# PCDS Wales 2023

# Diabetes and the kidneys

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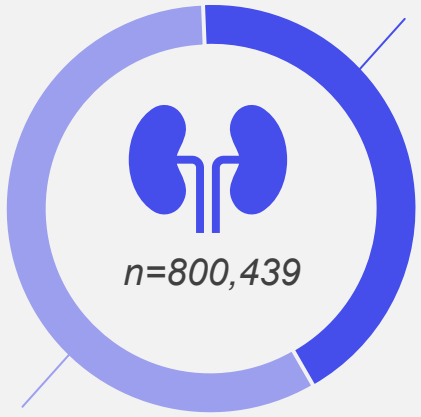
## Content

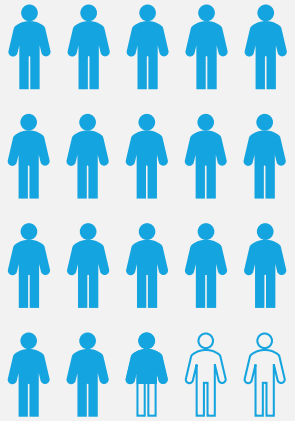
- Epidemiology
- Definition
- Classification
- **Treatment options**
- **Specialist referral**
- **Primary care & specialist collaboration**
- Interpretation of investigations

# The vast majority of people with type 2 diabetes and CKD are managed in primary care[1]

>40%

of people with T2D have CKD[3]



87%

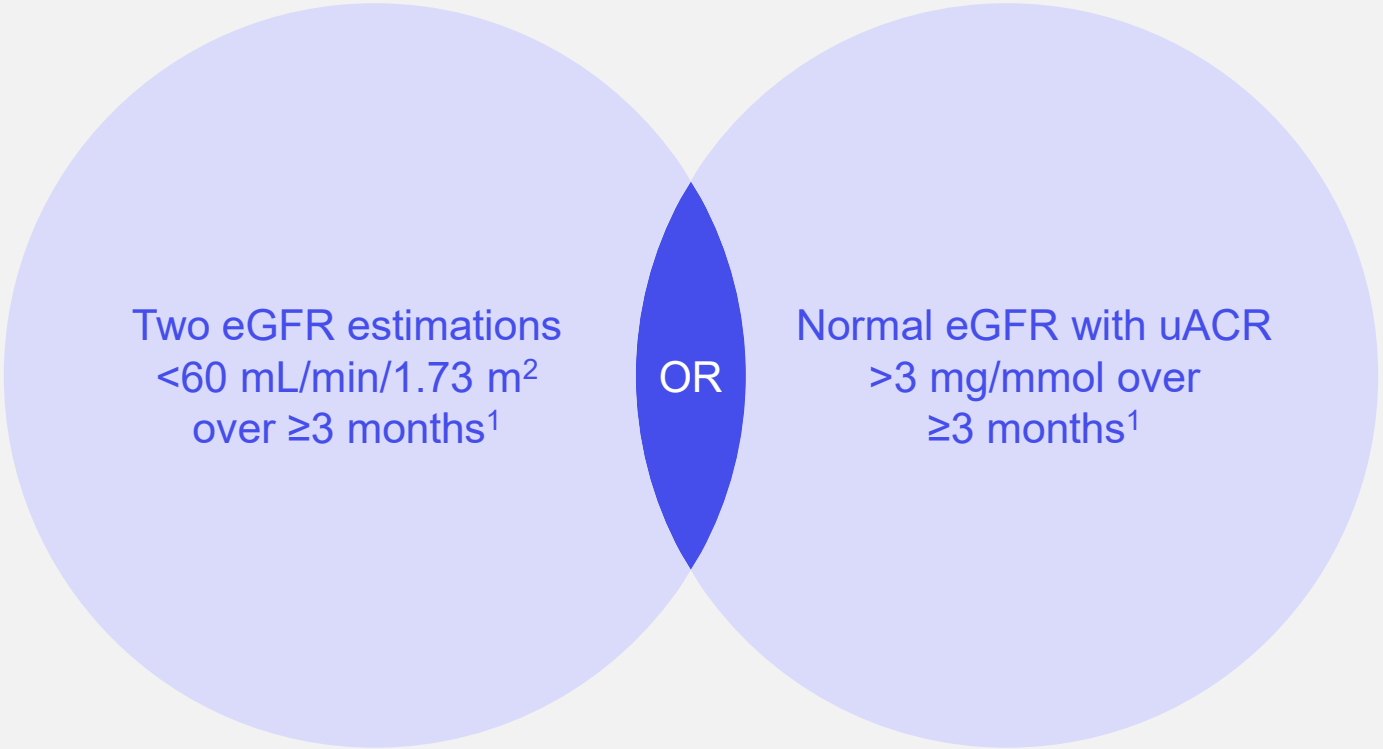
of all people with stage 3–5 CKD* in England are managed in primary care.[2]

**In its early stages CKD presents with few symptoms, which can make it difficult to diagnose[1]**

*Stages 3–5 CKD based on NICE CKD guideline referral criteria.
CKD = chronic kidney disease; NICE = National Institute for Health and Care Excellence; T2D = type 2 diabetes.
1. National Chronic Kidney Disease Audit: National Report. Available at: https://www.lshtm.ac.uk/files/ckd_audit_report.pdf. 2. Data on file, AstraZeneca. 3. Hill CJ, *et al. Diabet Med* 2014;31:448–454.

# What is chronic kidney disease?

Abnormalities of kidney structure or function, present for >3 months, with implications for health




eGFR = estimated glomerular filtration rate; uACR = urine albumin:creatinine ratio.

Kidney Disease Improving Global Outcomes (KDIGO) CKD workgroup. *Kidney Inter Suppl* 2013;3:1–150.

