Health Innovation
North East and North Cumbria

facts.ckd
Find Assess Correct Treat Sustain
Chronic Kidney Disease

Optimising the management of patients with Chronic Kidney Disease

Tuesday 16th July 2024 12.00-13:00

House Keeping

- Please ensure your microphone and video are turned off during the session. This is to avoid any disruption during presentations and to assist with the quality of the connection.
- If you need to take a break, please feel free to drop off the call at any time and re-join.
- Live captions are available if required.
- The event is being recorded and will be shared.
- Please ask any questions you have through the chat facility. We will try to address questions during the event, but if we don't manage to do this we will follow up after the event.
- If you cannot see the chat, please email your question/s to sarah.black@healthinnovationnenc.org.uk

Agenda

12.00 – 12.05 facts.ckd and HIN Strategic Priorities NENC
Alex Wood, Network Manager, Renal Operational Delivery Network,
North East and North Cumbria(Chair)

12.05 – 12.25
Barry Todd, Pharmacist Practitioner, Wallsend PCN Pharmacy Lead and Clinical Champion for Primary Care – Cardiovascular Disease, HI NENC

12.25– 12.45
Dr Will Hinchliffe, Consultant in Renal & General Medicine, South Tyneside and Sunderland NHS Foundation Trust and Nadia Malik, Pharmacist Practitioner, North Stockton PCN

12.45 Q&A for Panel

13.00 Close

Recap: facts.ckd Webinar Series

Chronic Kidney Disease – Detect, Protect, Perfect

Session 1 – Thursday 7th March

This session focused on what is CKD and those most at risk, the importance of CKD as a cardiovascular risk factor and an introduction to the resources available for practices to support the implementation.

Webinar recording and summary available here:
Chronic Kidney Disease - Detect, Protect, Perfect - Health Innovation NENC

Using digital systems to detect and manage patients for CKD

Session 2 – Tuesday 23rd April

This session focused on using HI NENC resources to support CKD case finding, correct coding and management:
CDRC for CKD – how to use this in the context of multimorbid QoF fulfilment.

Webinar recording and summary available here:
Using digital systems to detect and manage patients for CKD - Health Innovation NENC

Optimising the management of patients with Chronic Kidney Disease

Session 3 – Tuesday 16th July

This session is focusing on how to 'Perfect' the care of patients with CKD who have the greatest need for intervention, monitoring or referral. Showcasing replicable work being done now by pharmacists and doctors in our region.

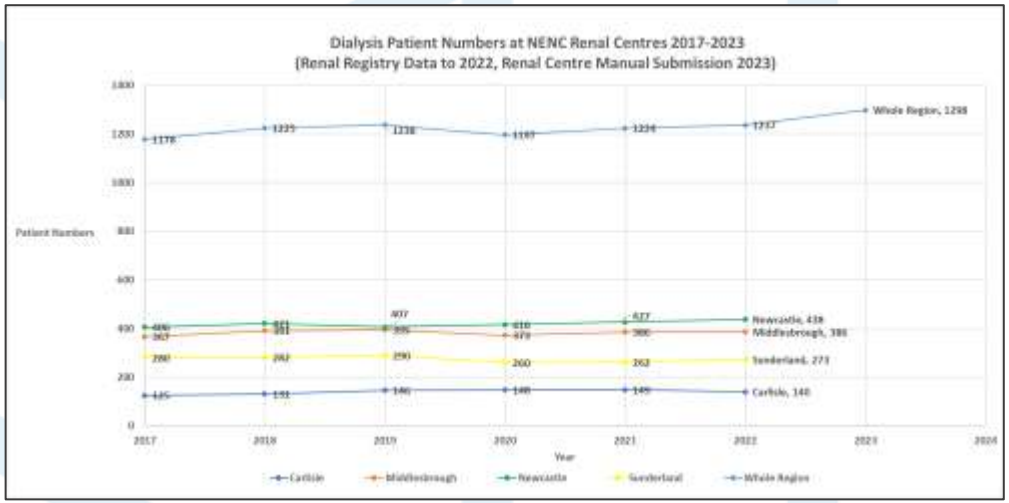
Webinar recording and summary to be made available after the event.

Recap: The NENC Kidney Patient Population

Known Adult CKD Patients: 127,181, 4.9% QOF 18+ prevalence vs. 4.2% in England as a whole. HI NENC aims to reach a prevalence of 6.05% by improved detection and earlier diagnosis. (PHE Fingertips Figures for NENC ICB Region and England in 2023)

Adult Kidney Transplant Patients: 1,828 Transplant patients according to the Renal Registry Data Portal (2022 data)

Adult Dialysis Patients: 1298 Dialysis patients (2023 Data returns by Renal Units to NENC Renal Network)



https://fingertips.phe.org.uk/profile-group/cardiovascular-disease-diabetes-kidney-disease/profile/cardiovascular/data#page/1/gid/1938133109/pat/223/ati/221/are/nE54000050/iid/258/age/168/sex/4/cat/-1/ctp/-1/yrr/1/cid/4/tbm/1

https://public.tableau.com/app/profile/ukkidney/viz/KRTdemography/Snapshot?Geography%20parameter=Region&?:render=false

Recap: Mitigating the Growth of RRT Demand (and the consequences of failing to do so)

NHS North East and North Cumbria Renal Operational Delivery Network

Kidney Research UK Report 2023 highlighted the threat to the NHS if current CKD growth trends continue and if they are unconstrained.

Predictions:

2023 costs of Kidney disease to the UK:£7.0 billion

2033 costs of Kidney Disease to the UK (unconstrained):£13.9 billion

(Costs and management of Renal Care are being delegated to regions through the ICBs so this challenge will be both national and regional)

Key interventions recommended by KRUK:

- Early/improved diagnosis
- Improved CKD management
- Use of SGLT-2 inhibitors
- Increased rates of transplantation (out of scope of this talk but the NENC Renal Network is actively working to streamline the Kidney Transplant pathway, increase transplantation numbers and equity)

Kidney disease: A UK public health emergency

The health economics of kidney disease to 2033

June 2023

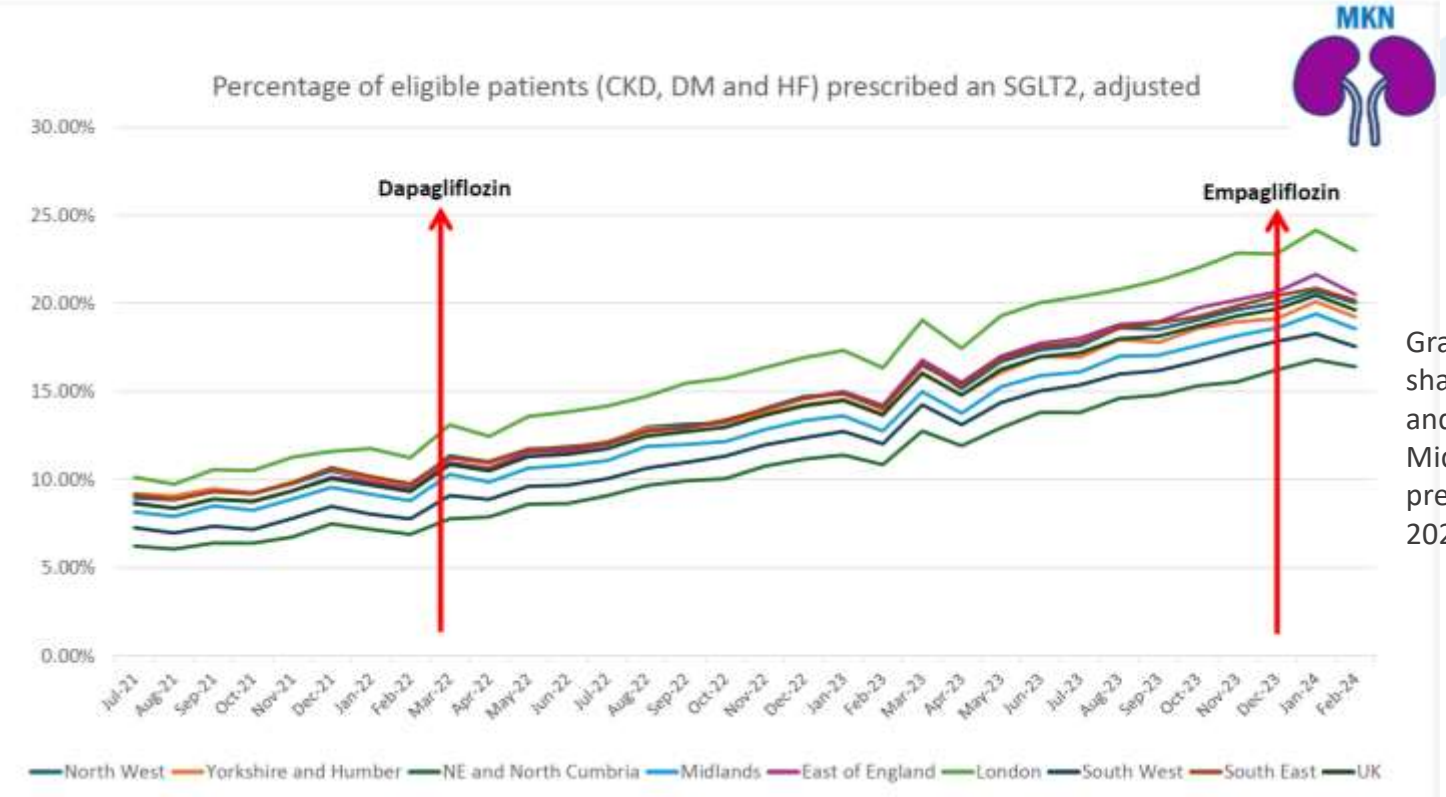
Kidney Research UK

ZS

Health Innovation North East and North Cumbria

Economics-of-Kidney-Disease-full-report_accessible.pdf (kidneyresearchuk.org)

SGLT2i Prescribing: How Our Region is Doing Right Now



Graph kindly produced and shared by Dr Catherine Byrne and Marie Atkins of the Midlands Kidney Network. As presented at UK Kidney Week 2024.

Optimising the management of patients with Chronic Kidney Disease

Barry Todd Clinical Champion for CVD prevention in Primary Care, Health Innovation NENC

A spot of revision - why the focus on CKD?

Definition: a persistent abnormality of kidney function or structure.

