annually as part of hypertensions reviews https://cks.nice.org.uk/topics/hypertension/diagnosis/investigations/
- Cardiovascular disease (ischaemic heart disease, chronic heart failure, peripheral arterial disease or cerebral vascular disease) annually as part of routine reviews
- History of acute kidney injury (monitor yearly for 3 years even if function back to baseline)
- Structural renal tract disease, recurrent renal calculi or prostatic hypertrophy
- Multi-system disease e.g., Systemic lupus erythematosus, vasculitis, myeloma
- Family history of end-stage kidney disease (GFR category G5) or hereditary kidney disease
- Haematuria /Proteinuria (opportunistic detection)
- Treated with nephron-toxic agents (NSAIDs, Lithium, Calcineurin inhibitors, Aminosalicylates etc)

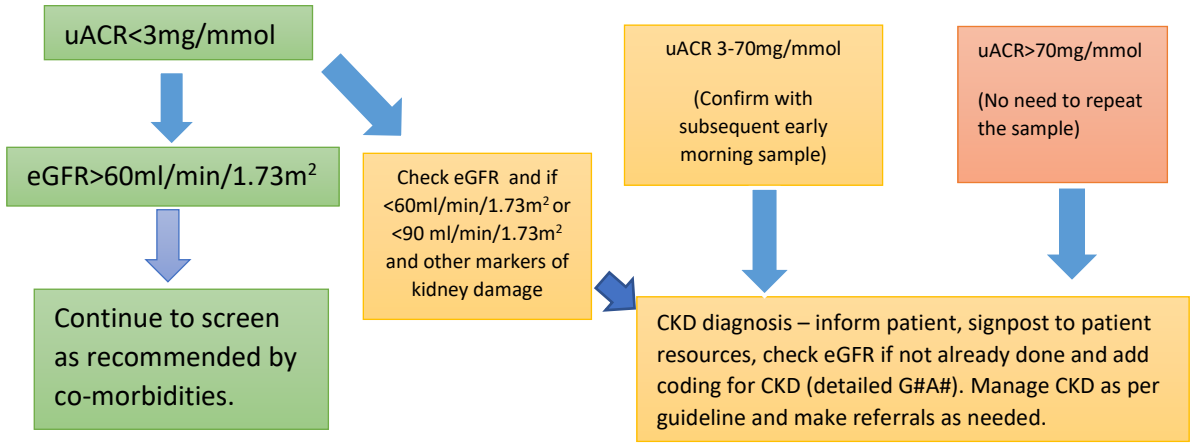
Every patient at the time of a clinician diagnosing CKD should have a urine dipstick because haematuria raises possibility of systemic renal disease or structural renal abnormalities which needs further assessment.

Haematuria

1. Use dipstick reagent strips rather than urine microscopy.
2. Evaluate further if a result of 1+ or more (initially repeat dipstick in 2 weeks)
3. Result is not useful if the person is menstruating if someone has a catheter or has a known infection.

Urine Albumin: Creatinine Ratio (uACR) and CKD Diagnosis

uACR is a useful marker of renal damage and complication risk. It is the usual method of assessing proteinuria. A confirmed (repeated) uACR>3mg/mmol represents proteinuria which is clinically significant.



KFRE (Kidney Failure Risk Equation)

The Kidney Failure Risk Equation

Healthcare professionals can use the Kidney failure risk equation to determine 2 and 5 year risk of treated kidney failure (dialysis and transplantation) for a patient with CKD stage 3a-5

There are also videos available on this website to explain risk to people living with CKD www.kidneyfailurerisk.co.uk

NB: KFRE must be calculated using eGFR EPI (not MDRD)

How do we categorise CKD, how often should we test and when should we refer/seek advice?