# Kidney disease can significantly impair cardiac function

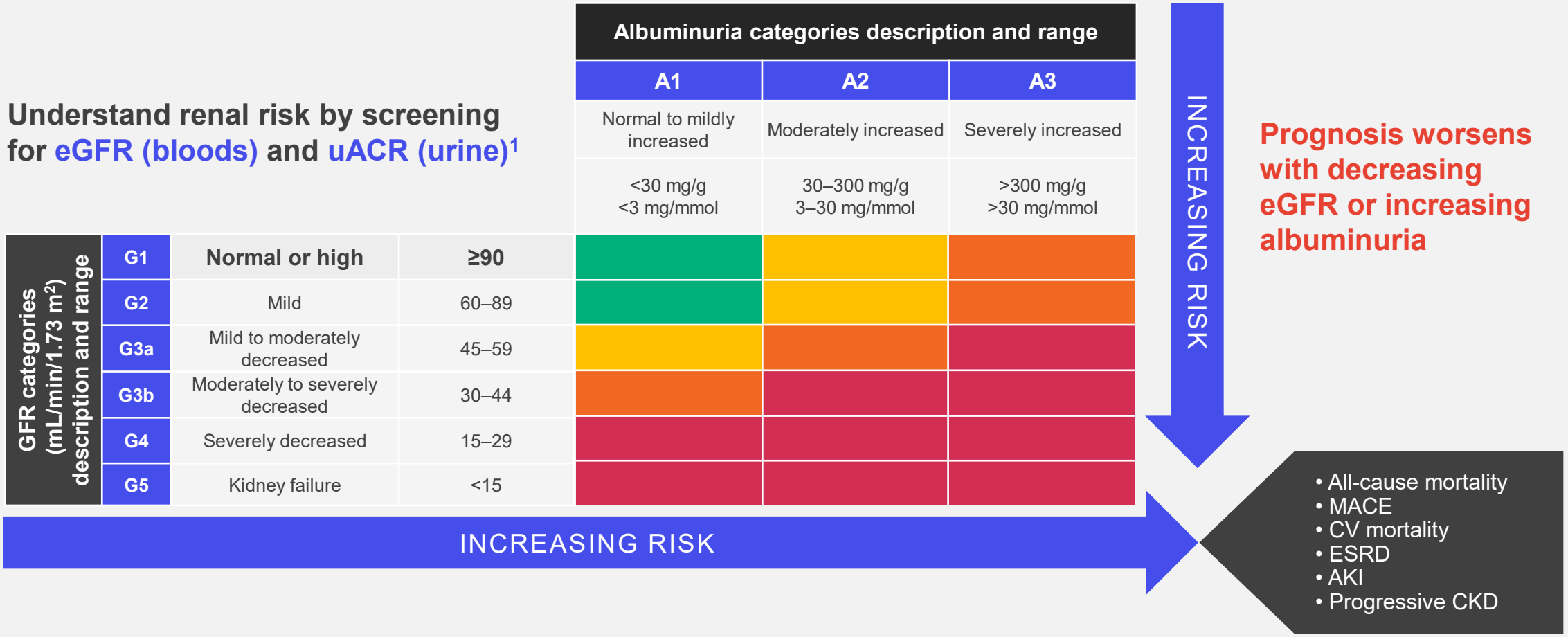
- Renal and cardiac systems are inextricably linked; acute or chronic disorder of one can induce dysfunction in the other[1]


- Older patients with CKD are more likely to die from heart disease than advance to end-stage renal disease (ESRD) and require dialysis[2]

The renal and cardiac systems should not be considered in isolation

# Ensure you understand risk of renal decline as early as possible in people with T2D[2]

**Understand renal risk by screening for eGFR (bloods) and uACR (urine)[1]**



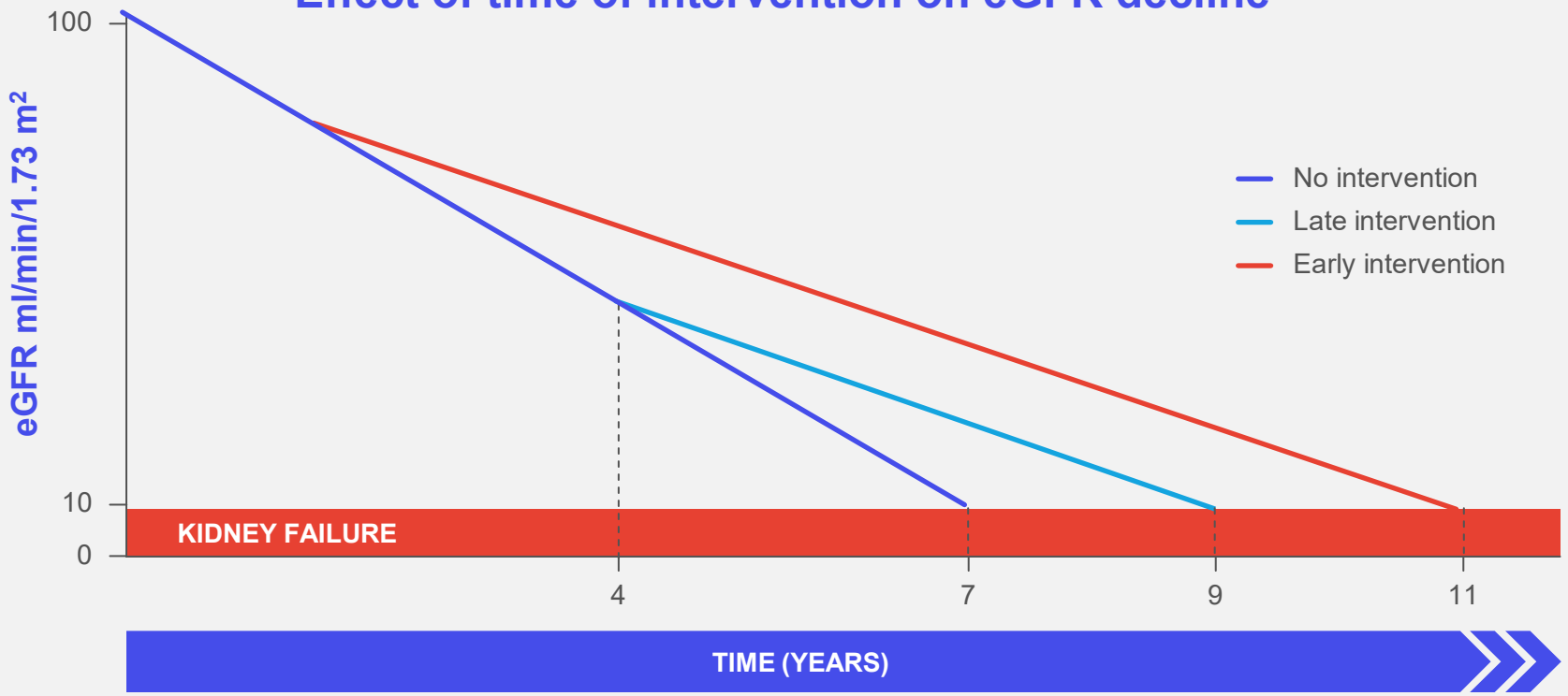

**Prognosis worsens with decreasing eGFR or increasing albuminuria**

Green is representative of low risk, yellow of moderately increased risk, orange of high risk, and red of very high risk.
AKI = acute kidney injury; CKD = chronic kidney disease; CV = cardiovascular; (e)GFR = (estimate) glomerular filtration rate; ESRD = end-stage renal disease; MACE = major adverse cardiovascular events; T2D = type 2 diabetes; uACR = urine albumin;creatinine ratio.

1. NICE clinical guidance. Surveillance report 2017 – Chronic kidney disease. CG157, CG182 and NG8. 2. KDIGO. Kidney Int Suppl (2011) 2013;3:1–150.

# Early treatment of declining eGFR in people with CKD is critical to delay kidney failure with or without T2D[1]

## Effect of time of intervention on eGFR decline[1]




Adapted from Gansevoort RT, *et al*
For illustration purposes only

CKD = chronic kidney disease; eGFR = estimated glomerular filtration rate; T2D = type 2 diabetes.