Persistent - 3 months or more

Abnormality of Kidney function: an eGFR of <60 ml/min/1.73m2

Abnormality of Kidney structure (i.e. damage): a urine ACR of >3 mg/mmol

QOF 2006-7

- CKD 001 - The contractor establishes and maintains a register of patients aged 18 and over with CKD
- CKD 002 - The percentage of patients on the CKD register in whom the last blood pressure reading (measured in the preceding 12 months) is 140/85 mmHg or less
- CKD 003 - The percentage of patients on the CKD register with hypertension and proteinuria who are currently treated with an ACE-I or ARB
- CKD 004 - The percentage of patients on the CKD register whose notes have a record of a urine albumin:creatinine ratio (or protein:creatinine ratio) test in the preceding 12 months
- DM 005 - The percentage of patients with diabetes, on the register, who have a record of an albumin:creatinine ratio test in the preceding 12 months
- DM006. The percentage of patients with diabetes, on the register, with a diagnosis of nephropathy (clinical proteinuria) or micro-albuminuria who are currently treated with an ACE-I (or ARBs)

QOF 2024-25

- CKD 005 - The contractor establishes and maintains a register of patients aged 18 or over with CKD with classification of categories G3a to G5 (previously stage 3 to 5)
- CHOL 003 - Percentage of patients on the QOF Coronary Heart Disease, Peripheral Arterial Disease, Stroke/TIA or **Chronic Kidney Disease** Register who are currently prescribed a statin, or where a statin is declined or clinically unsuitable, another lipid-lowering therapy
- DM006. The percentage of patients with diabetes, on the register, with a diagnosis of nephropathy (clinical proteinuria) or micro-albuminuria who are currently treated with an ACE-I (or ARBs)

The Challenge – urgent action needed

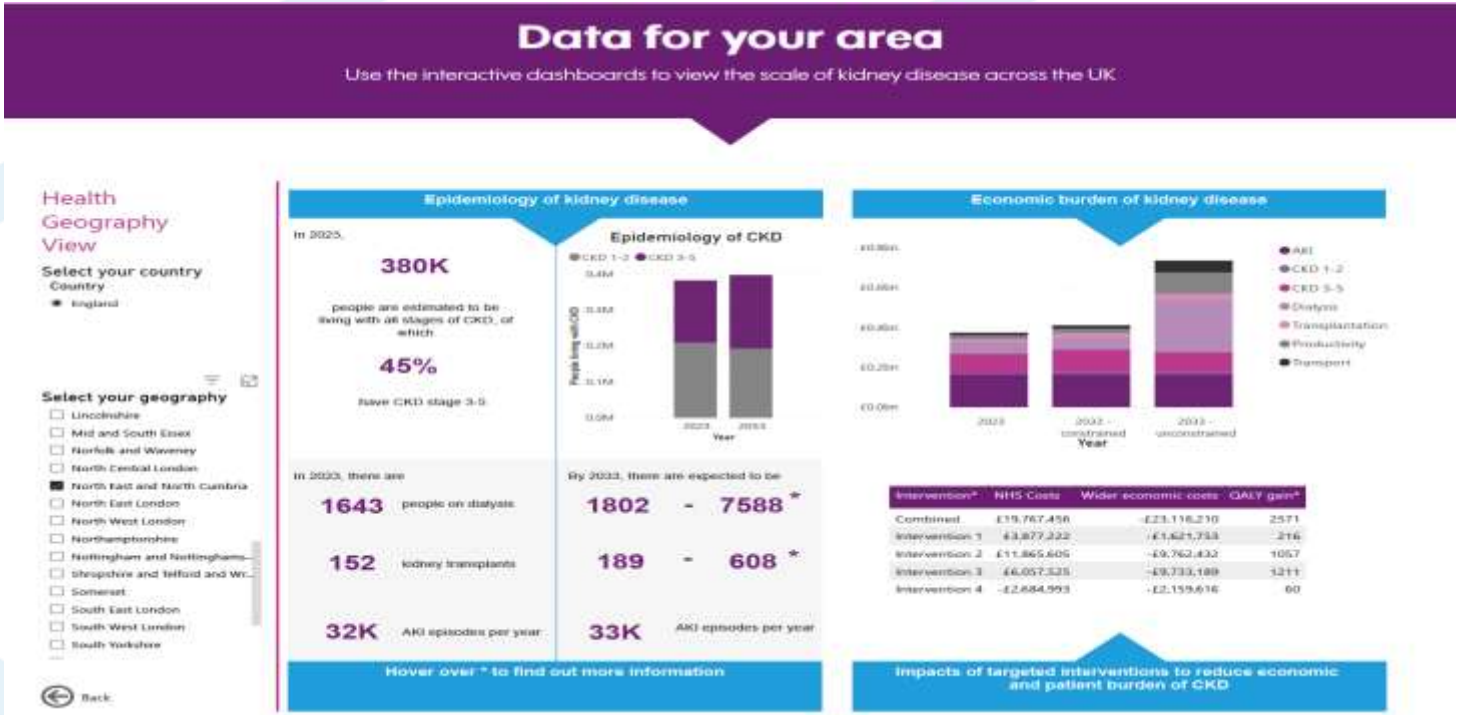
- Kidney disease is costing the UK economy £7 billion a year, costs which could rise to £13.9 billion in just ten years
- Growing numbers of people are at risk of kidney disease due to increased cases of diabetes, heart disease, high blood pressure and obesity
- Significant government action is needed to implement four healthcare interventions that could save 10,000 lives in the UK by 2033

- Intervention 1 Earlier/improved diagnosis (HI issues)
- Intervention 2 High Blood Pressure control using ACEIs and ARBs
- Intervention 3 Use of SGLT-2i to reduce CV events and progression to ESRD
- Intervention 4 Increased rate of pre-emptive transplantation

Sandra Currie, chief executive of Kidney Research UK said: “These figures are a stark warning, kidney disease has reached the point of being a public health emergency for the UK and unless serious action is taken the NHS risks being overwhelmed with demand.”

“There is:

- **no cure** for kidney disease,
- **a transplant does not last a lifetime**; and
- **dialysis** patients face hours of grueling treatment every week, taking them away from loved ones and making it.”



“We know the only hope for stopping the growth of kidney disease and the increasing burden to the health system, the economy and to patients, is **better prevention strategies, earlier diagnosis and better treatment options**, and yet kidney disease is not even included in NHS long term strategic plans.”

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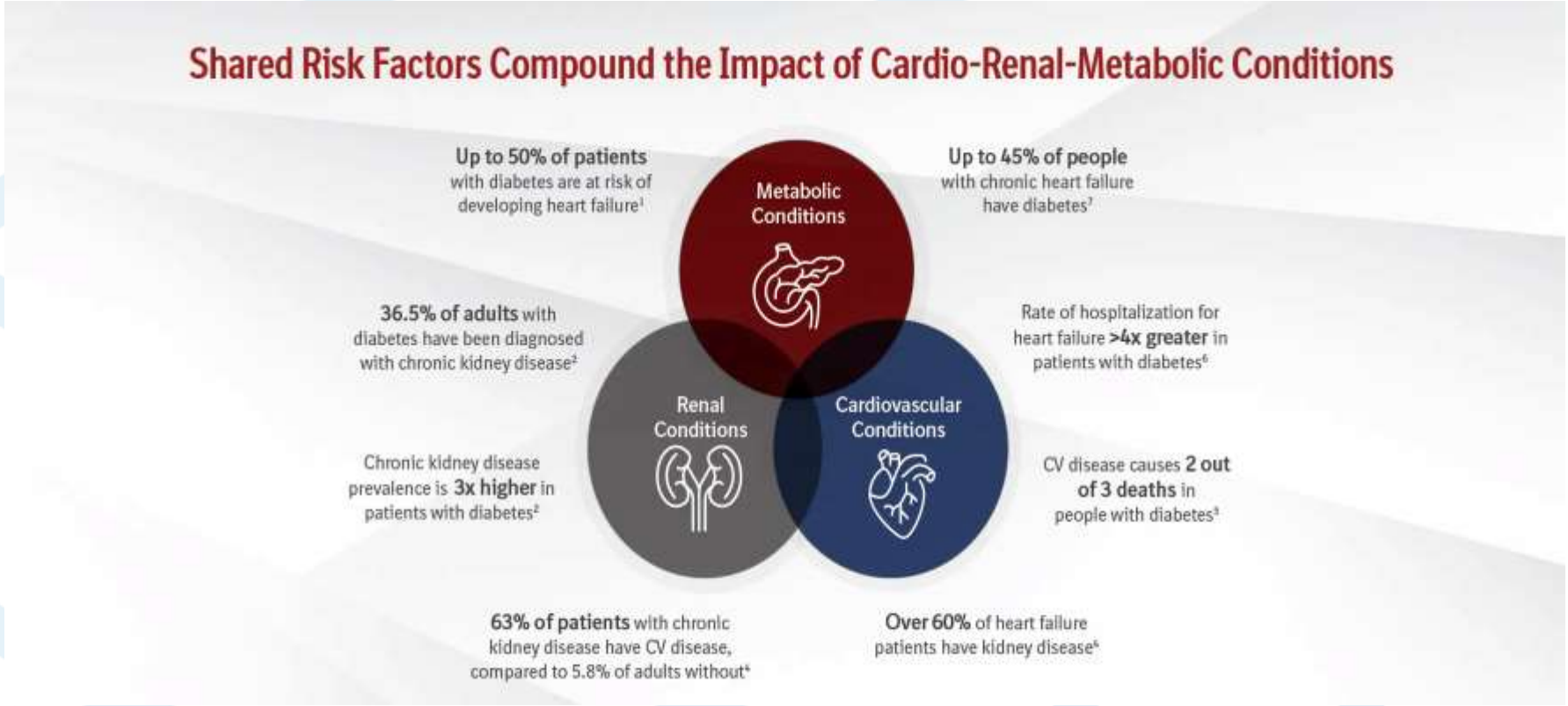
Cardio-Renal-Metabolic



The CaReMe connection

Co-morbidities

- **CKD <——> IHD**
- **CKD <——> HTN**
- **CKD <——> HF**
- **CKD <——> Diabetes**

Medicines Optimisation

Statins

ACEI

SGLT2i

Finerenone

Objectives: Drive down CVD and prevent CKD progression

- **Drive down CVD**
- Be aggressive
- Get the Blood Pressure down
- Get the Cholesterol down
- Get the Blood Sugars down
- Tackle the underlying causes: Lifestyle: **E**at, **E**xercise, **E**xcess fat, **E**x-smoking, **E**asy on the alcohol - never underestimate the value of good lifestyle choices

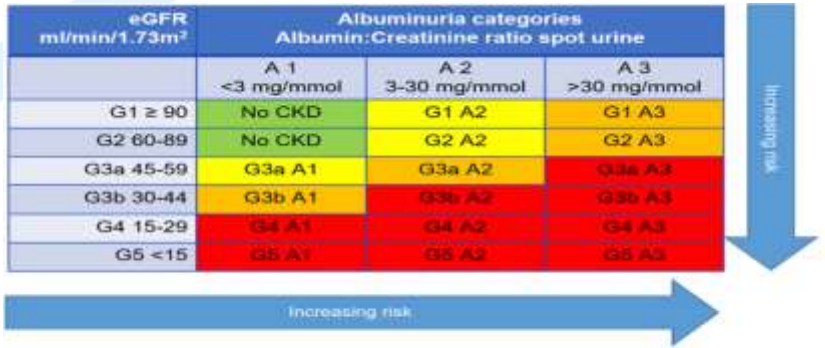
- **Prevent CKD progression**
- Early detection
- Early treatment
- Optimised treatment

Your CKD patient is 20x far more likely to die from a CVD related cause than from ESRD
CKD G3 - 2x risk of CVD
CKD G4 - 3x risk of CVD

Where to start?

