



**GFR**

Sticking it to kidney disease in 2025

## **Diabetes Update Orillia**

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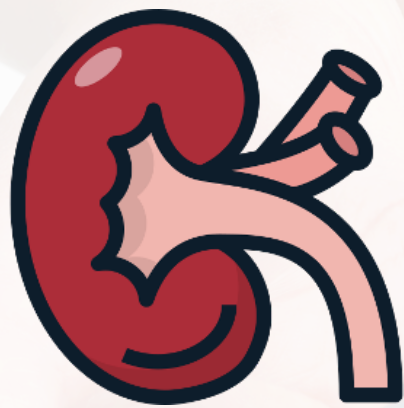


**2025 Update (Chpt 29)**

**Can J Diabetes 49 (2025) 73e86**



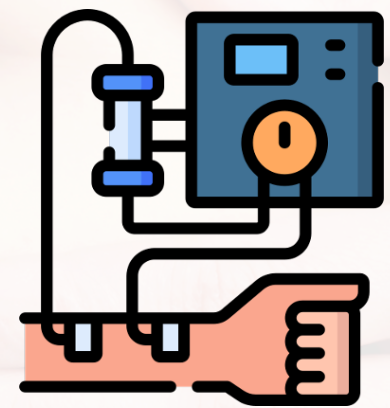
**2022 CPG Diabetes in CKD**



**Chronic kidney disease  
affects 1:7 adults**



**Diabetes 9.6% pop.  
(3.8m)**



**12,000 dialysis  
patients in Ontario**

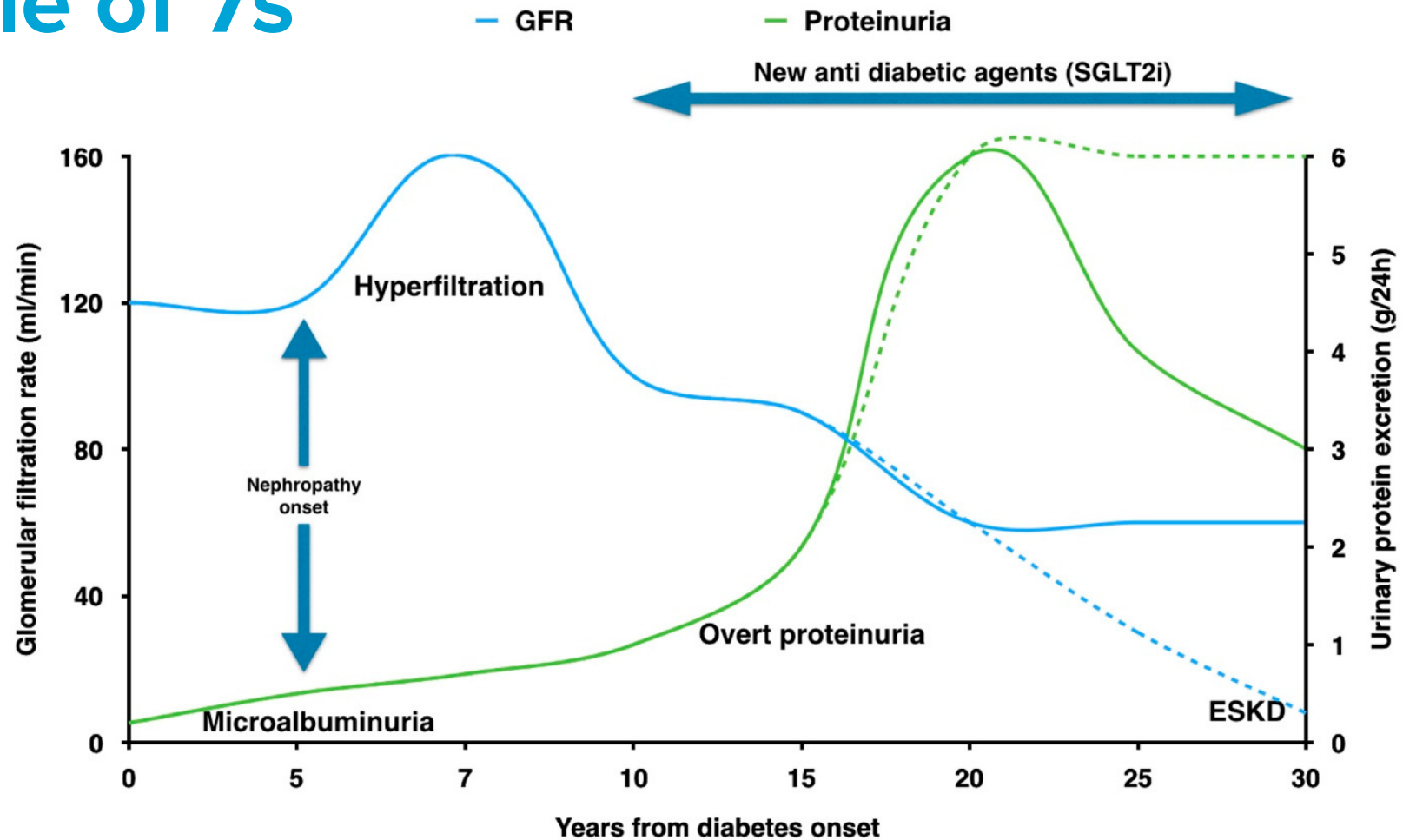
**40% of ESKD  
attributable to  
diabetes**