1. Gansevoort RT, *et al. J Am Soc Nephrol* 2009;20:465–468

# When eGFR is dipping, the clock is ticking

| CKD Stage | CV mortality risk[1]* |
|---|---|
| 3a eGFR 45–60 mL/min/1.73m$^2$ | Up to **4.3x** greater |
| 3b eGFR 30–45 mL/min/1.73m$^2$ | Up to **5.2x** greater |
| 4 eGFR 15–30 mL/min/1.73m$^2$ | Up to **14x** greater |

**eGFR <60 mL/min/1.73 m$^2$ is the single factor associated with the highest risk of MACE and mortality in people with T2D without pre-existing CVD[2]**

*CV mortality risk compared to an eGFR baseline of 90-105 mL/min/1.73m$^2$ and an ACR <10. CV mortality ranges: Stage 3a (1.5 to 4.3), Stage 3b (2.2 to 5.2), Stage 4 (4.8 to 14.0) per year;[1] **Accelerated progression defined as eGFR loss >4 mL/min/1.73 m$^2$ per year; 36% of patients had T2D at baseline.

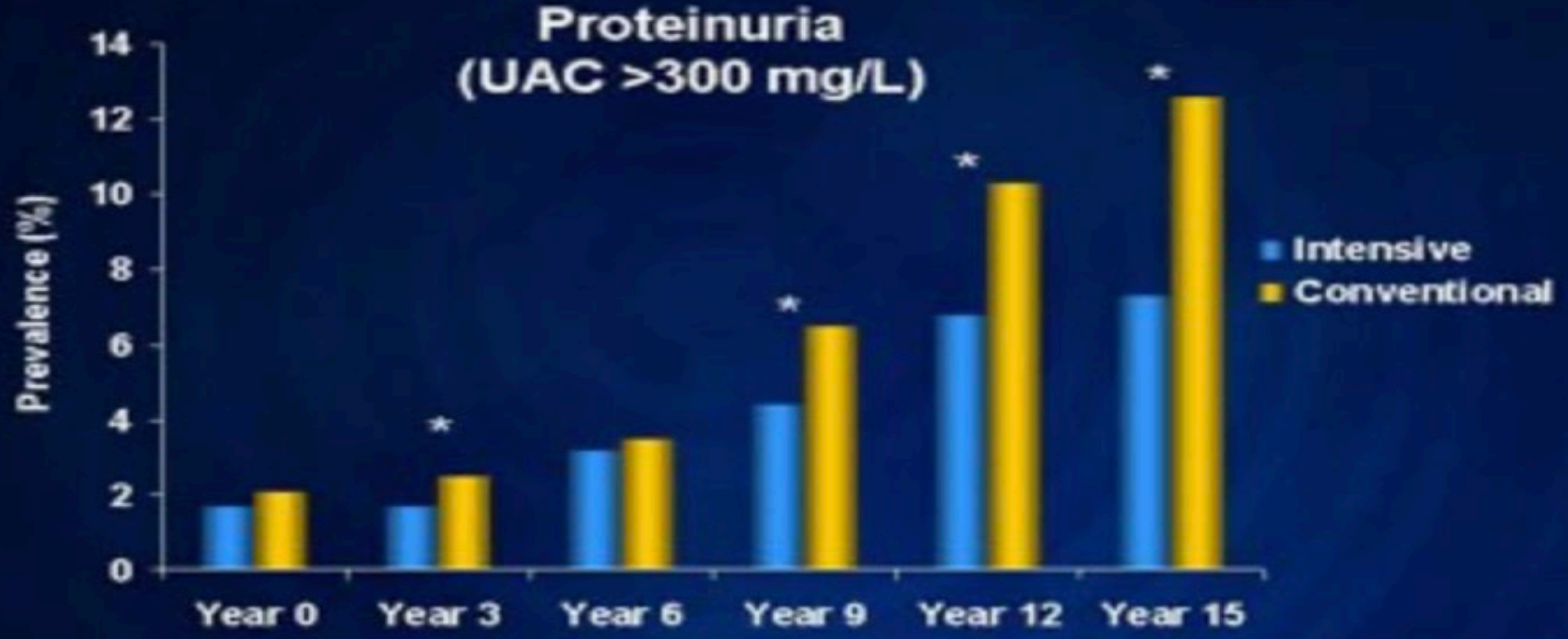
ACR = albumin:creatinine ratio; CKD = chronic kidney disease; CV = cardiovascular; eGFR = estimated glomerular filtration rate; MACE = major adverse cardiovascular events; T2D = type 2 diabetes.

1. Kidney Disease: Improving Global Outcomes (KDIGO). KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. *Kidney Int* 2013;3:1–150.
2. Go AS, *et al. BMC Nephrol* 2018;19:146.

# Evidence based interventions

- Optimal Glycaemic control
- Optimal Blood pressure control
- ACE inhibitor/ARB
- SGLT2 inhibitors
- Reduce CV risk
- Lipid lowering therapy
- Smoking cessation

# Intensive Glycemic Control Slows Progression of Renal Disease in Patients with Type 2 Diabetes




* *P*<0.05 between groups
UAC = urinary albumin concentration

UK Prospective Diabetes Study (UKPDS) Group. *Lancet.* 1998;352:837-853.

Joslin Diabetes Center

# The Pharmacological Management of Hyperglycaemia in People Living with Type 2 Diabetes and Chronic Kidney Disease

Medscape UK X Guidelines
Primary Care Hacks

Author: Dr Kevin Fernando, GP Partner, North Berwick Health Centre; Content Advisor, Medscape Global and UK. Email: kfernando@webmd.net

● No dose adjustment needed ● Dose adjustment or further action recommended ● Not recommended

The Pharmacological Management of Hyperglycaemia in People Living with Type 2 Diabetes and Chronic Kidney Disease

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● No dose adjustment needed ● Dose adjustment or further action recommended ● Not recommended