Existing patients

- Have you a recall system for CKD?
- Use the template
- Coding
- Are you ‘taking the pee’? Diabetes; Hypertension
- Make every contact count
- How well are we communicating what CKD is, what the patient can do and what we can do?
- https://kidneycareuk.org/kidney-disease-information/kidney-conditions/ckd-chronic-kidney-disease/



Adapted from National Institute for Health and are Excellence. Clinical guideline (CG182)

- Know your numbers and
- Optimise

medscape-uk.co/Hack-CKD

https://www.kidneyfailurerisk.co.uk/

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You don’t know what you don’t know

CDRC - Clinical Digital Resource Collaborative; cdrc.nhs.uk

Name	Population Count	%	Last Run	Search Type	Scheduled	Code System
? CKD 2 Casefinding ----------	0	0%	24-Apr-2024	Patient		N/A
? CKD 2 Casefinding ----------	0		24-Apr-2024	Patient		N/A
? CKD 2.0 Casefinding - All patients with potentially uncoded CKD	103	1%	24-Apr-2024	Patient		N/A
Patient List	103		24-Apr-2024	Patient		N/A
? CKD 2.01 Casefinding - eGFR<60 twice, 3m apart but not coded with ...	41	1%	24-Apr-2024	Patient		N/A
Patient List	99		09-Jan-2024	Patient		N/A
? CKD 2.02 Casefinding - Repeated ACR >=3 but not coded with CKD	27	1%	24-Apr-2024	Patient		SNOMED CT
? CKD 2.021 Casefinding - Repeated ACR>=3 but not coded with C...	20	100%	12-Dec-2023	Patient		N/A
? CKD 2.03 Casefinding - Diabetic kidney disease but not coded with CKD	44	1%	24-Apr-2024	Patient		N/A
? CKD 2.10 Casefinding - All patients with poss CKD - need repeat eGFR ...	63	1%	30-Jan-2024	Patient		N/A
Patient List	69		14-Dec-2023	Patient		SNOMED CT
Patient List (2)	63		30-Jan-2024	Patient		SNOMED CT
? CKD 2.11 Casefinding - eGFR<60 (iso) >4m ago not coded CKD 3-5 - ...	59	1%	30-Jan-2024	Patient		N/A
? CKD 2.12 Casefinding - eGFR<50 (iso) >4m ago not coded CKD 3-5 - ...	10	1%	12-Dec-2023	Patient		N/A
? CKD 2.40 Casefinding - Isolated ACR>=3 not coded with CKD - Repea...	4	1%	30-Jan-2024	Patient		N/A

Name	Population Count	%	Last Run	Search Type	Scheduled	Code System
? CKD 2 Casefinding ----------	0	0%	24-Apr-2024	Patient		N/A
? CKD 2 Casefinding ----------	0		24-Apr-2024	Patient		N/A
? CKD 2.0 Casefinding - All patients with potentially uncoded CKD 172 : 30 Jan 2024	103	1%	24-Apr-2024	Patient		N/A
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? CKD 2.40 Casefinding - Isolated ACR>=3 not coded with CKD - Repea...	4	1%	30-Jan-2024	Patient		N/A

CKD scoping for Wallsend PCN	Search code	VGS	Practice size = 12,715
Patient identification			
EMIS CKD register (March 2024)		482	VGS Prevalence 3.8%; National 6.05% Estimated (Place) 6.4% (range 3.8-9.0)
CDRC results:			
Potentially uncoded CKD	CKD 2.0	172	Extra 35.7% -> 654. Revised Prevalence 5.2%
EGFR<60 - 2 readings 3m apart NOT CODED	CKD 2.01	99	
Repeated ACR = or >3 not coded	CKD 2.02	20	
Diabetic kidney disease not coded CKD	CKD 2.03	46	
One eGFR <60 - needs repeat to confirm/refute CKD	CKD 2.10	63	
One uACR >= 3 needs repeat to conform/refute CKD	CKD 2.40	4	
Coded CKD but no uACR			

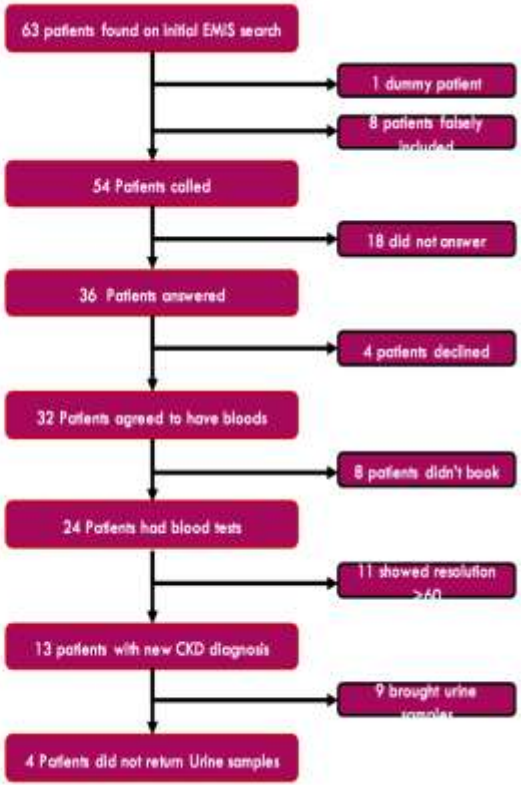
Eligible Medication			
statin			
ACEI /ARB			
SGLT2i			

Proven CKD - repeated eGFR <60 but uncoded

- Pick up any missing uACR, repeat eGFR if > 12m, HBA1c, BP.
- Coding using GxAy
- Inform and educate the patient
- Offer supportive literature
- Optimise
- Statin - atorvastatin 20mg daily
- ACEI. A2 or A3 if diabetes; A3 if not. Titrate to max.dose
- SGLT2. A2 if diabetes ; 22.6 mmol/l if not

Possible CKD - last eGFR <60 - no repeat

RESULTS



Some eGFRs fluctuate either side of 60 so can't give firm CKD diagnosis.

Some have codes such as persistent microalbuminuria with T2DM rather than a GxAy classification or CKD stage z classification

New diagnosis - patient response - surprised but when explained accept it.

However, existing diagnosis - patient hadn't been told - then created problems.

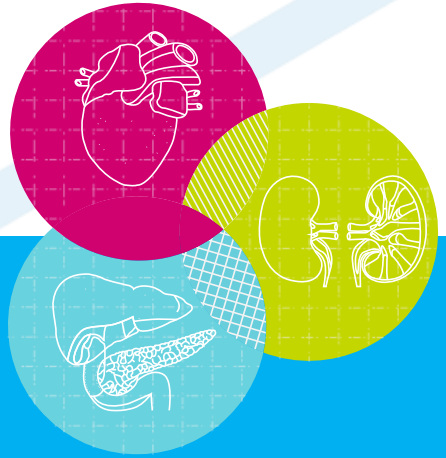
Some are interested in knowing more- others not interested.

Not every clinician in the practice feels articulate enough to explain CKD to the patient

Anticipate - get all bloods/urine done at the same time. Multi-morbid approach

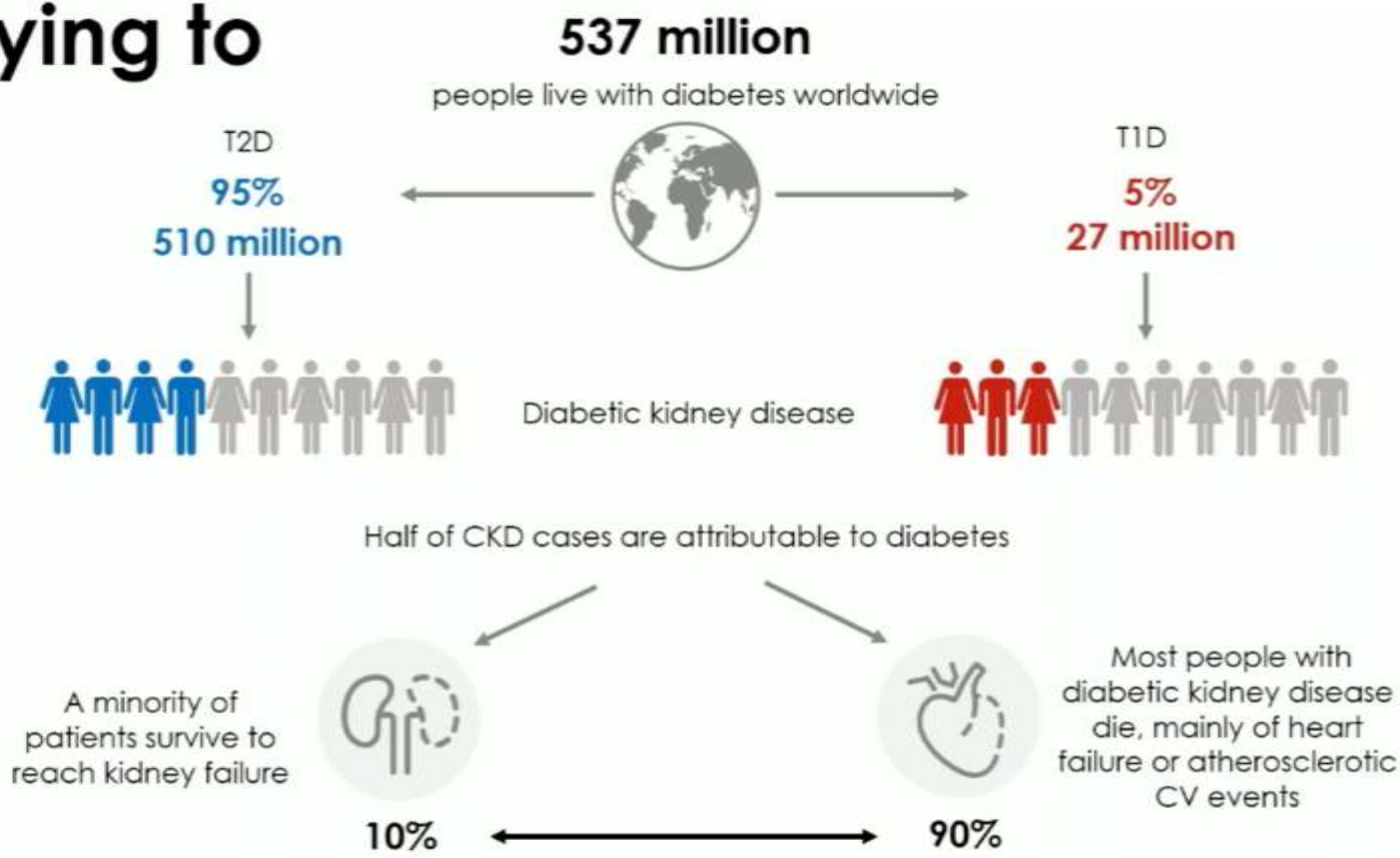
Reality is that a lot are optimised because of good diabetes and lipid management but not all - often t's need crossing and i's need dotting