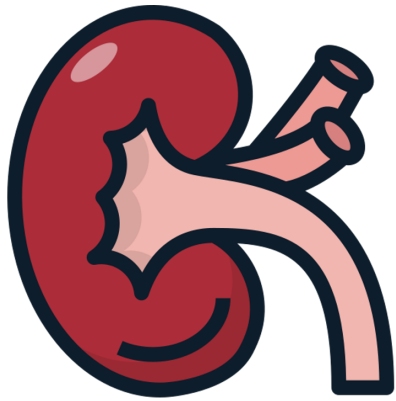


# Kidney function is like

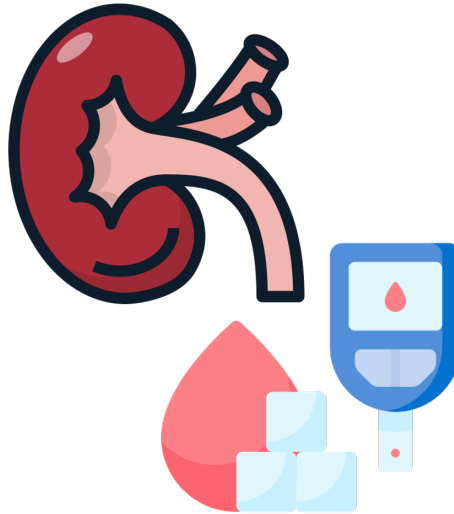


# “Rule of 7s”

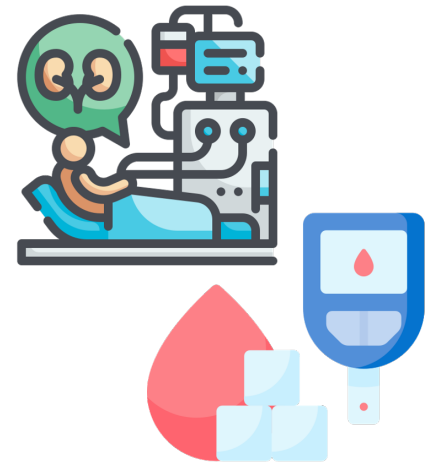




**CKD alone**



**CKD with diabetes**



**ESKD with diabetes**



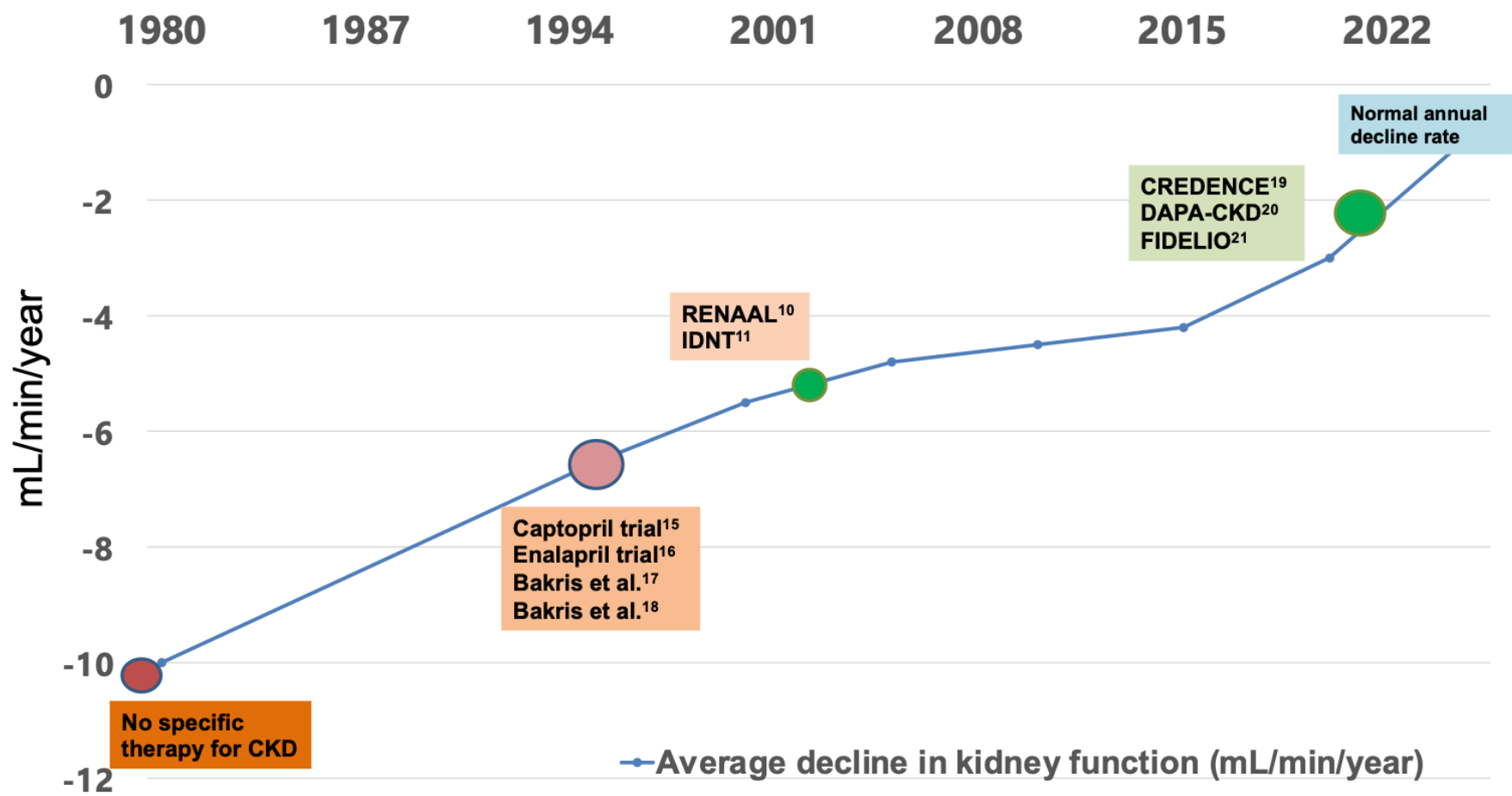
# SCREENING & ALBUMINURIA

**1**  
**YEAR**

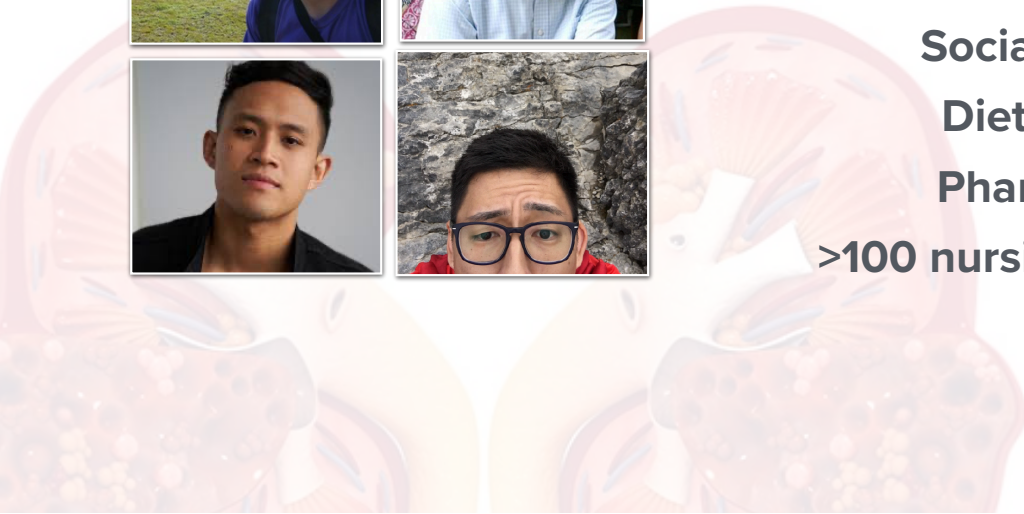
**13% GFR  
& uACR**

**5**  
**YEARS**

**60% GFR  
& uACR**



Falls and east to Brechin.



**Social work**  
**Dietitians**  
**Pharmacy**

**>100 nursing/support**



# Kidney Care Resources

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## Living with Kidney Disease

[Diet and Nutrition](#)

[Managing Your Symptoms](#)

[Dialysis Emergency Preparedness Resources](#)