| | CKD stage (ml/min/m²) | | | | |
|---|---|---|---|---|---|
| | Stages G1 and G2 eGFR ≥60 | Stage G3a eGFR 45–59 | Stage G3b eGFR 30–44 | Stage G4 eGFR 15–30 | Stage G5 eGFR <15 |
| Metformin | 3 g total maximum daily dose (in 2–3 daily doses) | 2 g total maximum daily dose (in 2–3 daily doses) | 1 g total maximum daily dose (in 2–3 daily doses) | | |
| Sulfonylureas | | Increased risk of hypoglycaemia if eGFR <60. Consider reducing dose. Glicazide and gliclazide preferred as metabolised in the liver | | | |
| Repaglinide | | | | | |
| Acarbose | | | | Avoid if CrCl <25 ml/min/1.73 m² | |
| Pioglitazone | | | | | Avoid in those on dialysis |
| Alogliptin | | | Reduce to 12.5 mg od if CrCl <50 ml/min | Reduce to 6.25 mg od if CrCl <30 ml/min or dialysis required | |
| Linagliptin | | | | | |
| Saxagliptin | | Reduce to 2.5 mg od | | | Avoid in those on dialysis |
| Sitagliptin | | | Reduce to 50 mg od | Reduce to 25 mg od | |
| Vildagliptin | | Reduce to 50 mg od if CrCl <50 ml/min | | | |
| Canagliflozin | Initiate 100 mg and titrate to 300 mg if additional glycaemic improvement required | Initiate or continue 100 mg only | All SGLT2 inhibitors have negligible glucose-lowering effects once eGFR falls below 45. Consider adding an additional glucose-lowering agent if further glycaemic improvement is required<br>Certain SGLT2 inhibitors have beneficial cardiorenal effects at all stages of renal impairment and should be continued<br>*See The Medscape UK Primary Care Hack, Extra-Glycaemic Indications of SGLT2 Inhibitors,* for use of SGLT2 inhibitors in this context<br>For further information, see:<br>*Diabetes Management in Chronic Kidney Disease: A Consensus Report by the American Diabetes Association and Kidney Disease: Improving Global Outcomes*<br>*Management of Hyperglycemia in Type 2 Diabetes, 2022. A Consensus Report by the American Diabetes Association and the European Association for the Study of Diabetes* | | |
| Dapagliflozin | Recommended dose is 10 mg | | | | |
| Empagliflozin | Initiate 10 mg and titrate to 25 mg if additional glycaemic improvement required | Do not initiate. For those already taking empagliflozin, continue 10 mg only | | | |
| Ertugliflozin | Initiate 5 mg and titrate to 15 mg if additional glycaemic improvement required. Do not initiate if eGFR <60 | | | | |
| Dulaglutide qw | | | | | |
| Exenatide bid | | Dose escalation should proceed conservatively if CrCl 30–50 ml/min | | | |
| Exenatide qw | | | | | |
| Liraglutide od | | | | | |
| Lixisenatide od | | | | | |
| Semaglutide sc qw | Limited experience in patients with severe renal impairment eGFR <30 | | | | |
| Semaglutide oral od | | | | | |
| Degludec + liraglutide (Xultophy®) | | Intensify glucose monitoring and dose adjust on an individual basis | | | |
| Glargine + lixisenatide (Suliqua®) | | Intensify glucose monitoring and dose adjust on an individual basis | | | |
| All insulins | | Intensify glucose monitoring and dose adjust on an individual basis due to increased risk of hypoglycaemia | | | |

# Blood pressure & Albumin:Creatinine ratio (ACR) NICE guidance 2021

- **Diabetes treat BP if > 140/90 mmHg**
- ACE-I or ARB are agents of choice

- **If ACR is > 30-70 mg/mmol** aim BP < 130/80 mmHg on individualized basis (ADA/NICE 2021)

- If ACR is > 3.0 mg/mmol then also use ACE-I or ARB

## People with CKD

1.4.27 Offer atorvastatin 20 mg for the primary or secondary prevention of CVD to people with CKD.

- Increase the dose if a greater than 40% reduction in non-HDL cholesterol is not achieved (see recommendation 1.3.28) and eGFR is 30 ml/min/1.73 $m^2$ or more.
- Agree the use of higher doses with a renal specialist if eGFR is less than 30 ml/min/1.73 $m^2$. **[2014]**

  See NICE's guideline on chronic kidney disease for CKD classification. People on renal replacement therapy are outside the scope of this guideline.

## Oral antiplatelets and anticoagulants for adults

1.6.25 Offer antiplatelet medicines to adults with CKD for the secondary prevention of cardiovascular disease, but be aware of the increased risk of bleeding. **[2014]**

1.6.26 For guidance on oral anticoagulants for people with CKD, see NICE's guidelines on atrial fibrillation and venous thromboembolic diseases. **[2014, amended 2021]**

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# Canagliflozin and Renal Outcomes in Type 2 Diabetes and Nephropathy

V. Perkovic, M.J. Jardine, B. Neal, S. Bompoint, H.J.L
S. Bull, C.P. Cannon, G. Capuano, P.-L. Chu, D. de
H. Zhang, B. Zinman, G. Meininger, B.M. Brenner

ORIGINAL ARTICLE

# Dapagliflozin in Patients with Chronic Kidney Disease

Hiddo J.L. Heerspink, Ph.D., Bergur V. Stefánsson, M.D., Ricardo Correa-Rotter, M.D., Glenn M. Chertow, M.D., Tom Greene, Ph.D., Fan-Fan Hou, M.D., Johannes F.E. Mann, M.D., John J.V. McMurray, M.D., Magnus Lindberg, M.Sc., Peter Rossing, M.D., C. David Sjöström, M.D., Roberto D. Toto, M.D., Anna-Maria Langkilde, M.D., and David C. Wheeler, M.D., for the DAPA-CKD Trial Committees and Investigators*

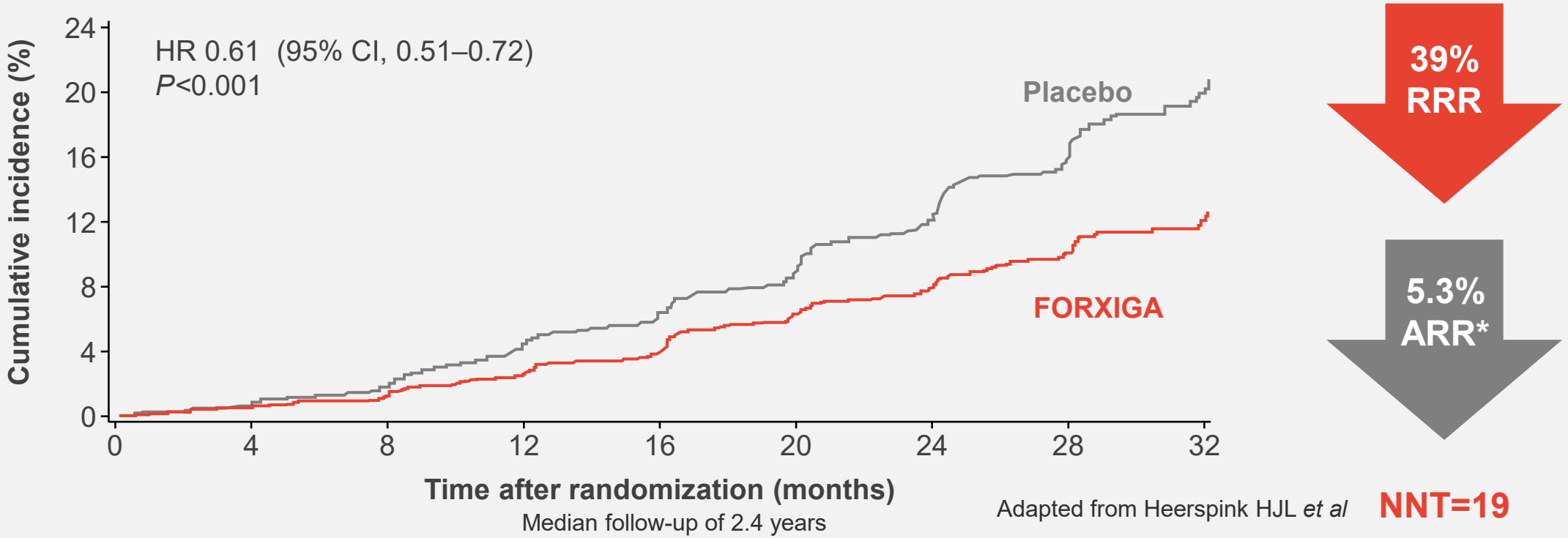
ORIGINAL ARTICLE FREE PREVIEW

# Empagliflozin in Patients with Chronic Kidney Disease

The EMPA-KIDNEY Collaborative Group*

January 12, 2023
N Engl J Med 2023; 388:117-127
DOI: 10.1056/NEJMoa2204233

# FORXIGA reduces the risk of the primary composite of declining kidney function, ESKD and cardiorenal death[1]




| No. at risk | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Placebo | 2152 | 1993 | 1936 | 1858 | 1791 | 1664 | 1232 | 774 | 270 |
| FORXIGA | 2152 | 2001 | 1955 | 1898 | 1841 | 1701 | 1288 | 831 | 309 |

