Guidelines on Chronic Kidney Disease (CKD) Coding in Primary Care
London Kidney Network Expert Consensus

Background

One of the main aims of the London Kidney Network (LKN) CKD Prevention Workstream is to support healthcare systems to identify CKD early in people either at risk of or who have CKD. This sits alongside reducing unwarranted variation in both identification and coding of CKD. There is a need to ensure accurate and consistent coding of CKD as part of the overall aims around CKD prevention.

Aims

1. To have consistent coding to help with appropriate diagnosing and data capture.
2. To have a consistent approach to coding, i.e. including blood and urine values.

What are the issues?

1. Quality and Outcomes Framework

The Quality and Outcomes Framework (QOF) aims to improve the quality of care patients are given by rewarding practices for the quality of care they provide to their patients, based on a number of indicators across a range of key areas of clinical care and public health. CKD indicators are included within the QOF, which can serve as a way to create a disease register for those with CKD. However, the CKD indicators are based on:

1. CKD stages G3a to G5 (stage 3 to stage 5)
2. Estimated Glomerular Filtration Rate (eGFR) rather than Albumin to Creatinine Ratio (ACR)

Unfortunately, the current CKD indicators used within the QOF do not allow for a specific group of CKD patients to be registered or captured, i.e. those people who have been identified early as having (or at risk of) CKD based on ACR testing as opposed to blood testing. The absence of ACR in the QOF may disincentivise GP practices from conducting ACR testing. The most likely group of people missed from appropriate CKD coding are those who have moderately raised ACRs (3-30mg/mmol) and eGFRs within the mild to normal range (60-90ml/min). It is primarily this group of patients who need to be targeted for early intervention in order to have the greatest impact on CKD prevention.

2. Range of CKD coding

Currently, there are an extensive array of codes in use to define CKD. There is a need to capture CKD accurately based on both blood and urine values. It is important to note that an eGFR value greater than 60ml/min would not indicate CKD in the absence of other abnormalities such as albuminuria. Therefore, the use of blood tests alone for CKD recognition and coding is insufficient. Some level of CKD staging is also beneficial as this helps to not only track progression but also influences treatment decisions.

What are the solutions?

There are a range of solutions available and a recognition that different parts of the healthcare system will be using CKD coding with varying degrees of granularity. The following guiding principles are advocated for all CKD coding:

1. Coding should include both the blood (eGFR) and urine (ACR) values relevant to CKD detection
2. Higher level coding (such as *Chronic Renal Impairment* and *Chronic Kidney Disease)* should be avoided, as this does not align to intricacies of CKD staging, tracking and management.
3. In instances where disease specific nomenclature may be relevant and used (such as *Diabetic nephropathy)*, the coding should still include both the blood and urine values relevant to that diagnosis

The tables below show the possible alternative options for coding both blood and urine values relevant to CKD diagnosis. These are placed into two main groups (Group 1 and Group 2) for comparison.
When interpreting these tables and coding guidelines, please be aware that:

1. Coding should include both the urine and blood results. These are necessary to give a combined view of CKD
2. For consistency and clarity, the same coding group should be used for both the blood and urine tests so that coding remains consistent and aligned.

Blood results

eGFR value (ml/min)	Possible Code Group 1	Possible Code Group 2
Greater than 90	G1	CKD stage 1
60-90	G2	CKD stage 2
45-59	G3a	CKD stage 3
30-44	G3b	CKD stage 3
15-29	G4	CKD stage 4
Less than 15	G5	CKD stage 5

Urine results

ACR value (mg/mmol)	Possible Code Group 1	Possible Code Group 2
0-3	A1	No code
3-30	A2	Microalbuminuria
Greater than 30	A3	Microalbuminuria/Proteinuria

The case example below shows how this coding would work in practice.

Case example

A patient with known hypertension has routine blood and urine tests. The results are shown and highlighted below in yellow. Their eGFR is 74ml/min and the ACR is 5.5mg/mmol.

eGFR value (ml/min)	Possible Code Group 1	Possible Code Group 2
Greater than 90	G1	CKD stage 1
60-90	G2	CKD stage 2
45-59	G3a	CKD stage 3
30-44	G3b	CKD stage 3
15-29	G4	CKD stage 4
Less than 15	G5	CKD stage 5

ACR value (mg/mmol)	Possible Code Group 1	Possible Code Group 2
0-3	A1	No code
3-30	A2	Microalbuminuria
Greater than 30	A3	Albuminuria

Using the coding tables above, options for coding would be:

If using Group 1- CKD G2A2
If using Group 2- CKD2, Microalbuminuria

There are benefits and issues with either approach. The main ones are:

Using Group 1

Benefits:

- Provides the most granularity. Coding is precise and follows the KDIGO guidance and NICE recommendations
- Requires a single SNOMED code
- Aligns more readily to recommendations around frequency of testing
- Allows for easier tracking of disease progression

Issues:

- Requires some working knowledge of CKD due to increased granularity
- May require more frequent updates as and when disease progresses
- Some coding is not currently defined and eligible under QOF business rules e.g. G1A2 and G2A2

Using Group 2

Benefits:

- Aligns with more recognisable existing CKD nomenclature
- Has less granularity and may therefore be easier for list cleaning and administrative work e.g. batch coding

Issues:

- Has less granularity
- Requires the use of two separate SNOMED codes
- Has a greater emphasis on eGFR over ACR, with risk that ACR is not adequately captured in coding

Recommendation

The London Kidney Network recommends that CKD coding should align with Group 1 coding nomenclature. We recommend the eGFR/uACR combination SNOMED codes in Table 1 (page 5, appendix) when coding for CKD.

Coding Guideline Use

This guideline should be used primarily to support efforts to improve CKD detection in community and primary care settings. It can be used alongside other measures in electronic health records such as templates, searches, protocols and prompts where they exist. Healthcare professional training is an important aspect of quality improvement initiatives around CKD prevention and this guidance should be used to support those initiatives. Where patients are incontinent of urine or there are challenges obtaining a urine sample, it would be pragmatic to use a previous result, if available, and reflect that in the coding.

This guideline runs in parallel to the 'LKN CKD Early Identification & Optimisation Pathways' on CKD diagnosis and prevention (Figure 1, pages 6-10, appendix). The diagnosis of CKD, particularly in people with hypertension and/or diabetes, is explained in more detail, with reference to both blood tests and urine parameters. Further information about CKD assessment and management can also be found in NICE guidance (NG203).

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5. Dr Vasa Gnanapragasam (LKN Primary Care Lead GP for SWL)
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10. Dr Catriona Shaw (Nephrologist)

APPENDIX:

Table 1: eGFR/uACR combination SNOMED codes

eGFR/uACR	SNOMED code	Description ID
eGFR≥90ml/min/1.73m^2 **and** uACR<3mg/mmol 3≤uACR≤30mg/mmol uACR>30mg/mmol	 CKD G1A1 (**if non-proteinuric markers of CKD**) CKD G1A2 CKD G1A3	 2426331000000114 2426381000000113 2426511000000114
60≤eGFR<90ml/min/1.73m^2 **and** uACR<3mg/mmol 3≤uACR≤30mg/mmol uACR>30mg/mmol	 CKD G2A1 (**if non-proteinuric markers of CKD**) CKD G2A2 CKD G2A3	 2426601000000111 2426691000000116 2426821000000118
45≤eGFR<60ml/min/1.73m^2 **and** uACR<3mg/mmol 3≤uACR≤30mg/mmol uACR>30mg/mmol	 CKD G3aA1 CKD G3aA2 CKD G3aA3	 2427381000000110 2427401000000110 2427451000000111
30≤eGFR<45ml/min/1.73m^2 **and** uACR<3mg/mmol 3≤uACR≤30mg/mmol uACR>30mg/mmol	 CKD G3bA1 CKD G3bA2 CKD G3bA3	 2427751000000117 2427801000000112 2427851000000113
15≤eGFR<30ml/min/1.73m^2 **and** uACR<3mg/mmol 3≤uACR≤30mg/mmol uACR>30mg/mmol	 CKD G4A1 CKD G4A2 CKD G4A3	 2428021000000111 2428091000000114 2428141000000115
eGFR<15ml/min/1.73m^2 **and** uACR<3mg/mmol 3≤uACR≤30mg/mmol uACR>30mg/mmol	 CKD G5A1 CKD G5A2 CKD G5A3	 2428191000000113 2428281000000117 2428331000000110