Chronic Kidney Disease – Local Heroes



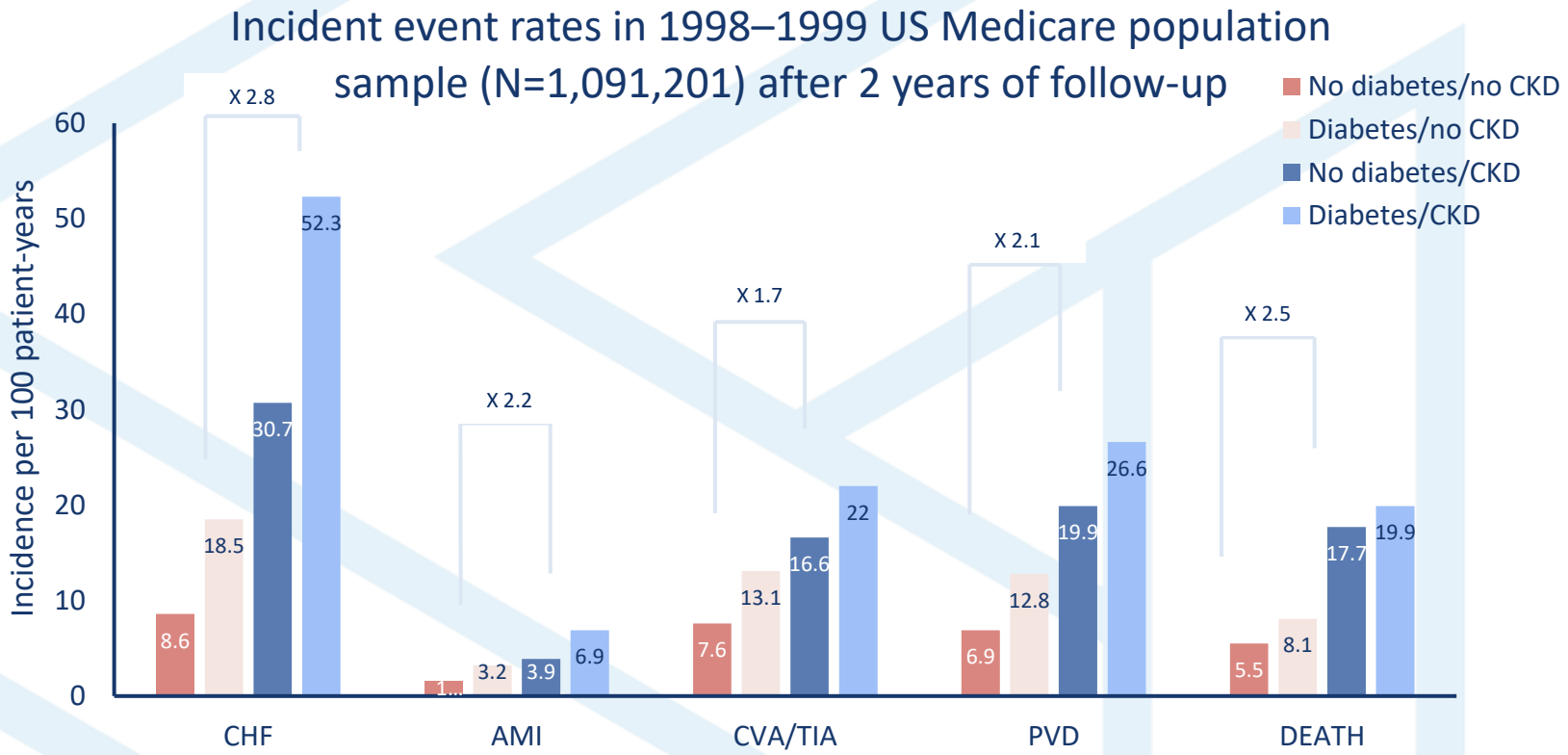
Dr William Hinchliffe – Consultant
Sunderland Royal Hospital
Nadia Malik,
Prescribing Pharmacist
North Tees

What problem are we trying to solve?



CKD, chronic kidney disease; CV, cardiovascular; T1D, type 1 diabetes; T2D, type 2 diabetes.
Tuttle KR et al. *Clin J Am Soc Nephrol* 2022;17:1092–1103.

CKD vs diabetes

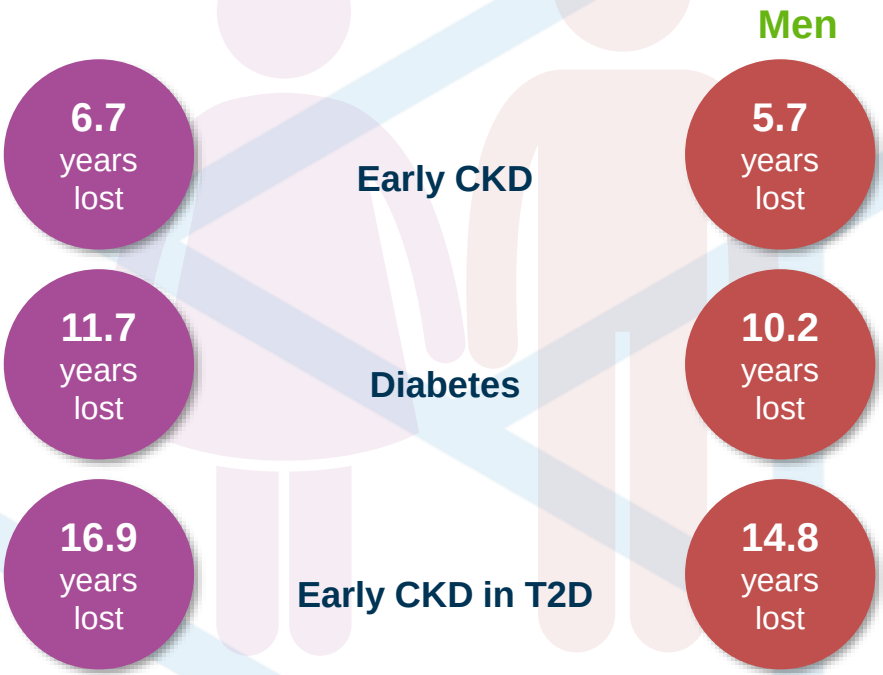


Increases in the values for Diabetes/no CKD to the values for Diabetes/CKD are indicated on the graph.

CHF, congestive heart failure; AMI, acute myocardial infarction; CVA/TIA, cerebrovascular accident/transient ischemic attack; PVD, peripheral vascular disease;

Adapted from Foley RN, et.al. Am. Soc. Nephrol. 2005.

Compared with healthy individuals, having CKD and diabetes can shorten life expectancy by 16 years*



*At age 30 compared to patients without diabetes or CKD. Study population consisted of 543,412 adults who participated in a self-paying comprehensive health surveillance programme between 1994 and 2008
Early CKD, CKD stages 1–3
Wen CP, *et al*. *Kidney Int* 2017;92:388–396

Projected Years of life lost due to diabetes & CKD: Diabetes & CKD is set to increase[1]

1. Adapted from Foreman K et al. Lancet 2018; 392:2052-90
2. Cook, S. et al BMJ Open 2023;13:e065927. doi:10.1136/ bmjopen-2022-065927

~30% patients with diabetes have CKD[2]

Growing prevalence of CKD

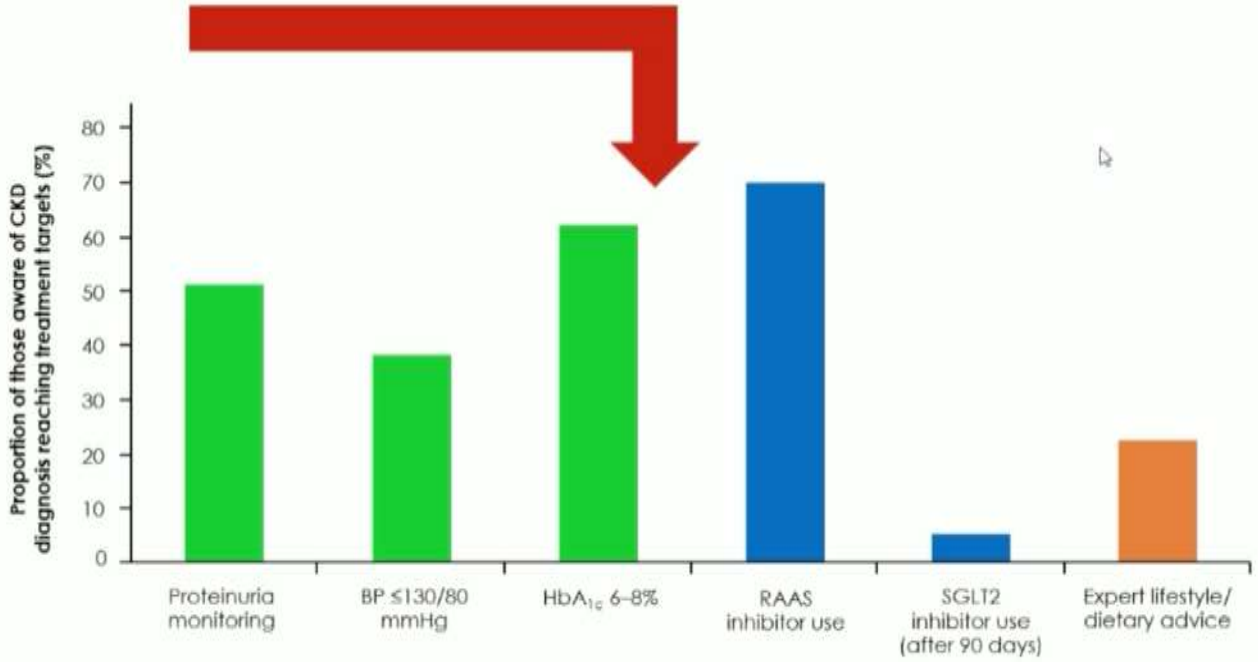
Key fact (1) KRUK

Leading cause in 2016	Leading cause in 2040
1. Ischaemic heart disease	1. Ischaemic heart disease
2. Stroke	2. Stroke
3. Lower respiratory infections	3. Lower respiratory infections
4. Diarrhoeal diseases	. COPD
5. Road injuries	5. Chronic kidney disease
6. Malaria	6. Alzheimer's disease
7. Neonatal preterm birth	7. Diabetes
8. HIV / AIDS	8. Road injuries
9. COPD	9. Lung cancer
10. Neonatal encephalopathy	10. Diarrhoeal diseases
11. Tuberculosis	11. Self-harm
12. Congential defects	12. HIV / AIDS
13. Lung cancer	13. Liver cancer
14. Self-harm	14. Hypertensive heart disease
15.Diabetes	15. Colorectal cancer
16. Chronic kidney disease	16. Tuberculosis

Most people with CKD are unaware of their condition

7–20%

Aware of CKD

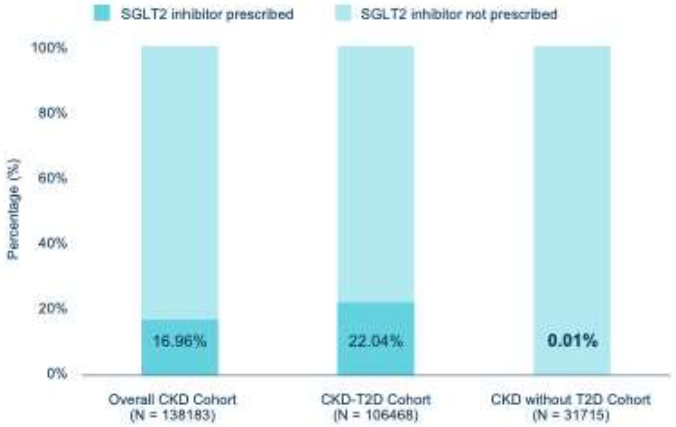


, blood pressure; CKD, chronic kidney disease; HbA_{1c}, glycated haemoglobin; RAAS, renin–angiotensin–aldosterone system; SGLT2, sodium–glucose cotransporter-2.