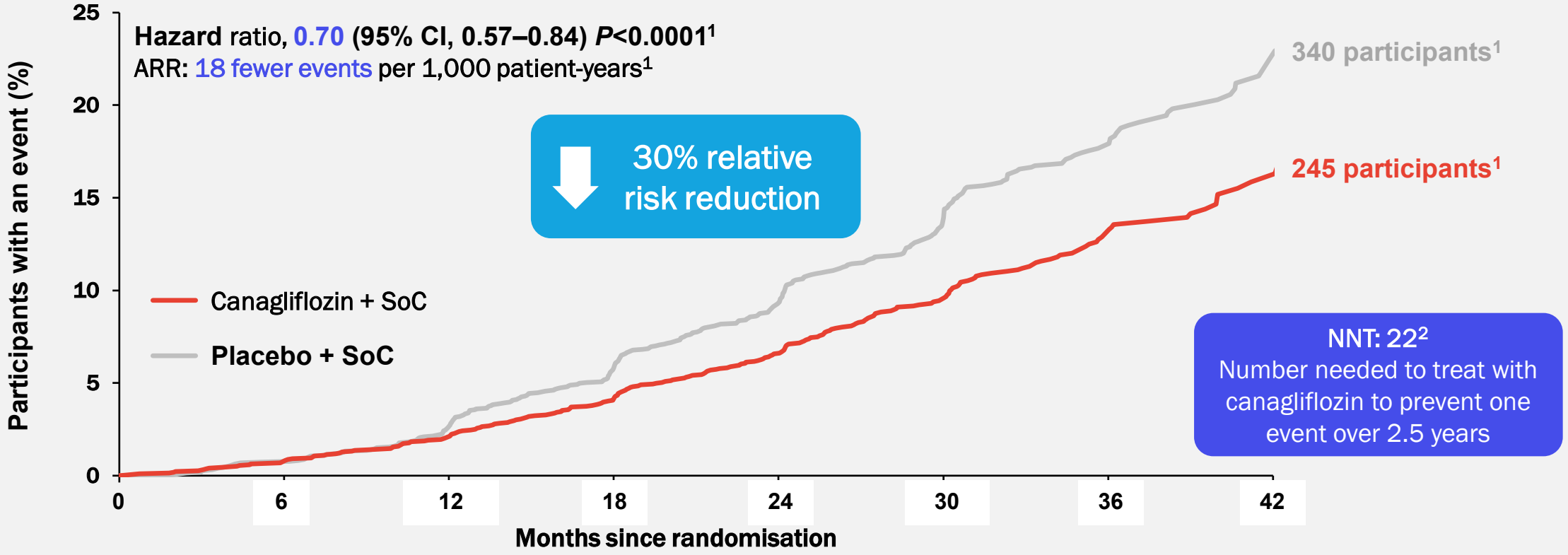
ESKD defined as the need for maintenance dialysis (peritoneal or hemodialysis) for at least 28 days and renal transplantation or sustained eGFR <15 mL/min/1.73 m2 for at least 28 days. Kidney death was defined as death due to ESKD when dialysis treatment was deliberately withheld for any reason

*The primary composite outcome occurred in 197 patients (9.2%) in the FORXIGA group and in 312 patients (14.5%) in the placebo group

ARR = absolute risk reduction; CI = confidence interval; CV = cardiovascular; eGFR = estimated glomerular filtration rate; ESKD = end-stage kidney disease; HR = hazard ratio; NNT = number needed to treat; RRR = relative risk reduction.

1. Heerspink HJL, *et al. N Engl J Med* 2020;383:1436–1446.

# Invokana + SoC reduces the risk of primary renal composite (ESKD, doubling of serum creatinine, or renal or CV death) vs. placebo + SoC[1,2*]




| Number at risk[1] | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Placebo + SoC | 2,199 | 2,178 | 2,132 | 2,047 | 1,725 | 1,129 | 621 | 170 |
| Canagliflozin + SoC | 2,202 | 2,181 | 2,145 | 2,081 | 1,786 | 1,211 | 646 | 196 |

*Intent-to-treat analysis set. SoC: standard of care; ESKD: end-stage kidney disease; CV: cardiovascular; ARR: absolute risk reduction.

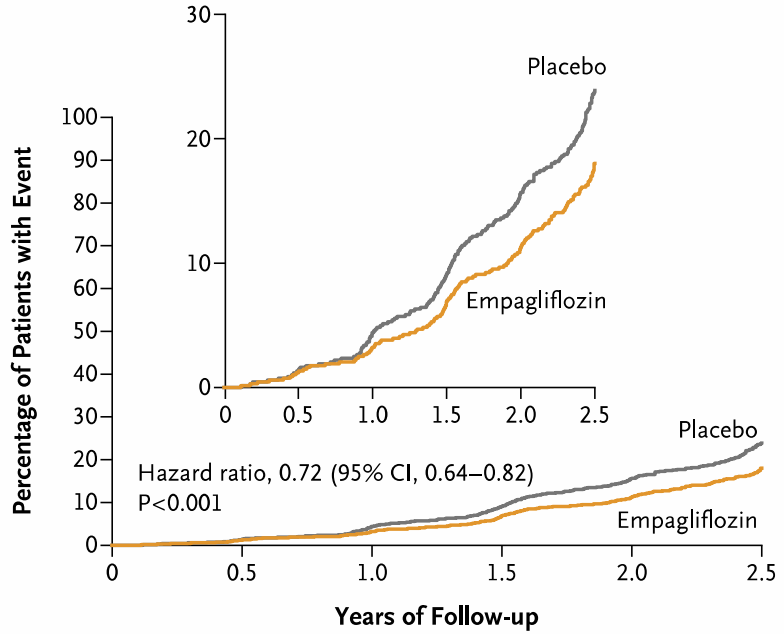
1. Invokana 100 mg and 300 mg film-coated tablets. Summary of Product Characteristics. [Accessed July 2020]. www.medicines.org.uk/emc/product/8855
2. Perkovic V, et al. N Engl J Med 2019;380:2295-306.