Figure 1: LKN CKD Early Identification & Optimisation Pathways

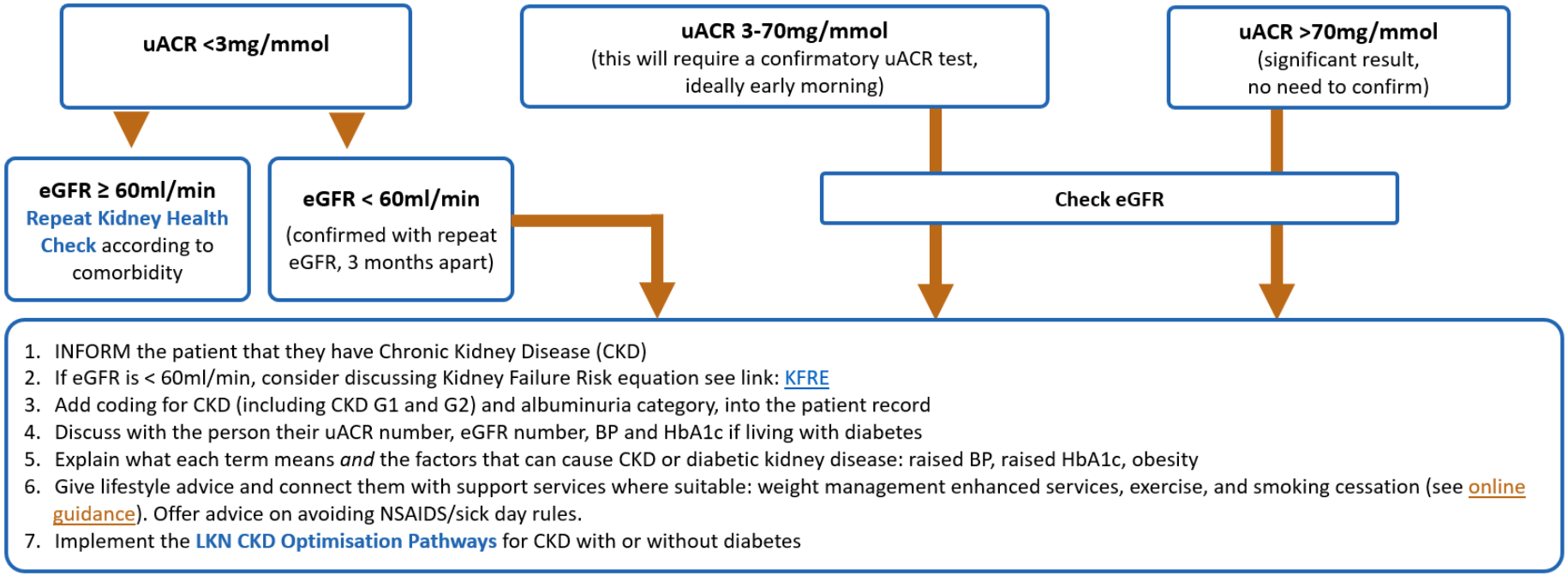
The Kidney Health Check for Adults Living with Diabetes or Hypertension: How to identify Chronic Kidney Disease early

LKN CKD Early Identification Pathway

What is a Kidney Health Check? It is the combination of both an **eGFR** *and* a **uACR** test

Who should have a Kidney Health Check?

1. People living with **diabetes** should have a yearly kidney health check
2. People living with **hypertension** should have a kidney health check every 1-5 years (annually for poorly controlled hypertension)
3. See NICE CKD Assessment and Management for uACR testing in other health conditions



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3 key actions within 3 months to save lives (3 in 3)

LKN CKD Optimisation Pathway

In adults with Type 2 diabetes and CKD

(eGFR 20–90ml/min/1.73m^2)

ACTION 1 (Month 1)
Maximum intensity RAS / RAAS blockade

Start ACE-inhibitor or ARB and titrate to maximum tolerated licensed dose *(NICE, NG203)* within one month
Ensure the patient is on a high intensity statin, unless contraindicated.

ACTION 2 (Month 2)
Initiate SGLT-2 inhibitor according to NICE guidance (see next page)

Consider/ counsel on risks of diabetic ketoacidosis (which may be euglycaemic), sick day rules, risk of UTI/fungal infections. Consider adjusting sulfonylureas/insulin where eGFR >45ml/min and
HbA1c < 58mmol/mol to mitigate risk of hypoglycaemia.

ACTION 3 (Month 3)
Initiate further blood pressure agent to target <140/90mmHg unless uACR >70mg/mmol (then 120-129/80mmHg)

If BP remains above target initiate 2nd line BP agents as per NICE guidance (*NG203/ NG136)*
Consider Finerenone as an add on therapy in patients with eGFR 25-60ml/min, uACR>3mg/mmol and potassium<5mmol/l

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3 key actions within 3 months to save lives (3 in 3)

LKN CKD Optimisation pathway for adults with Type 2 Diabetes and CKD (eGFR 20–90ml/min/1.73m^2)

(excluding people with polycystic kidney disease or on immunological therapy for renal disease, and renal transplant patients)