When reviewing results, place the test results in clinical context including consideration of why the blood tests were taken. If history of acute illness, then assess and manage accordingly. Consider acute kidney injury (AKI) and the possibility of obstruction if rapidly declining eGFR. Think Kidneys https://www.thinkkidneys.nhs.uk/aki/resources/primary-care/, https://www.thinkkidneys.nhs.uk/campaign/

Frequency of Monitoring (***number of times per year shown in table as italicised number***)				Urinary Albumin Creatinine Ratio (uACR)		
				normal or mildly increased	moderately increased	severely increased
				<3mg/mmol	3-30mg/mmol	30mg/mmol
				A1	A2	A3
eGFR categories	G1	normal or high	≥90	*1* if CKD	*1* monitor	*2* A&G/Refer
	G2	mildly decreased	60-89	*1* if CKD	*1* monitor	*2* A&G/Refer
	G3a	mildly to moderately decreased	45-59	*1* Monitor	*2* monitor	*3* refer
	G3b	moderately decreased	30-44	*2* Monitor	3 monitor	*3* refer
	G4	severely decreased	15-29	*3* A&G/Refer	*3* A&G/Refer	*4+* refer
	G5	kidney failure	<15	*4+* refer	*4+* refer	*4+* refer

A&G = Advice and Guidance or refer NB: G1A1 and G2A1 only classed as CKD if also have additional Markers of Kidney Disease e.g. renal stone disease.

WHEN TO REFER

Where referral required, this should be to renal services if the patient does not have diabetes, or to combined diabetes/renal clinic for patient with diabetes (unless suspected or known non-diabetic kidney disease or eGFR <20ml/min1.73 m2 in which case referral should be to renal service)

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)**
- **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 haematuria**
- **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**
- **hypertension that remains poorly controlled (above the person's individual target) despite the use of at least 4 antihypertensive medicines at therapeutic doses**
- **known or suspected rare or genetic causes of CKD**
- **suspected renal artery stenosis.**
- **Patients with eGFR <30 ml/min/1.73 m2 will usually require referral; but with eGFR ≥30 ml/min/1.73 m2 referral will depend on other factors as above.**

Patient Information

What is chronic kidney disease? What is Chronic Kidney Disease? | London Kidney Network

Chronic Kidney Disease Chronic kidney disease (CKD) | Kidney Care UK

A healthy diet and lifestyle for kidneys A healthy diet and lifestyle for your kidneys | Kidney Care UK

Medicines for chronic kidney disease Medication | Kidney Care UK

Medicines for high blood pressure Medicines for high blood pressure | Kidney Care UK

Diabetes and kidney disease Diabetes and kidney disease | Kidney Care UK

Sick day rules Sick Day Rules | London Kidney Network

Importance of uACR testing Urine ACR Testing | London Kidney Network

4 Key things in 4 months to Save Lives for Adults with CKD **(ideally do in every patient with eGFR<60 or uACR ≥ 3 mg/mmol)**

Month 1

Maximum intensity RAS/ RAAS blockade and Optimise Lipids

Start ACE-inhibitor or ARB in the following populations:

1. Adults with hypertension and an ACR>30mg/mmol (category A3 or above)
2. Adults with diabetes and an ACR>3mg/mmol (category A2)
3. Adults without diabetes and ACR>70mg/mmol (also refer to nephrology)

Titrate to maximum tolerated licensed dose (*NICE, NG203*) **Ideally** do this within one month (see rapid titration protocol for RAAS blockade below)

When titrating the dose of ACE/ARB to the maximum tolerated dose - see the blood results and monitoring box on page 4 for further guidance on how to do this. *Note: this differs from creatinine clearance (CrCl) cut offs outlined in the BNF/SPC.*

Atorvastatin 20mg once daily should be offered as initial therapy for primary and secondary prevention and national guidelines followed for review and titration. Optimise lipid lowering therapies according to national lipid lowering guidance NHS Accelerated Access Collaborative » Summary of national guidance for lipid management (england.nhs.uk)

Month 2

Start SGLT2i
(Referring to 'safe and effective use of SGLT2is' guidance)