The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

# Empagliflozin in Patients with Chronic Kidney Disease

The EMPA-KIDNEY Collaborative Group*




**No. at Risk**

| | | | | | | |
|---|---|---|---|---|---|---|
| Placebo | 3305 | 3250 | 3129 | 2243 | 1496 | 592 |
| Empagliflozin | 3304 | 3252 | 3163 | 2275 | 1538 | 624 |

**Figure 1. Progression of Kidney Disease or Death from Cardiovascular Causes.**

Shown are the results of the primary composite outcome of progression of kidney disease or death from cardiovascular causes. Over a median of 2 years of follow-up, progression of kidney disease or death from cardiovascular causes occurred in 432 patients (13.1%) in the empagliflozin group and in 558 patients (16.9%) in the placebo group, representing 42 fewer primary-outcome events per 1000 patients in the empagliflozin group than in the placebo group over 2 years. The inset shows the same data on an enlarged y axis.

1.8.17 For adults with type 2 diabetes and CKD who are taking an ARB or an ACE inhibitor (titrated to the highest licensed dose that they can tolerate), offer an SGLT2 inhibitor (in addition to the ARB or ACE inhibitor) if:

- ACR is over 30 mg/mmol **and**
- they meet the criteria in the marketing authorisation (including relevant estimated glomerular filtration rate [eGFR] thresholds).

  In November 2021, not all SGLT2 inhibitors were licensed for this indication. See NICE's information on prescribing medicines. **[2021]**

1.8.18 For adults with type 2 diabetes and CKD who are taking an ARB or an ACE inhibitor (titrated to the highest licensed dose that they can tolerate), consider an SGLT2 inhibitor (in addition to the ARB or ACE inhibitor) if:

- ACR is between 3 and 30 mg/mmol **and**
- they meet the criteria in the marketing authorisation (including relevant eGFR thresholds).

  In November 2021, not all SGLT2 inhibitors were licensed for this indication. See NICE's information on prescribing medicines. **[2021]**

# Extra-Glycaemic Indications of SGLT2 Inhibitors

Medscape UK X Guidelines
Primary Care Hacks

Author: Dr Kevin Fernando, GP Partner, North Berwick Health Centre and Content Advisor, Medscape Global and UK
Email: kfernando@webmd.net

● Initiate or continue as described ● Continue as described ● Not recommended

| SGLT2 | Indication | CKD stage (mL/min/1.73 m²) | | | | |
|---|---|---|---|---|---|---|
| | | Stages G1 and G2 eGFR ≥60 | Stage G3a eGFR 45–59 | Stage G3b eGFR 30–44 | Stage G4 eGFR 15–30 | Stage G5 eGFR <15 |
| Canagliflozin | Treatment of diabetic kidney disease in adults with T2D as add-on to standard of care | Initiate or continue 100 mg | | | If urinary ACR ≥30 mg/mmol, continue 100 mg and continue dosing until dialysis or renal transplantation. Do not initiate if eGFR <30 | |
| Dapagliflozin | Treatment of symptomatic chronic heart failure regardless of ejection fraction (HFrEF and HFpEF) in adults with or without T2D | Initiate or continue 10 mg | | | | No dose adjustment is required based on renal function. It is not recommended to initiate if eGFR <15 |
| | Treatment of CKD in adults with or without T2D | Initiate or continue 10 mg* | | | | No dose adjustment is required based on renal function. It is not recommended to initiate if eGFR <15 |
| Empagliflozin | Treatment of symptomatic chronic heart failure regardless of ejection fraction (HFrEF and HFpEF) in adults with or without T2D | Initiate or continue 10 mg | | | Not recommended if eGFR <20 | |
| | Cardiovascular risk reduction as add-on to standard of care in adults with T2D and established cardiovascular disease | Initiate or continue 10 mg | | | Not recommended if eGFR <30 | |

- The glucose-lowering efficacy of all SGLT2 inhibitors is dependent on renal function and is reduced when eGFR <45 and likely absent in people with severe renal impairment. Therefore, if eGFR falls <45, additional glucose-lowering treatment should be considered in people living with T2D.
- SGLT2 inhibitors are not recommended for people living with T1D.

* NICE TA775 and SMC2428 advise initiation in people with eGFR 25–75 and type 2 diabetes or ACR ≥22.6 mg/mmol (≥23 mg/mmol in SMC2428)

**Table based on author's interpretation of relevant summaries of product characteristics.** At time of publication, ertugliflozin has no extra-glycaemic indications.

**Abbreviations: ACR: albumin/creatinine ratio; CKD: chronic kidney disease; eGFR:** estimated glomerular filtration rate; **HFpEF: heart failure with preserved ejection fraction; HFrEF: heart failure with reduced ejection fraction; NICE TA: NICE technology appraisal; SGLT2: sodium–glucose cotransporter 2; SMC: Scottish Medicines Consortium; T1D: type 1 diabetes; T2D: type 2 diabetes.**

References
1. Napp Pharmaceuticals Limited. Invokana 100 mg and 300 mg film-coated tablets—summary of product characteristics. www.medicines.org.uk/emc/ (accessed 19 January 2023).
2. AstraZeneca UK Limited. Forxiga 10 mg film-coated tablets—summary of product characteristics. www.medicines.org.uk/emc/ (accessed 19 January 2023).
3. Boehringer Ingelheim Limited. Jardiance 10 mg film-coated tablets—summary of product characteristics. www.medicines.org.uk/emc/ (accessed 19 January 2023).

# Renal and cardiovascular protective drugs

RAASi therapy

SGLT2-inhibitors

Finerenone

# Finerenone

- A nonsteroidal, selective antagonist of the mineralocorticoid receptor (MR)
- Aldosterone binds to MR in both epithelial (e.g. kidney) and non-epithelial (e.g. heart, blood vessels) tissues and increases blood pressure through induction of sodium reabsorption and potassium excretion
- Mineralocorticoid receptor over-activation is a major driver of cardiovascular and kidney damage through oxidative stress, inflammation and organ fibrosis
- Unlike the steroidal MRAs spironolactone and eplerenone, finerenone is distributed relatively equally between heart and renal tissue
- Finerenone has been shown to reduce the risk of CKD progression and cardiovascular events in people with T2DM vs. placebo

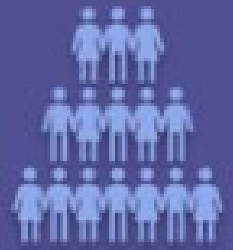
# Does finerenone slow progression of CKD and reduce cardiovascular mortality in patients with type 2 diabetes?