1 Month 1, Visit 1: RAS/ RAAS blockade

- ✓ Initiate Atorvastatin 20mg OD unless contra-indicated
  or
  Increase dose up to 80mg OD (40mg OD in GFR<30ml/min) to achieve target cholesterol level (target: 40% reduction in non-HD cholesterol)
- ✓ Initiate treatment with ACEi (Ramipril 5mg once daily) or ARB (Irbesartan 150mg once daily).
  Increase to maximum licenced dose tolerated to achieve BP <140/90mmHg. If uACR is >70mg/mmol, target 120-129/80mmHg. Other BP agents may need to be reduced to optimise ACEi/ARB dosing.
- ✓ In people with significant frailty, consider individualised BP targets as appropriate.
- ✓ Recheck creatinine and potassium within 2 weeks; accept 30% increase in creatinine or 25% decrease in eGFR with initiation/dose change in ACEi/ARB. If over 25% change in eGFR or K ≥6mmol/l, consult local renal team.
- ⚠ Stop nephrotoxic medications : Advise against use of NSAID's and discuss alternatives

Refer or re-refer to local specialist services at any stage if required

2 Month 2, Visit 2: SGLT2 inhibitor treatment

- ✓ Initiate treatment with SGLT2 inhibitor (as per NICE)
  - Empagliflozin GFR 20-90ml/min
  - Dapagliflozin GFR 25-75ml/min
  - Canagliflozin GFR >30ml/min and uACR>30mmol/l
- ⚠ Counsel patient on sick day rules, the risk of UTI/fungal infections. Suspend SGLT-2i if vomiting, in severe sepsis and peri-operatively.
- ⚠ Counsel on signs and symptoms of diabetic ketoacidosis (DKA). Advise that DKA may be in the context of euglycaemia. Consider adjusting sulfonylureas/insulin in those with eGFR <45ml/min and glycated Hb < 58mmol/mol to mitigate the complication of hypoglycaemia.
  Counsel patient regarding avoidance of foot complications (suspend SGLT-2i if acute foot ulceration/ischaemia develops).

3 Month 3, Visit 3: Continue RAS/RAAS blockade, and optimise blood pressure

- ✓ Initiate further blood pressure agent to target to <140/90mmHg, or 120-129/80mmHg if uACR >70mg/mmol.

Consider Finerenone as add on therapy in those on maximal tolerated/indicated dose of ACE/ARB and SGLT2i in patients with GFR25-60ml/min, residual albuminuria and potassium <5mmol/l.

For more information:

NICE NG203 Chronic Kidney Disease: Assessment and Management

Hypertension in Adults: Diagnosis and Management (NG136)

UK Kidney Association Clinical Practice Guideline: SGLT-2 Inhibition in adults with kidney disease (October 2021)

NICE TA877 Finerenone for treating chronic kidney disease in type 2 diabetes

At each review:

Inform your patient of their eGFR, uACR, BP

Reiterate the meaning of each marker

Discuss progress with each target

Assess adherence with medications and discuss any reasons for non-adherence

Give detailed no added salt diet advice and/or refer to local specialist services

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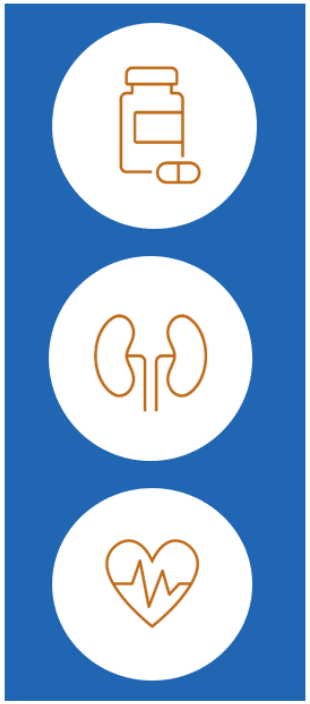
3 key actions within 3 months to save lives (3 in 3)

LKN CKD Optimisation Pathway

In adults without Type 2 diabetes, with CKD

(eGFR 20–45ml/min/1.73m^2 irrespective of the presence of albuminuria or eGFR 45–90ml/min/1.73m^2 *and* uACR>22.6mg/mmol)



ACTION 1 (Month 1)
Maximum intensity RAS / RAAS blockade

First, ensure the patient is on a statin, unless contraindicated.
Start ACE-inhibitor or ARB if indicated, and titrate to maximum tolerated licensed dose (*NICE, NG203*) within one month

ACTION 2 (Month 2)
Initiate SGLT-2 inhibitor according to NICE guidance (see next page)

Counsel patient on sick day rules, and the risk of UTI/fungal infection

ACTION 3 (Month 3)
Initiate further blood pressure agent to target <140/90mmHg unless uACR >70mg/mmol (then <130/80mmHg)