Person with Type 2 Diabetes

1st line: Dapagliflozin 10mg once daily

2nd line: **Empagliflozin 10mg** once daily

Ensuring the person has an eGFR 20-90ml/min/1.73m2 recognising that glycaemic benefits will be limited at an eGFR<45ml/min/1.73m^2

Person without Type 2 Diabetes
(NB not for people living with T1DM unless under specialist care)

1st line: Dapagliflozin 10mg once daily

2nd line: Empagliflozin 10mg once daily

Ensuring the person has either:
An eGFR 20 ml/min/1.723m^2 to less than 45ml/min/1.73m^2

OR

an eGFR 45ml/min/1.73m^2 - 90ml/min/1.73m^2 **and** uACR ≥ 22.6mg/mmol.

Follow the guidance in the document 'West Yorkshire Guideline for the Safe and Appropriate Use of Sodium Glucose Co-Transporter 2 inhibitors (SGLT2-i) for Adults'

If history of: kidney transplant, polycystic kidney disease; on immunological/immunosuppressant therapy for renal disease; haemodialysis -seek advice from nephrology prior to starting.

Month 3

Optimise Blood Pressure and Other Cardiovascular Risk Factors

Initiate further blood pressure agents to treat to target

- uACR < 70mg/mmol: <130/80mmHg
- uACR≥70mg/mmol: Ideally <120/80mmHg taking into consideration frailty and co-morbidities.

Caution in the elderly/frail – consider reviewing the targets

Encourage home monitoring of Blood Pressure (n.b. targets are 5mmHg lower for HBPM)

In those who have had a cardiovascular event, ensure offered aspirin with appropriate gastric protection (in some cases a H2 receptor antagonist may be preferred e.g., if having electrolyte abnormalities or in the instance of acute interstitial nephritis (ANI). Famotidine is the H2 receptor antagonist of choice in this situation).

Aspirin may be considered for primary prevention in those at high cardiovascular risk. Initiation should be balanced with consideration of the increased bleeding risk, including thrombocytopathy with low eGFR.

In those with established CAD or PAD at high risk of ischaemic events (see NICE) consider 2.5mg bd rivaroxaban alongside aspirin. Only if eGFR>15ml/min.

Consider at month 4 onwards

Consider Finerenone

Only for people living with Type 2 Diabetes who also have:

- stage 3 or 4 CKD (eGFR ≥25-<60ml/min/1.73m^2) with albuminuria (uACR ≥3mg/mmol)
- been optimised on standard care (RAAS blockade and SGLT2ihibitors)*

Finerenone can only be initiated if serum potassium ≤4.8mmol/L or if serum potassium >4.8 to 5 mmol/L then initiation can be considered with additional monitoring in the first 4 weeks based on patient characteristics and potassium levels.

*unless clinically unsuitable

Finerenone is now green restricted (primary care initiation in line with NICE)

See flow chart for starting dose, and titration schedule and monitoring details West Yorkshire APC

Lifestyle advice – diet, exercise, weight management, smoking cessation

Rapid Titration Protocol for RAAS Blockade

Assess if patient suitable for rapid RAAS titration (unsuitable if low baseline blood pressure, people with significant co-morbidities, potassium level already near ULN)

NO

If not consider reducing any other BP medications and where appropriate setting frailty targets for blood pressure

Consider a slower titration of RAAS blockade and consider a reduced dose at initiation

YES

Start ACE inhibitor (or ARB) at half maximum dose e.g., Ramipril 5mg once daily

- Advise on Sick Day Rules
- Advise on good fluid intake 1-2L/day depending on size.

Check creatinine and potassium 1-2 weeks after initiation and recheck blood pressure.

Increase ACE inhibitor (or ARB) to maximum tolerated dose e.g., Ramipril 10mg od.

Check creatinine and potassium 1-2 weeks after each dose titration and recheck blood pressure.