#NephJC

PHASE 3, DOUBLE-BLIND, MULTICENTER, RANDOMIZED, CONTROLLED TRIAL

**5674**

Patients with type 2 diabetes and CKD



| | Finerenone (10 mg or 20mg daily) | Placebo |
|---|---|---|
| | n = 2833 | n = 2841 |
| **2.6 year median follow up** | | |
| Primary Composite Outcome: Kidney Failure with >40% decrease in eGFR over 4-week period or death from renal causes | 17.8% (504/2833) | HR 0.82 (0.73 – 0.93) p = 0.001 — 21.1% (600/2841) |
| Secondary Composite Outcome: Death from cardiovascular causes or hospitalization for any cause | 13.0% (367/2833) | HR 0.86 (0.75 – 0.99) p = 0.03 — 14.8% (420/2841) |

In patients with CKD and type 2 diabetes, treatment with finerenone resulted in lower risk of CKD progression and cardiovascular events than placebo.

Reference: Bakris GL, Agarwal R, Anker S, Pitt B, et al. Effect of Finerenone on Chronic Kidney Disease Outcomes in Type 2 Diabetes. NEJM

VA by Dhwanil Patel @iheartkidneys

# Finerenone for treating CKD in T2DM (NICE TA, 2023)

## 1 Recommendations

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/1.73 $m^2$ or more.

# Finerenone in practice

- Formulary status currently “Specialist initiation” or “Hospital only” across Wales
- As familiarity increases, likely to be a transition to primary care
- RAASi therapy, SGLT2-i and finerenone will likely work together for better renal protection than any of them alone
- SGLT2-i may be preferred in hyperkalaemia
- Finerenone may be preferred if risk of DKA or foot disease
- NICE currently places finerenone as an add-on to RAASi and SGLT2-i

# When to refer to renal

# NICE CKD Guideline

## Referral criteria

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

- a 5-year risk of needing renal replacement therapy of greater than 5% (measured using the 4-variable Kidney Failure Risk Equation)
- an ACR of 70 mg/mmol or more, unless known to be caused by diabetes and already appropriately treated (see recommendations 1.6.6 and 1.6.7)
- an 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 $m^2$ 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 (see also NICE's guideline on hypertension in adults)
- known or suspected rare or genetic causes of CKD
- suspected renal artery stenosis. **[2021]**

NICE CG 203, 2021

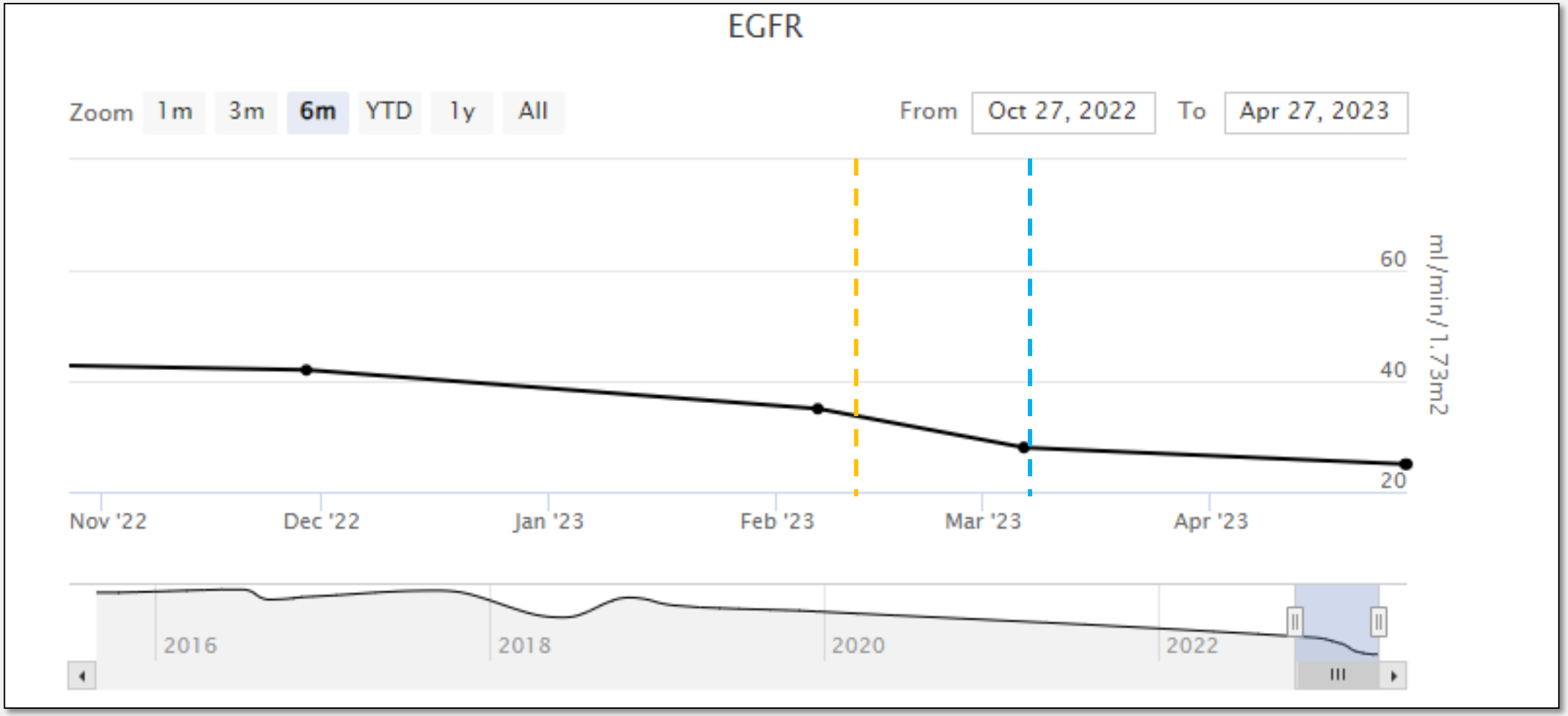
# Kidney Failure Risk Equation (KFRE)

- A person’s 5 year risk of needing RRT (dialysis or transplant)
- Not yet operational in Wales and most of England
- Requires LIMS update and switch from MDRD to CKD-EPI eGFR equation

# In practice

- Follow NICE Guidance
- Average eGFR for starting dialysis ~7 or 8 ml/min/1.73m$^2$
- Early identification of CKD progression important
- If patient has diabetic neuropathy or retinopathy, diabetes is almost certainly the cause of CKD
- Renal specialists unlikely to manage differently unless sudden onset proteinuria (note gap between ACR tests)
- If in doubt, it's reasonable to ask nephrologist for management advice
- ACR underutilised in primary and secondary care
- Potassium may be a factor for earlier referral
- Discuss CKD 'diagnosis' with patient