However, SGLT2i guidelines in CKD have not yet been successfully implemented and utilisation in clinical practice remains low[1]

Whilst the protective CV and kidney benefits of SGLT2is in people with CKD have been well-established, the implementation of updated SGLT2i guidelines and prescribing in the real-world CKD population is low

Only <0.01% of CKD patients without T2D were prescribed SGLT2is



In a 2024 cross-sectional study of adults with CKD registered with UK primary care practices, **only 26.8%** of the overall population had a guideline-directed indication for SGLT2i treatment

Enhanced efforts are urgently needed to **embed SGLT2is into routine care** for people with CKD including **identifying and assessing** suitable individuals and **initiating treatment** in patients

Adapted from: Forbes AK, Hinton W, Feher MD, Elson W, Joy M, Ordóñez-Mena JM, Fan X, Cole NI, Banerjee D, Suckling RJ, de Lusignan S, Swift PA. Implementation of chronic kidney disease guidelines for sodium-glucose co-transporter-2 inhibitor use in primary care in the UK: a cross-sectional study. Eclinicalmedicine. 2024 Feb 1;68.

Finerenone for treating chronic kidney disease in type 2 diabetes

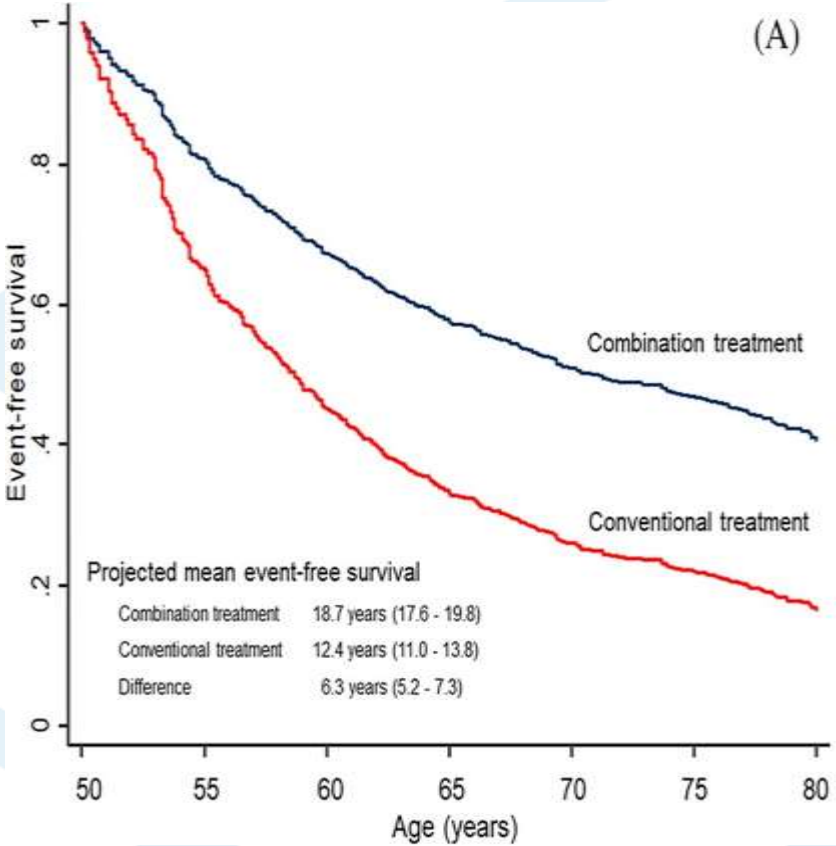
Technology appraisal guidance [TA877] Published: 23 March 2023

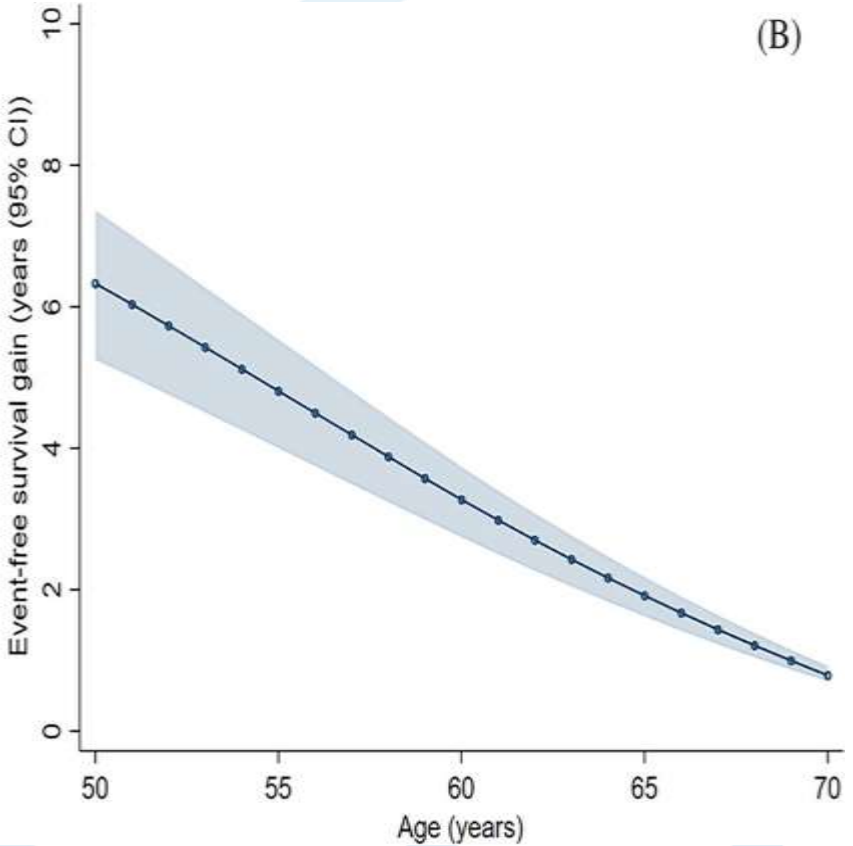
RECOMMENDATION:

1.1 Finerenone is recommended as an option for treating stage 3 and 4 chronic kidney disease (with albuminuria) associated with type 2 diabetes in adults. It is recommended only if:

- It is an add-on to optimised standard care. This should include, unless they are unsuitable, the highest tolerated licensed doses of:
  - angiotensin-converting enzyme (ACE) inhibitors or angiotensin-receptor blockers (ARBs), and
  - sodium–glucose cotransporter-2 (SGLT2) inhibitors, and
- The person has an estimated glomerular filtration rate (eGFR) of 25 mL/min/1.73m^2 or more.

Estimated lifetime benefit of novel pharmacological therapies in patients with type 2 diabetes and chronic kidney disease: A joint analysis of randomized controlled clinical trials

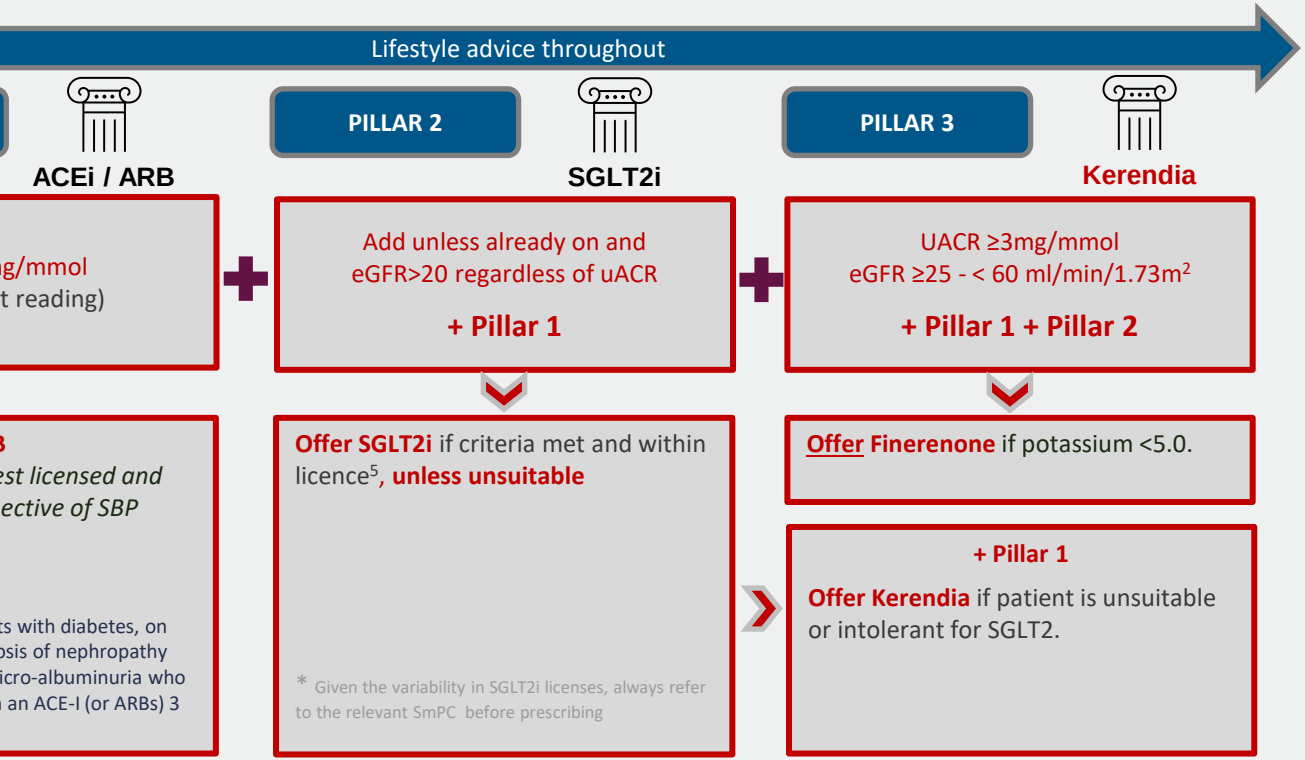




Diabetes Obesity Metabolism, Volume: 25, Issue: 11, Pages: 3327-3336, First published: 14 August 2023, DOI: (10.1111/dom.15232)