Blood Results and Monitoring

ACE inhibitor and ARB

eGFR and Serum Creatinine

Accept a serum creatinine rise < 30% or eGFR fall of < 25% from baseline: after ACEi/ARB initiation or dose increase.

If renal function deterioration greater than stated above seek nephrologist advice (to exclude possible reno-vascular disease)

STOP ACEi/ARB if changes in creatinine/ eGFR exceed the above and no other causes of deteriorating renal function (e.g., dehydration, use of NSAIDs) is found.

Potassium (K+)

If K^+ >6.0 mmol/L -would need urgent repeat U&E (please follow local guidance and ideally this would be a same day repeat) and if 6.5 mmol/L or greater or if there are symptoms consistent with hyperkalaemia, you would usually send to A&E for repeat potassium and ECG. If K^+ >6.0 mmol/L stop ACEi/ARB and start low potassium diet, a recommended patient information can be found: https://www.kidney.org.uk/potassium.

If K+ remains persistently ≥6.0mmol/L and because of this hyperkalaemia people are unable to take an optimised dose of RAAS inhibitor, consider referral for sodium zirconium cyclosilicate (for CKD stage 3b-5, not on dialysis only)

If K^+ >5.5mmol/L stop MRAs (including Finerenone)

Aim to restart medications once K^+ ≤ 5.5 mmol/L (note lower starting doses with Finerenone below)

If the patient has proteinuria or heart failure with reduced ejection fraction and would benefit from an ACEi/ARB, seek nephrologist advice regarding introduction of furosemide, potassium binders or bicarbonate to facilitate reintroduction of these agents.

Concomitant use of ACEi/ARB with spironolactone and other potassium sparing diuretics requires close monitoring of potassium. The Think Kidneys campaign has a useful guidance which can be found 2020-statement-on-Changes-in-Kidney-Function-FINAL.pdf (thinkkidneys.nhs.uk)

Finerenone

Serum potassium and eGFR must be remeasured 2-4 weeks after initiation or re-start of Finerenone treatment or after an increase in dose (note SPC recommends 4 weeks). Thereafter, serum potassium is monitored exactly as would be undertaken based on the individual's long-term health conditions or acute health conditions that may arise. If there is a decrease in eGFR by **greater than 30%** Do NOT escalate dose. A&G renal for advice about treatment continuation.

		Current Finerenone dose	
		10mg	20mg
Current Serum Potassium	≤4.8mmol/L	Increase to 20mg once daily	Continue 20mg once daily
	>4.8-5.5mmol/L	Continue 10mg once daily	Continue 20mg once daily
	>5.5mmol/L	Withhold. Consider restarting at 10 mg once daily when serum potassium ≤ 5.0 mmol/L.	Withhold. Consider restarting at 10 mg once daily when serum potassium ≤ 5.0 mmol/L.

Patient with Heart Failure and established on RAAS Blockade unwell with AKI/worsening renal function.

- Infection (treat with antibiotics as per local guidance)
- Hypotension (as compared to usual BP) +/- hypovolaemia.
- Fluid overload (check decompensated HF)

- Stop RAAS blockade if not for prognostic benefit.
- May need IV fluids and repeat clinic/biochemical review.
- May temporarily withhold RAAS blockade even if for prognostic benefit (e.g., if symptomatic hypotension despite volume correction, moderate/severe hyperkalaemia, progressively worsening renal function)

HFrEF

Consider reducing/withholding RAAS blockade if:

- Symptomatic hypotension
- Moderate/severe hyperkalaemia
- Progressive worsening renal function

HFpEF

- Stop RAAS blockade as no prognostic benefit.
- MRA may offer symptomatic benefit.

Clark AL, Kalra PR, Petrie MC, Mark PB, Tomlinson LA, Tomson CR. Change in renal function associated with drug treatment in heart failure: national guidance. Heart. 2019 Jun;105(12):904-910. doi: 10.1136/heartjnl-2018-314158. PMID: 31118203;