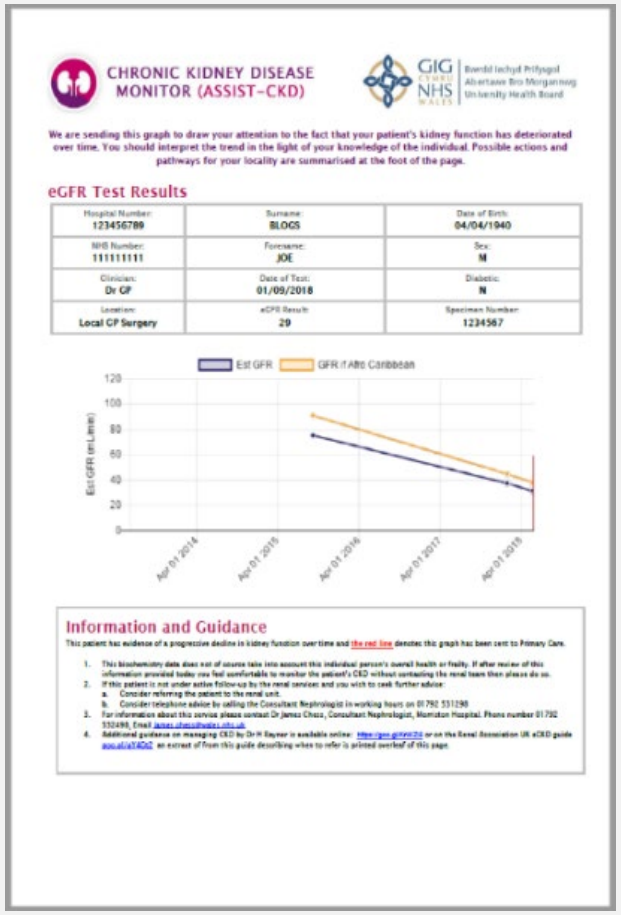
# eGFR over time




Kidney Function Graph Surveillance alert

GP referral letter

# Kidney Function Graph Surveillance (KFGS)



CHRONIC KIDNEY DISEASE MONITOR (ASSIST-CKD)

GIG CYMRU NHS WALES

We are sending this graph to draw your attention to the fact that your patient's kidney function has deteriorated over time. You should interpret the trend in the light of your knowledge of the individual. Possible actions and pathways for your locality are summarised at the foot of the page.

eGFR Test Results

| | | |
|---|---|---|
| Hospital Number: 123456789 | Surname: BLOGS | Date of Birth: 04/04/1940 |
| NHS Number: 111111111 | Forename: JOE | Sex: M |
| Clinician: Dr GP | Date of Test: 01/09/2018 | Diabetic: N |
| Location: Local GP Surgery | eGFR Result: 29 | Specimen Number: 1234567 |



Information and Guidance

This patient has evidence of a progressive decline in kidney function over time and the red line denotes this graph has been sent to Primary Care.

1. This biochemistry data does not of course take into account this individual person's overall health or frailty. If after review of this information provided today you feel comfortable to monitor the patient's CKD without containing the renal team then please do so.
2. If this patient is not under active follow-up by the renal services and you wish to seek further advice:
   a. Consider referring the patient to the renal unit.
   b. Consider telephone advice by calling the Consultant Nephrologist in working hours on 01792 531290
3. For information about this service please contact Dr James Chess, Consultant Nephrologist, Morriston Hospital. Phone number 01792 532490, Email james.chess@wales.nhs.uk
4. Additional guidance on managing CKD by Dr R Baynes is available online: https://gpnet.gig.wales or on the Renal Association UK eCKD guide www.ukkidney.org an extract of from this guide describing when to refer is printed overleaf of this page.

– SWW Renal Service adopted the UK-wide ASSIST-CKD programme
– Aim to identify people with CKD at the greatest risk of disease progression
– Avoid late referral which is associated with a 2-fold increase risk of death
– Minimal impact on workload
– Over 3 million eGFR results imported from GPs across SBU and H Dda
– Review approximately 500 graphs a week
– Over 100,000 graphs have been reviewed to date
– Approx. 5% of the graphs reviewed sent to GPs
– Currently evaluating our KFGS programme

# Primary Care Pilot

## Cardio-Renal-Diabetes Service

# Primary care Cardio-Renal-Diabetes pilot

- A small team of pharmacists and pharmacy technicians working part time
- One GP Cluster in Hywel Dda HB
- Identify people at risk of CKD progression (diabetics and non-diabetics):
  - Check CKD coding
  - Arrange ACR and eGFR as required
  - Patient education (without causing undue concern)
  - Medication review: start/optimise RAASi, SGLT2-i, finerenone, atorvastatin etc. and stop potentially harmful meds
  - Appropriate monitoring and referral: GPs, specialists, smoking cessation, diet & exercise
- Programme evaluation: interventions, patient and staff surveys, health economy
- Ultimate aim to create a sustainable and scalable primary care CKD service

# Case 1

60-year-old woman

Type 2 Diabetes 8 years. Hypertension & moderate diabetic retinopathy

Treatment Metformin, Linagliptin 5mg, Ramipril 5mg/day, Atorvastatin 20mg

| HbA1c | 58 mmol/mol |
|---|---|
| eGFR | 56 ml/min/1.73m$^2$ |
| Albumin creatinine ratio | 16 mg/mmol |
| BP | 150/90 |

The test is repeated 3/12 same results

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2. How do you classify CKD?

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| GFR categories, description and range (mL/min/1.73 m$^2$) | | | | Albuminuria stages, description and range | | |
|---|---|---|---|---|---|---|
| | | | | A1<br>Normal to mildly increased<br><30 mg/g (<3 mg/mmol) | A2<br>Moderately increased<br>30–300 mg/g (3 – 30 mg/mmol) | A3<br>Severely increased<br>>300 mg/g (>30 mg/mmol) |
| | G1 | Normal or high | ≥90 | | | |
| | G2 | Mild | 60 – 89 | | | |
| | G3a | Mild – moderate | 45 – 59 | | ********* | |
| | G3b | Moderate – severe | 30 – 44 | | | |
| | G4 | Severe | 15 – 29 | | | |
| | G5 | Kidney failure | <15 | | | |

# Case 2

45 year old man, T2DM 7 years, Previous laser therapy for retinopathy

Treatment Metformin 1g bd, Dapagliflozin 10 mg, Sitagliptin 100mg 5mg, Ramipril 2.5mg, Atorvastatin 10mg

| HbA1c | 48 mmol/mol |
|---|---|
| eGFR | 70 ml/min/1.73m$^2$ |
| Albumin creatinine ratio | 140 mg/mmol |
| LDL Cholesterol | 3.0 mmol/l |
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low risk (if no other markers of kidney disease, no CKD)

moderately increased risk

high risk

very high risk

# Case 3

68 year old man
Type 2 Diabetes 15 years, IHD, Hypertension, dyslipidaemia, DM retinopathy, ex-smoker,

**Treatment**
Metformin 500mg bd, Gliclazide 80mg bd, Linagliptin 5mg
Aspirin 75mg, Ramipril 10 mg, Bisoprolol 5mg,
Atorvastatin 80mg,

| HbA1c | 68 mmol/mol |
|---|---|
| eGFR | 28 ml/min/1.73m$^2$ |
| Albumin creatinine ratio | 100 mg/mmol |
| LDL Cholesterol | 1.6 mmol/l |
| BP | 125/75 mmHg |
| BMI | 32 |

ACR > 30 for 6 years

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# Summary

- Early identification is vital
- Interventions to retard decline of eGFR
- Attenuate cardiovascular risk
- Collaboration between primary care, diabetes and renal teams is important