A Three Pillars Approach to Management of People with CKD & T2D

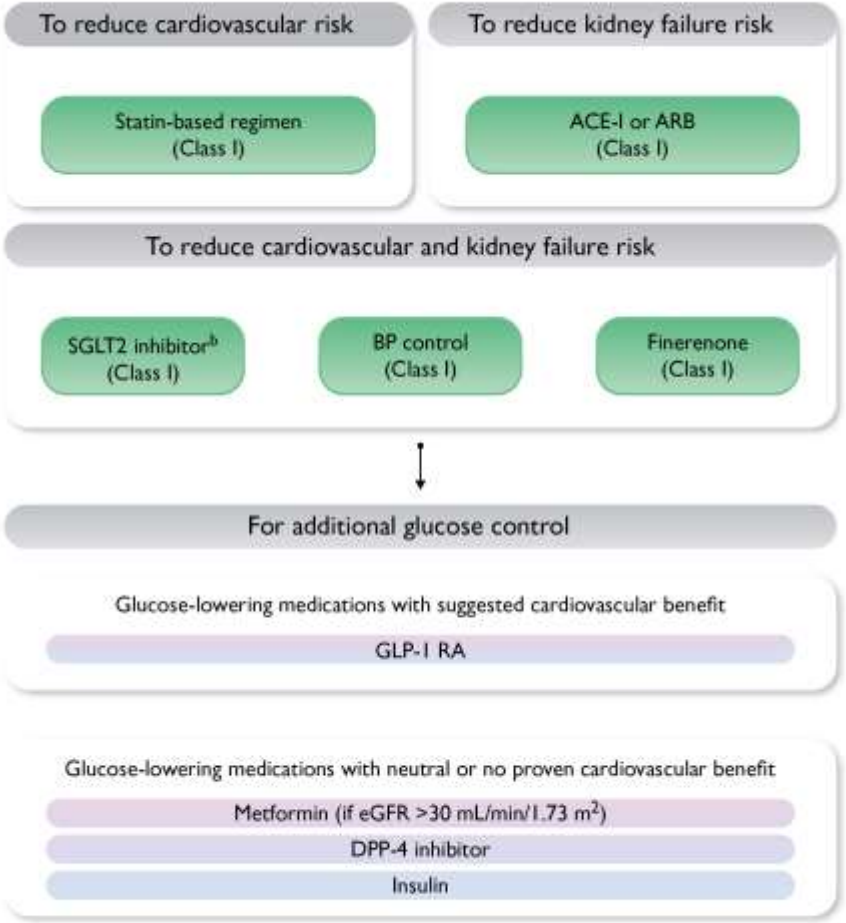
Primary care CKD in adults with T2DM treatment intensification pathway[1,2]



1) NICE. Chronic kidney disease: assessment and management. Last updated: November 2021. Available at: https://www.nice.org.uk/guidance/ng203
2) NICE. Finerenone for treating chronic kidney disease in type 2 diabetes. Last updated: March 2023. Available at: https://www.nice.org.uk/guidance/ta877
3) Quality and Outcomes Framework 2024/25 Publication reference: PRN01104

ACEi: angiotensin-converting enzyme inhibitor, ARB: angiotensin-receptor blocker, CKD: chronic kidney disease, eGFR: estimated glomerular filtration rate, RAS: Renin Angiotensin System, SGLT2i: sodium-glucose cotransporter-2 inhibitor, SOC: standard of care, T2DM: type 2 diabetes mellitus, uACR: urine albumin-creatinine ratio, QOF; Quality and Outcomes Framework

Treatment of patients with T2DM and CKD[a]

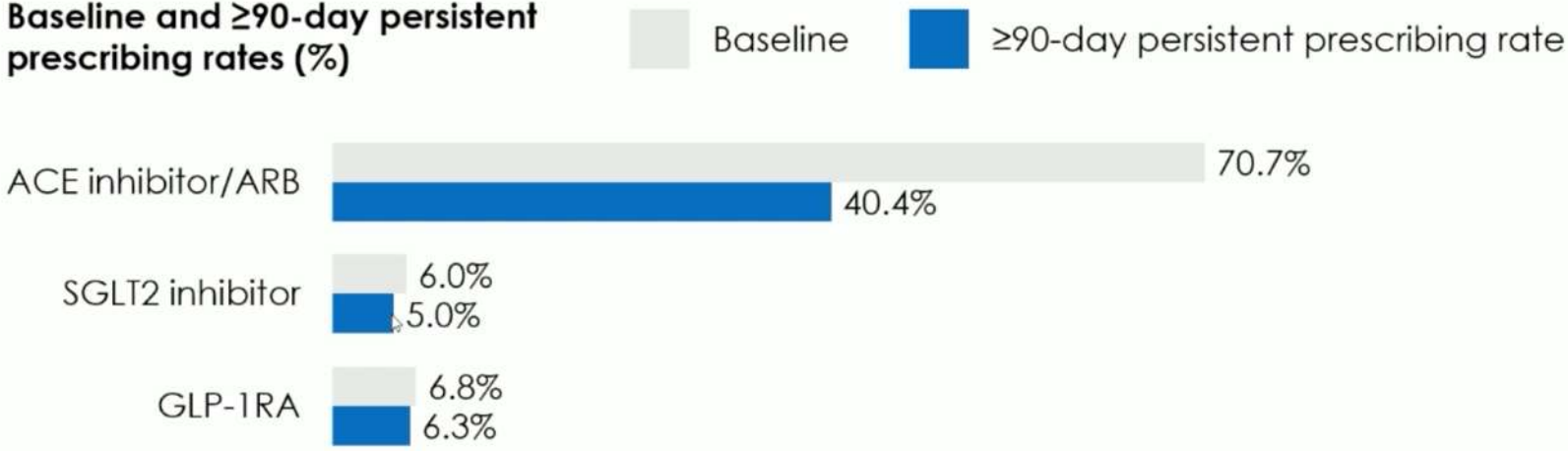


https://www.escardio.org/Guidelines/Clinical-Practice-Guidelines/CVD-and-Diabetes-Guidelines

Prescribing and persistence of guideline-directed medical therapy is suboptimal

US CURE-CKD registry study, an electronic health records database from Providence and UCLA Health system (2019–2020)

Baseline and ≥90-day persistent prescribing rates (%)



ACE, angiotensin-converting enzyme; ARB, angiotensin II receptor blocker; CURE-CKD, Center for Kidney Disease Research, Education, and Hope; GLP-1RA, glucagon-like peptide-1 receptor agonist; SGLT2, sodium–glucose cotransporter-2; UCLA, University of California Los Angeles.

Nicholas SB et al. *Diabetes Obes Metab* 2023;25:2970–2979.

1. Lipids[3–5,15–18]

- For primary prevention, start **atorvastatin 20 mg OD**
- For secondary prevention, do not stop or attenuate dose if eGFR <30 ml/min/1.73 m²
- Offer **aspirin** for **secondary prevention** of CVD.

2. Blood Pressure[3–5,12,18–22]

- **Standard target: SBP <120 mmHg**[A]
- Follow NG136 (**nice.org.uk/ng136**)[18] and NG203 (**nice.org.uk/ng203**)[21] when choosing medications
- When RAASi is first line, choose an **ARB**[B]
- Independent of BP.[18]
  - if uACR >30 mg/mmol: start **ARB** and titrate to maximum tolerated dose
  - if uACR >3 mg/mmol in people with diabetes: start **ARB** and titrate to maximum tolerated dose
    - additional agents may be required
- If eGFR <45 ml/min/1.73 m² when starting or increasing RAASi, check creatinine and electrolytes within 28 days; eGFR drop <25% and creatinine rise <30% can be accepted. NICE endorses potassium binders, as they enable RAASi use in those not on dialysis. If hyperkalaemia encountered, follow Figure 1.

3. Further Medications

Add an **SGLT2i** in eligible groups[5,22] (see Figure 2 and **medscape-uk.co/Hack-SGLT2i**) after RAASi has been titrated to maximum tolerated dose.[22,23]

- Omit in type 1 diabetes.[24]

In those with T2DM and CKD, finerenone[4] is a **nonsteroidal MRA** that can be added as third line to an RAASi and an SGLT2i (or second line if SGLT2i is inappropriate or not tolerated) if eGFR ≥25 ml/min/1.73 m², uACR ≥3 mg/mmol (≥30 mg/g), AND serum potassium concentration is normal.[4,5,19,20,22] See **bit.ly/3v8PX4f**.

4. Further Considerations

- Opportunistically check FBC/HbA$_1$c/lipids/LFTs/weight/BP at the same time as checking U&E and ACR, to support holistic interventions (see **medscape-uk.co/Hack-CVRM**)
- Offer the following vaccinations:[4,5,25]
  - annual **flu vaccine**
  - polyvalent **pneumococcal vaccine** if eGFR <30 ml/min/1.73 m²
  - **hepatitis B vaccination** for adults with GFR <30 ml/min/1.73 m² who are at high risk of progression
- Refer to the *Renal drug handbook*[26] (if accessible) for dosing for antimicrobials, anticoagulants, and hypoglycaemics.

Lifestyle and Dietary Modification

A. Encourage **weight loss** and **smoking cessation**[3–5,15]
B. Advise on **salt restriction** (ideally <2 g of sodium per day, equating to <5 g of sodium chloride)[3–5,9,12]
C. If gastric protection is required, consider **H$_2$RAs** over PPIs, as PPI use has been associated with increased risk of nephritis and progression of CKD[3,5,14]
D. Avoid **NSAIDs**[3–5]
E. Promote **exercise** of at least 150 minutes per week.[3–5,8]

Figure 1: Managing Hyperkalaemia[27,28]

Clinical context	Serum K+ (mmol/l) 5.5–6.1	6.2–6.4	≥6.5
Clinically well, no AKI	Repeat in 14 days	Repeat within 1 working day[1]	Consider urgent referral to hospital[5]
Unexpected result	Repeat within 3 days	Repeat within 1 working day[1]	Consider urgent referral to hospital[5]
Clinically unwell or AKI[3]	Consider if hospital referral is indicated[2]	Urgent referral to hospital	Urgent referral to hospital
Taking RAASi[4]	Consider reducing dose by 50%	Withhold, restart at lower dose when K+ <5.5	Consider urgent referral to hospital

1. Routine blood tests during weekday OOH and weekends are not available in primary care. Depending on clinical circumstances and risk of deterioration, hospital referral or repeat testing at next working day may be reasonable.
2. The clinical circumstances, likely cause, and risk of deterioration will guide need for referral.
3. AKI as defined by KDIGO criteria:
   - AKI stage 1: current creatinine ≥1.5x baseline (or creatinine rise >26 umol/l within 48 hours)
   - AKI stage 2: current creatinine ≥2x baseline
   - AKI stage 3: current creatinine ≥3x baseline (or creatinine 1.5x baseline AND >354 umol/l)
4. RAASi=ACEIs/ARBs/K-sparing diuretics. For patients with decompensated HF in the community, the threshold for withholding RAASi is higher; thus, they may be continued (at reduced dose) when K+ is 6.0–6.4 and if previously withheld, restarted when K+ <6.0.
5. If pseudohyperkalaemia is likely then urgent hospital referral may not be required; please use clinical judgement.