## Living with Dialysis

## Community Resources

## Kidney Transplant

## Regional Hospital Partners

## Diet And Nutrition

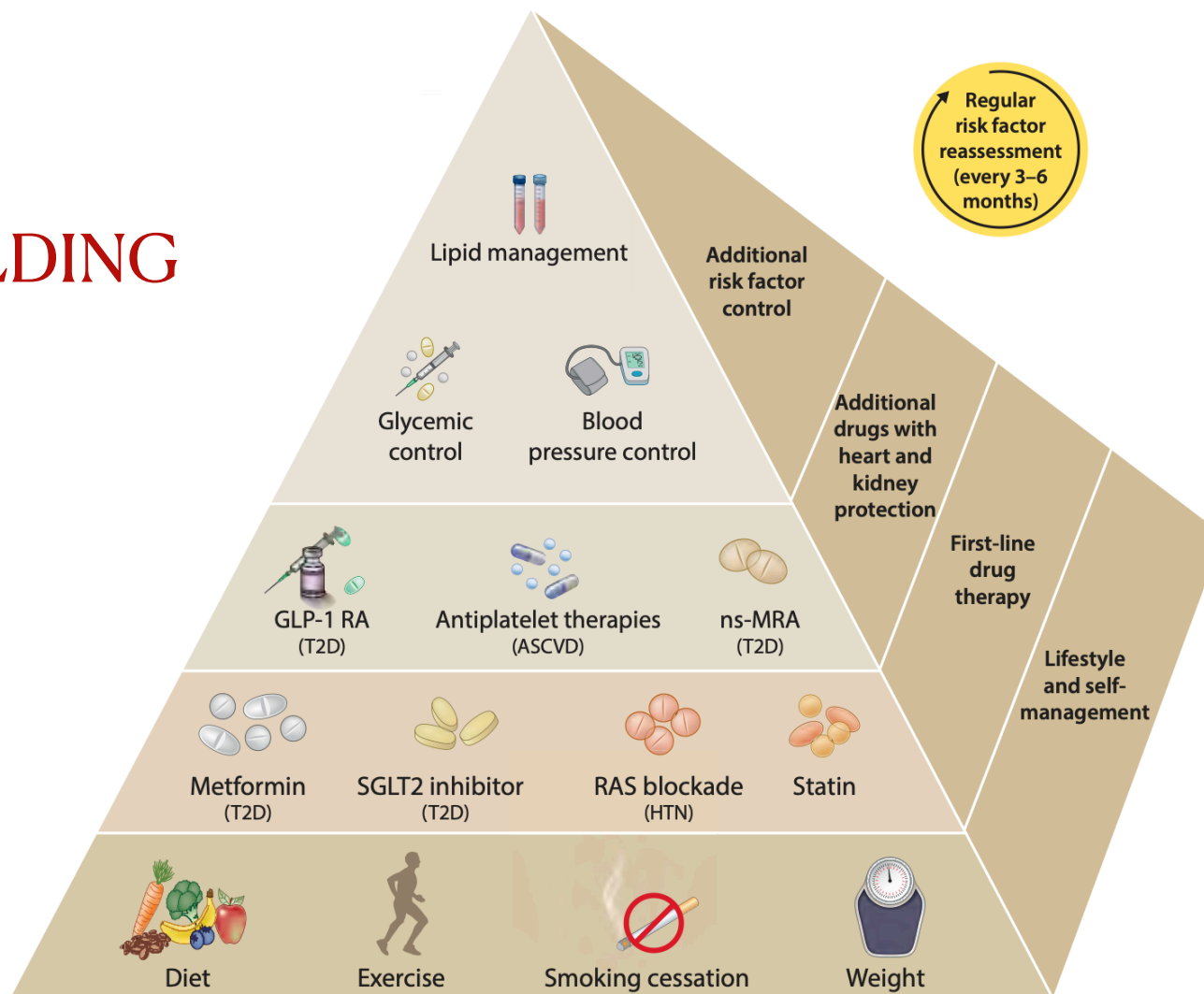
- [Diabetes and Kidney Care Food Guide](#)
- [Potassium Food Choices](#)
- [Spice it Up Canada – Giving Zest to Your Renal Diet](#)
- [Kidney Foundation of Canada – Kidney Community Kitchen](#)
- [Soldiers' Meals Made Easy Program](#)