If BP remains above target initiate 2nd line BP agents as per NICE guidance (*NG203/ NG136)*

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3 key actions within 3 months to save lives (3 in 3)

LKN CKD Optimisation pathway for adults without Type 2 Diabetes, with CKD

(excluding people with polycystic kidney disease or on immunological therapy for renal disease, and renal transplant patients)

Month 1, Visit 1: RAS/ RAAS blockade

- ✓ Initiate Atorvastatin 20mg OD unless contra-indicated
  or
  Increase dose up to 80mg OD (40mg OD in GFR<30ml/min) to achieve target cholesterol level (target: 40% reduction in non-HD cholesterol)

  Indications for ACEi or ARB therapy:
  uACR>70mg/mmol or >30mg/mmol if hypertensive

- ✓ Initiate treatment ACEi (Ramipril 5mg once daily) or
  ARB (Irbesartan 150mg once daily) unless contraindicated.
  Increase to maximum licenced dose tolerated to achieve BP <140/90mmHg. If uACR is >70mg/mmol, target 120-129/80mmHg. Other BP agents may need to be reduced to optimise ACEi/ARB dosing.

- ✓ In people with significant frailty, consider individualised BP targets as appropriate.

- ✓ Recheck creatinine and potassium within 2 weeks; accept 30% increase in creatinine or 25% decrease in eGFR with initiation/dose change in ACEi/ARB. If over 25% change in eGFR or K ≥6mmol/l, consult local renal team.

- ⚠ Stop nephrotoxic medications : Advise against use of NSAID's and discuss alternatives

Refer or re-refer to local specialist services at any stage if required

Month 2, Visit 2: SGLT2 inhibitor treatment

- ✓ Initiate treatment with SGLT2 inhibitor (as per NICE)
  - Empagliflozin: GFR 20-45ml/min, irrespective of proteinuria or GFR 45-90ml/min AND uACR>22.6mmol/l
  - Dapagliflozin: GFR 25-75ml/min and uACR>22.6mmol/l

- ⚠ Counsel patient on sick day rules, the risk of UTI/fungal infections. Suspend SGLT-2i if vomiting, in severe sepsis and peri-operatively.

Month 3, Visit 3: Continue RAS/RAAS blockade, and optimise blood pressure

- ✓ Initiate further blood pressure agent to target to <140/90mmHg, or 120-129/80mmHg if uACR >70mg/mmol.

For more information:

NICE NG203 Chronic Kidney Disease: Assessment and Management

Hypertension in Adults: Diagnosis and Management (NG136)

Dapagliflozin for treating CKD NICE TA775

UK Kidney Association Clinical Practice Guideline: SGLT-2 Inhibition in adults with kidney disease (October 2021)

At each review:

Inform your patient of their eGFR, uACR, BP	Reiterate the meaning of each marker	Discuss progress with each target
Assess adherence with medications and discuss any reasons for non-adherence	Give detailed no added salt diet advice and/or refer to local specialist services	

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References

1. Heerspink HJL, Stefánsson, BV, Correa-Rotter R, et al. Dapagliflozin in patients with chronic kidney disease. *N Engl J Med.* (2020) 383:1436-1446. doi:10.1056/NEJMoa2024816
2. Perkovic V, Jardine MJ, Neal B, Bompoint S, Heerspink HJL, Charytan DM, et al. Canagliflozin and renal outcomes in type 2 diabetes and nephropathy. *New Engl J Med.* (2019) 380:2295–306. doi: 10.1056/NEJMoa1811744

3 key actions within 3 months to save lives (3 in 3)
LKN CKD Early Identification and Optimisation Pathways

References & Acknowledgements

The London Kidney Network reviewed the following guidelines in producing these pathways:

1. Dapagliflozin for treating chronic kidney disease (NICE TA775, published March 2022)
2. Empagliflozin for treating chronic kidney disease (TA942 Published: 20 December 2023)
3. Chronic Kidney Disease: Assessment and Management (NICE guideline NG203, updated November 2021)
4. UK Kidney Association Clinical Practice Guideline: Sodium-Glucose Co-Transporter-2 (SGLT-2) Inhibition in Adults with Kidney Disease (published October 2021)
5. Clinical Practice Guidelines for management of hypertension and renin-angiotensin-aldosterone system blockade in adults with diabetic kidney disease: 2021 update (UK Kidney Association and Association of British Clinical Diabetologists)
6. Hypertension in adults: diagnosis and management (NICE guideline NG136, updated March 2022)
7. Kidney disease a UK public health emergency (UKKA)

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