© Edinburgh Renal Unit. Hyperkalaemia (outpatient). **edren.org/ren/handbook/urithdbk/fluids-and-electrolytes/hyperkalaemia-outpatient** (accessed 19 March 2024). Reproduced with permission.

Figure 2: SGLT2i Initiation in CKD

eGFR (ml/min/1.73 m²)	uACR (mg/mmol) <20	≥20
≥60	Suggested in T2DM	Recommended
45–60	Suggested in T2DM	Recommended
20–45	Recommended	Recommended
<20	Suggested[1]	Suggested[1]
Dialysis	Not recommended[1]	

The association between dual RAAS inhibition and risk of acute kidney injury and hyperkalemia in patients with diabetic kidney disease

stematic review and
alysis of the risks of AKI
rkalemia with dual renin
sin aldosterone inhibition
in patients with diabetic
dney disease (DKD)

l RAASi therapy
VS.
ACEi or ARB therapy

als (33,048 patients)
with DKD

Results

Dual RAASi therapy	ACEi + ARB	ACEi/ARB + non-steroidal MRA	ACEi/ARB + steroidal MRA
	Pooled risk ratio (95% CI) vs. single ACEi or ARB therapy		
AKI	1.48 (1.23–1.79)	0.97 (0.81–1.16)	1.30 (0.69–2.44)
Hyperkalemia	1.97 (1.32–2.94)	2.05 (1.84–2.28)	5.42 (2.15–13.7)

ACEi: angiotensin-converting enzyme inhibitors, ARBs: angiotensin II receptor blockers, MRAs: mineralocorticoid receptor antagonists.

Dual therapy with an ACEi/ARB and non-steroidal MRAs have no additional risk of AKI but a similar risk of hyperkalemia, which is lower than dual therapy with an ACEi/ARB and steroidal MRAs

Whitlock, R. *et al.*
NDT (2023)
@NDTSocial

1. Assess creatinine before initiation or change in RAASi dose → **2. Check creatinine (together with potassium and electrolytes) 2-4 weeks after** → **3. If creatinine increases, assess magnitude and manage**

Note: increase in serum creatinine can be a result of a haemodynamic RAASi effect

Creatinine increases <50% from baseline
(as long as and eGFR remains >20ml/min)

- Acceptable, no changes in RAASi needed if kidney function stabilizes
- Further assess creatinine as part of the long-term monitoring

Creatinine increases between 50 to 100%
(as long as eGFR remains >20ml/min)

- Reduce dose to half or temporary withhold RAASi
- Exclude reversible causes (refer to info #2)
- Reassess kidney function after 2-4 weeks
  - If improvement, increase dose or re-introduce at half dose (check creatinine again in 2-4 weeks)

Creatinine increases more than 100%

- Temporarily withhold RAASi
- Exclude reversible causes (refer to info #2)
- Reassess kidney function in 2-4 weeks
  - If improvement, re-attempt the doses (check creatinine in 2-4 weeks)

Note: Keep in mind that discontinuation and reducing doses of RAASi can worsen outcomes in HF and CKD

- *In the management of HF as a primary indication for RAASi a more aggressive approach is preferred if kidney function is preserved*
- *In advanced CKD a more conservative approach may be necessary*

Viviane Calice-Silva @CaliceViviane; Fadi Jouhra; Suman Behera @DrSumanBehera

Chronic hyperkalemia Management

Mild (5.0-5.5)

Important measures to manage hyperkalemia

- Review K^+ inducing medications and eliminate K^+ supplements
- See information on dietary approaches to hyperkalemia in this tool

RAASi-specific management

- If on RAASi, aim to maintain RAASi dose and monitor K^+ levels
- Do not start RAASi if not already prescribed when serum K^+ >5.0mmol/L
- If indication is for heart failure, consider switch to ARNI from RAASi if available

Moderate (>5.5-6.0)

Important measures to manage hyperkalemia

- Review K^+ inducing medications and eliminate K^+ supplements
- See more information on dietary approaches to hyperkalemia in this tool
- Consider loop diuretics if not prescribed for patients with volume overload, increase loop diuretic dose if already previously prescribed
- Correct acidosis if present

RAASi-specific management

- Consider K^+ binder initiation if available to avoid dose reduction
- If on RAASi, and K^+ binder not available, reduce RAASi dose and monitor K^+ levels

Severe (>6.0)

RAASi-specific management

- Need to reduce K^+ to <5.0.
- Withhold RAASi and evaluate eGFR, bicarbonate and K^+ to determine whether RAASi could be restarted
- Consider K^+ binder initiation if available to facilitate RAASi reinitiation

Transforming the CKD Pathway

Improve diagnosis & coding

Education & awareness
Data / Coding validation
QI cycles (ICS/ODN-level)

Understand the risk

Kidney Failure Risk Equation (KFRE)
Patient-facing resources

Modify disease trajectory

AKI minimisation

Ongoing lifestyle changes
BP
HbA1c
Medicines Optimisation

ACEi/ARB +/- MRA for BP SGLT2i non-steroidal MRA
GLP-1 RA. Endothelin antagonism

Type 2 Diabetes Cardiovascular Renal Metabolic Review Checklist

Medscape UK X Guidelines
Primary Care Hacks

Authors: Dr Eimear Darcy, GP Partner, Grange Family Practice Omagh; Dr Kevin Fernando, GP Partner, North Berwick Health Centre and Content Advisor, Medscape Global and UK (email: kfernando@webmd.net)

Consider the following during T2D CVRM shared decision making:

Lifestyle Considerations

- [ ] Identify people at high risk of T2D
- [ ] Assess weight (e.g. BMI or WHR) and discuss individualised weight loss goals as appropriate. Remember to ethnically adjust these goals where indicated[1]
- [ ] Discuss the importance of 24-hour physical behaviours for T2D:[2] sitting/breaking up prolonged sitting, sweating, strengthening, sleep, stepping
- [ ] Strive for remission of T2D if possible,[3] irrespective of weight.[4] Weight loss of 5–10% confers metabolic improvement; weight loss of 10–15% or more can have a disease-modifying effect and lead to remission of T2D[3]

Individualised HbA_{1c} Goals

- [ ] Review the person's current HbA_{1c} and trend, and consider other factors when individualising HbA_{1c} goals, e.g., risks potentially associated with hypoglycaemia and other drug adverse effects; life expectancy; comorbidities; established vascular complications; and patient preference, resources, and support systems[5]
- [ ] See the expert consensus statement on diabetes and frailty for individualising management in older adults and/or adults with frailty and T2D

Kidneys

- [ ] Individualise HbA_{1c} targets in people with diabetic kidney disease. Be aware that all SGLT2is have negligible glucose-lowering effect once eGFR falls below 45 ml/min, so consider adding in an additional glucose-lowering medication such as a GLP-1 RA
- [ ] If eGFR <60 ml/min/1.73 m^2 **or** clinically significant proteinuria (ACR ≥3 mg/mmol) **and** on maximally tolerated dose of ACEi/ARB: consider adding SGLT2i with renal protective benefits,[2] irrespective of HbA_{1c}
  - o see the Primary Care Hack, *Extra-Glycaemic Indications of SGLT2 Inhibitors*
- [ ] In people with T2D and CKD who have persistent albuminuria (ACR >3) despite use of maximally tolerated ACEi/ARB and SGLT2i, consider adding finerenone to reduce the risk of adverse kidney and CV outcomes[6][7][8]
- [ ] If CKD present, offer atorvastatin 20 mg for primary or secondary prevention of CVD[9]
- [ ] Offer aspirin or clopidogrel to adults with CKD for the secondary prevention of CVD,[10] but be aware of the risk of bleeding
- [ ] Consider referral as per NICE criteria, or if 5-year risk of requiring renal replacement therapy is >5% (measured using the Four-Variable Kidney Failure Risk Equation)

Blood Pressure

There is considerable debate around optimal BP targets for people living with diabetes, with several conflicting guidelines published

- [ ] For grade 1 hypertension (people with a clinic SBP 140–159 mmHg and/or a clinic DBP 90–99 mmHg), effective lifestyle changes may delay or prevent the need for pharmacological treatment
  - o for information on effective lifestyle changes, see the Primary Care Hack, *Lifestyle Changes for Managing Hypertension*
- [ ] **First instance:** aim for a HBPM average target of <135/85 mmHg (<140/90 mmHg clinic target) in all people[11]
- [ ] **Provided treatment is well tolerated:** then aim for HBPM average of 125/75 mmHg (130/80 mmHg clinic target) or lower in most people[11]
- [ ] **For adults aged >80 years:** consider a clinic BP target of <150/90 mmHg[12]
- [ ] **For people living with T2D:** start drug treatment with an ACEi/ARB,[12] irrespective of age or ethnic background
- [ ] Measure sitting and standing BP in people with hypertension and T2D.[12] In those with a significant postural drop in BP (i.e., ≥20 mmHg systolic and/or ≥10 mm Hg diastolic that occurs on standing[13]), treat to a BP target based on the standing BP

Note: SGLT2is have a modest impact on BP, lowering it by around 4/2 mmHg[14]

Lipids

- [ ] LDL-C targets for people living with T2D:[15]
  - o moderate risk: <2.6 mmol/l
  - o high risk: ≥50% reduction from baseline **and** <1.8 mmol/l
  - o very high risk: ≥50% reduction from baseline **and** <1.4 mmol/l
- [ ] Patient's QRISK3 is ≥10%: offer atorvastatin 20 mg for primary prevention of CVD[9][16]
- [ ] If LDL-C targets are not achieved on maximally tolerated dose statin, consider combination lipid-lowering therapy e.g., add in ezetimibe, bempedoic acid, PCSK9 inhibitor,[15] or inclisiran
- [ ] Consider icosapent ethyl if the individual has established CVD (secondary prevention) and on statins with fasting TG ≥1.7 mmol/l and LDL-C between 1.04 and ≤2.60 mmol/l[16][17]
- [ ] For secondary prevention of CVD, offer atorvastatin 80 mg[15]

Continued overleaf...