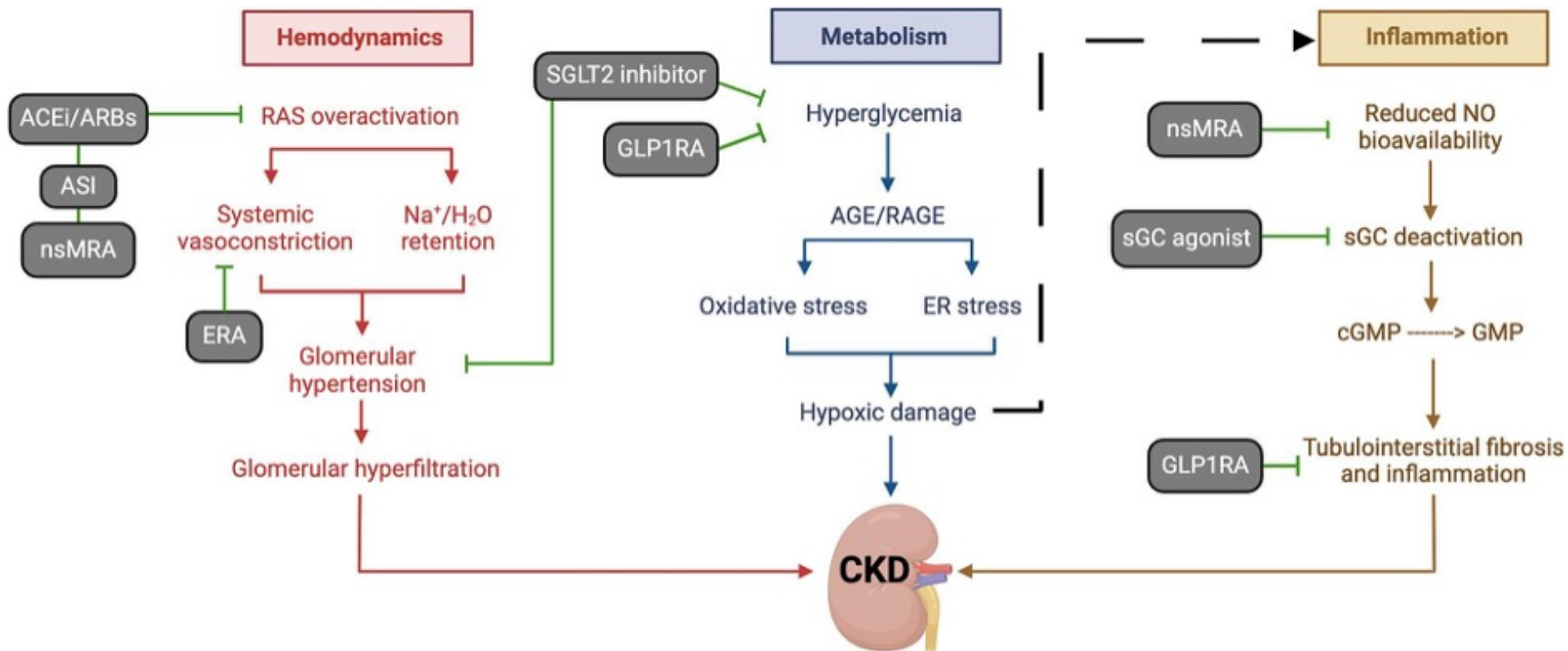
## Managing Your Symptoms

Each person's experience with chronic kidney disease is different. If you are a family member or friend of someone with the disease, you may want to learn more about the disease and how to help.

<https://www.osmh.on.ca/kidney-care/>

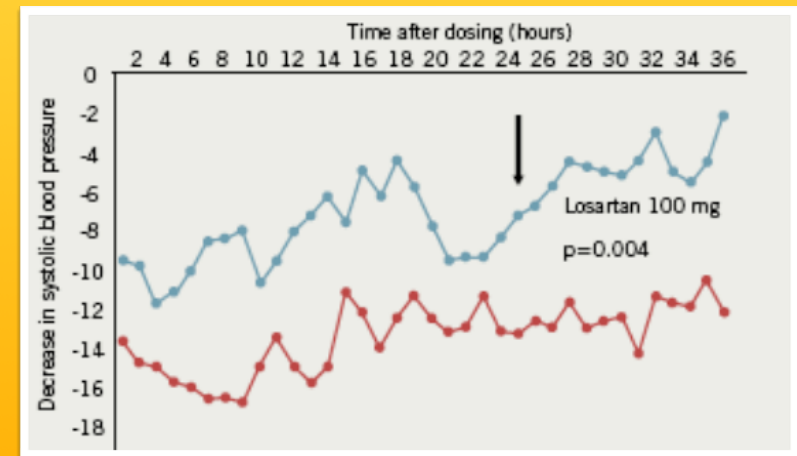
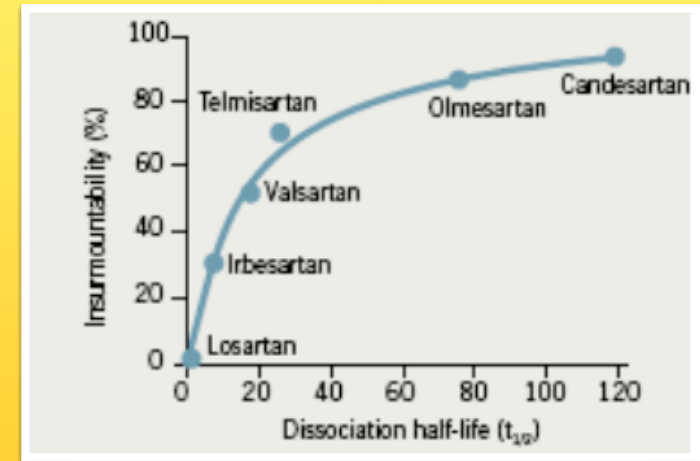