MASLD

- [ ] Non-invasive tests for liver fibrosis risk may be advisable due to the strong association of T2D with MASLD[18][19][20]
- [ ] Consider FIB-4 test to assess for underlying fibrosis risk in people aged <65 years
- [ ] If identified as intermediate or high risk, consider referral to secondary care gastroenterology for transient elastography (FibroScan)
- [ ] Strongly encourage and facilitate weight loss where possible: weight loss 3–5% reduces hepatic steatosis, ≥5–7% can lead to resolution of MASH, and ≥10% improves hepatic fibrosis[21]
- [ ] There is emerging evidence for pioglitazone, SGLT2is, GLP-1 RAs, and the dual GLP-1 and GIP receptor agonist tirzepatide for MASLD[22]

Comorbidities and Life Story

- [ ] Consider presence of:
  - o CVD or high risk of CVD:[23][24]
    - ASCVD (i.e. IHD/TIA/stroke/PVD): if present, offer early combination therapy with metformin and an SGLT2i, irrespective of HbA_{1c}[25]
    - all subtypes of HF: if present, offer early combination therapy with metformin and an SGLT2i, irrespective of HbA_{1c}[26]
    - QRISK3 ≥10% and age >40 years, or presence of hypertension, dyslipidaemia, smoking, obesity, or family history (in a first-degree relative) of premature cardiovascular disease: consider early combination therapy with metformin and an SGLT2i, irrespective of HbA_{1c}[27]
  - o CKD and proteinuria[28][29] (see Kidney section)
  - o obesity:[28][30] both SGLT2is and GLP-1 RAs can facilitate weight loss in people living with T2D
  - o retinopathy:[31] be aware of the possibility of worsening of pre-existing retinopathy if HbA_{1c} is rapidly lowered
  - o OSAHS: these conditions are commonly associated with T2D.[32][33] Consider using the Epworth sleepiness scale and the STOP-BANG questionnaire to exclude underlying OSAHS
- [ ] Educate women of childbearing age that many medications (e.g. ACEIs, ARBs, statins, SGLT2is, and GLP-1 RAs) are contraindicated in pregnancy, and counsel them regarding contraception.[34][35] If planning pregnancy, refer to pre-pregnancy services
- [ ] Consider age, functional and frailty status, occupation, literacy level, and other social determinants of health during shared decision making[36][37][38]

Prescribing Considerations

- [ ] Discuss adherence and if necessary explore barriers/preferences[39][40][41]
- [ ] Review history of hypoglycaemia/hypoglycaemia awareness, DVLA adherence, and CBG monitoring where appropriate, and consider CGM in all people with T2D on insulin[42][43]
- [ ] Sick-day guidance[44][45]:
  - o for people with T2D on insulin
  - o review the SADMANS mnemonic. Consider temporarily pausing these drugs during any significant intercurrent illness, but remind individuals to restart once they are eating and drinking normally and recovered from their illness
- [ ] SGLT2i or GLP-1 RA commenced:
  - o consider reduction in SU or insulin dose. If on insulin, consider cautiously reducing insulin dose, increase CBG monitoring, and contact DSN as required[42][43][46][47]
  - o consider adjustment of any dose of diuretic when introducing an SGLT2i[28][48][49]
- [ ] Ensure appropriate/optimal prescribing; consider de-intensifying in the context of functional dependence and frailty[50]

MDT Referrals

- [ ] DSMES (e.g. DESMOND or X-Pert)
- [ ] Consider any locally available physical activity referral pathway
- [ ] Regular retinopathy screening
- [ ] Regular foot screening
- [ ] Consider secondary care as required, e.g., diagnostic uncertainty or treatment option advice
- [ ] Consider dietician referral, and psychological counselling for diabetes distress

Coding

- [ ] Code identified conditions as 'priority 1'
- [ ] Do not code 'diabetes resolved'; instead, code 'diabetes in remission'

Follow Up

- [ ] Goal setting—Diabetes UK information prescriptions can help to facilitate goal setting, information sharing, and care planning
- [ ] Set a defined timescale for follow up and consider regular monitoring as clinically indicated
- [ ] Regular monitoring of weight, BP, HbA_{1c}, renal function (both eGFR and urinary ACR), and lipid profile as clinically indicated (at least annually)

ACEi=angiotensin-converting enzyme inhibitor; **ACR**=albumin to creatinine ratio; **ARB**=angiotensin receptor blocker; **ASCVD**=atherosclerotic cardiovascular disease; **BP**=blood pressure; **CBG**=capillary blood glucose; **CGM**=continuous glucose monitoring; **CHF**=congestive heart failure; **CKD**=chronic kidney disease; **CVD**=cardiovascular disease; **CVRM**=cardiovascular, renal, and metabolic; **DBP**=diastolic blood pressure; **DESMOND**=diabetes education and self-management for ongoing and newly diagnosed; **DSMES**=diabetes self-management, education, and support; **DSN**=diabetes specialist nurse; **DVLA**=Driver and Vehicle Licensing Agency; **eGFR**=estimated glomerular filtration rate; **FIB-4**=Fibrosis-4; **GLP-1 RA**=glucagon-like peptide-1 receptor agonist; **HbA_{1c}**=haemoglobin A_{1c}; **HBPM**=home blood pressure monitoring; **HDL-C**=high-density lipoprotein cholesterol; **HF**=heart failure; **HFpEF**=heart failure with preserved ejection fraction; **HFrEF**=heart failure with reduced ejection fraction; **IHD**=ischaemic heart disease; **LDL-C**=low-density lipoprotein cholesterol; **MASH**=metabolic dysfunction-associated steatohepatitis; **MASLD**=metabolic dysfunction-associated steatotic liver disease; **MDT**=multidisciplinary team; **OSAHS**=obstructive sleep apnoea hypopnoea syndrome; **PAMS**=Physical Activity Referral Service; **PVD**=peripheral vascular disease; **QRISK3**=Cardiovascular Risk Score 3; **SGLT2i**=sodium–glucose cotransporter-2 inhibitor; **SBP**=systolic blood pressure; **STOP-BANG**=snoring history, tired during the day, observed stop breathing while sleep, high blood pressure, BMI >35 kg/m^2, age >50 years, neck circumference >40 cm, and male gender; **SU**=sulfonylurea; **TIA**=transient ischaemic attack; **TG**=triglyceride; **T2D**=type 2 diabetes; **WHR**=waist to hip ratio

For references, view this Primary Care Hack online at bit.ly/Nask-CVRM

@DrEimearDarcy @DrKevinFernando @GLNS_Medscape medscape.co.uk/guidelines

Last updated: September 2025

CKD Project

Queens Park Medical Centre

Nadia Malik (Pharmacist- IP)
Kellie Butler (Pharmacy Technician)
Dr Will Hinchcliffe (Nephrologist)

Searches

CDRC search identified that there was a potential 105 patients (7.9%) with diabetes and potentially uncoded albuminuria.

CKD 2.01 Casefinding - eGFR<60 twice, 3 months apart but not coded with CKD3-5 # (CDRC Quality / Renal)

CKD 2.02 Casefinding - Repeated ACR>=3 but not coded with CKD # (CDRC Quality / Renal)

Overlapped searches with support from Oberoi and Boehringer Ingelheim to prioritise and stratify patients- manageable chunks

NEXT »

Identify → Searches to identify high risk patients

Screen → Ensure patients have both eGFR and uACR

Diagnose → Standardised coding

Intervene → Optimise medication- Implementing 3 pillars

NEXT »

Template content

Message

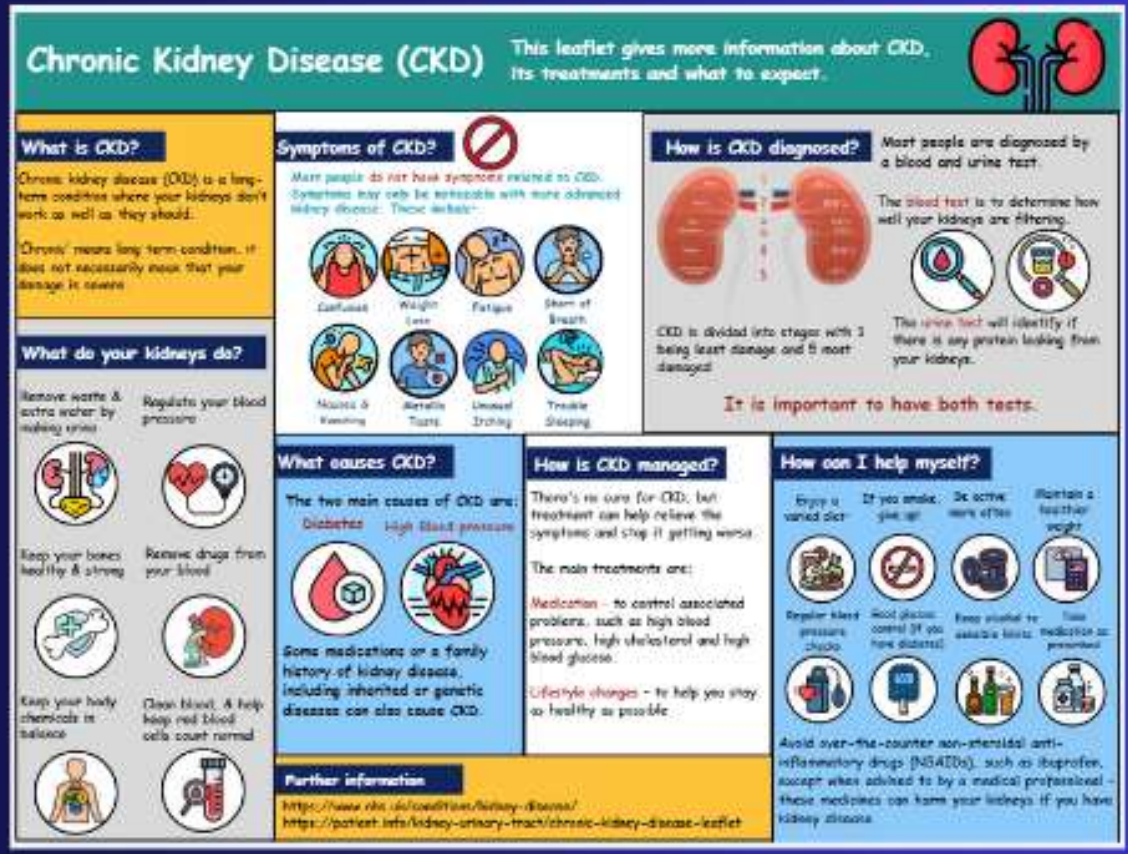
Dear [Patient Name],

We have an important update about managing Chronic Kidney Disease (CKD) in our practice. To give you the best care possible, we use specific codes to record CKD in your medical record.

Most cases of CKD are mild or moderate and most people do not have diseases of their kidneys but have normal aging of their kidneys.

Please click the link below or contact the practice for more information on CKD.

Thanks, Nadia Malik
Queens Park Medical Ctr



NEXT

RESULTS

Screening and Early Detection

Patient Education

Management and Monitoring

Collaboration and Referral

CHALLENGES

Low patient awareness and engagement.

Limited resources and staffing.

Variability in knowledge and adherence to guidelines.

Managing comorbidities effectively.

QoF does not align with latest guidelines

Searches are only as effective as coding

NEXT »

Q&A session

- Any questions?