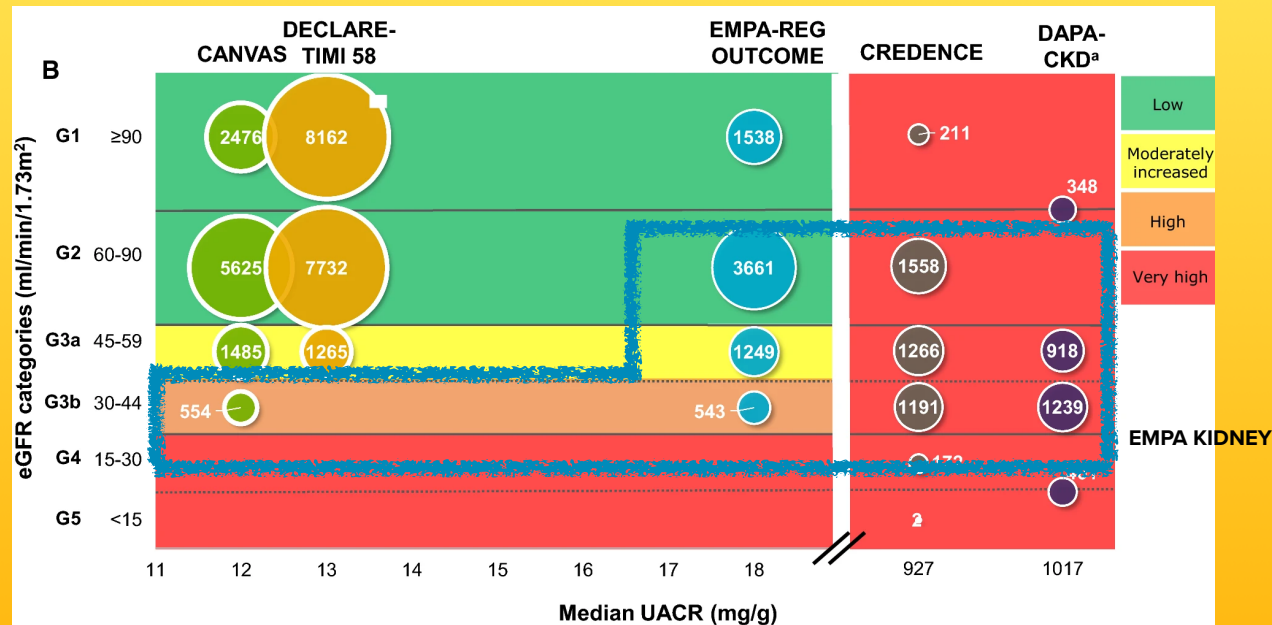
# RAAS INHIBITION

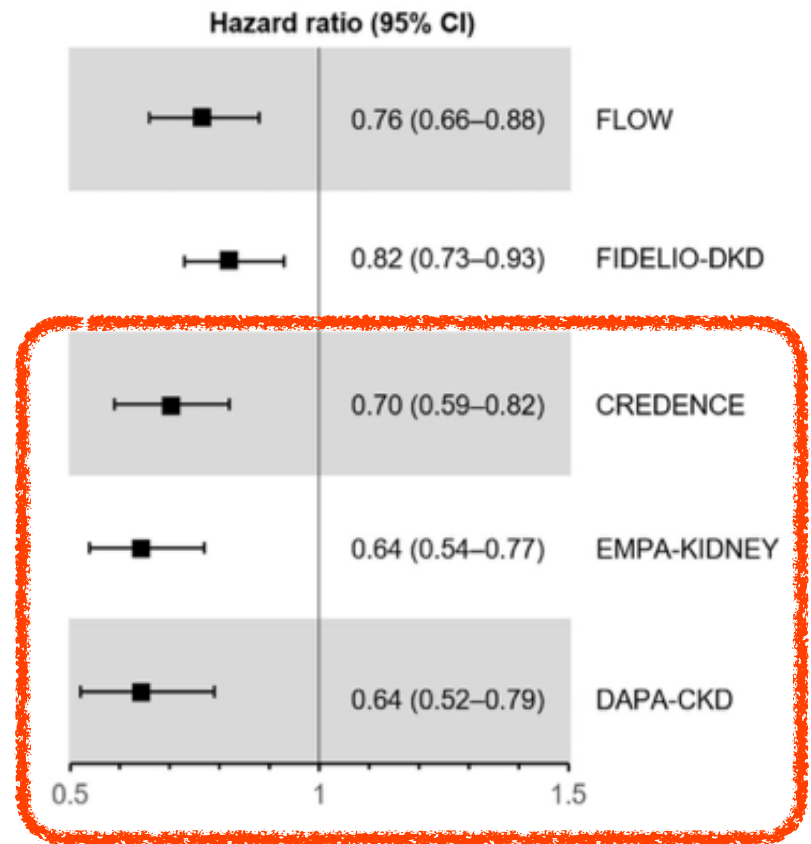
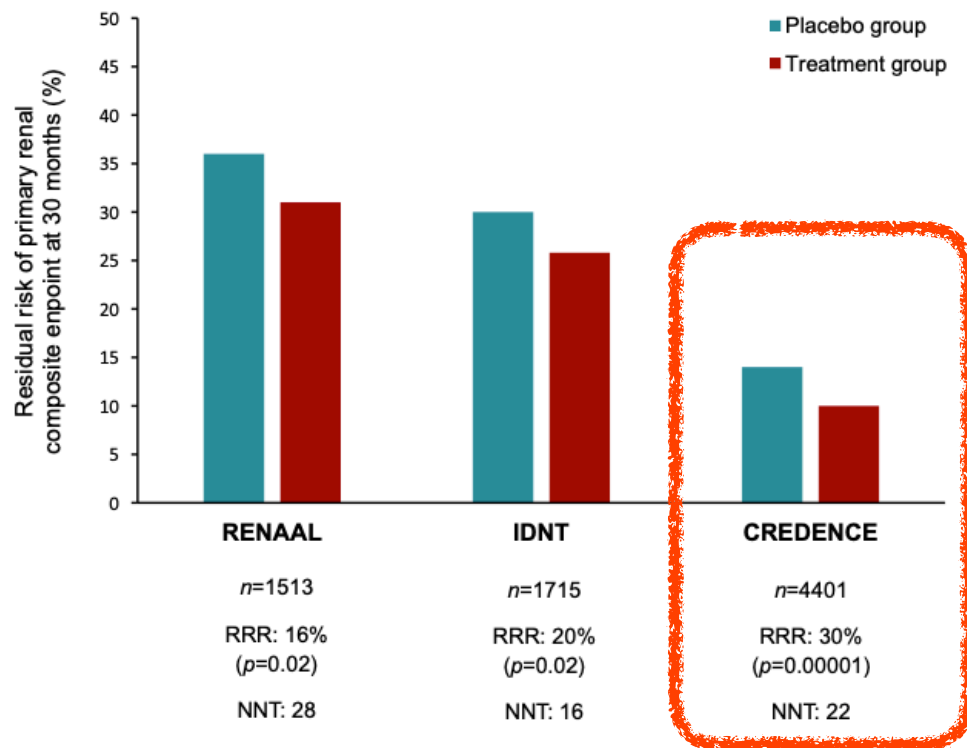
- First line therapy in diabetic kidney disease
- Captopril trial (Lewis 1993 NEJM) & RENAAL trial (Brenner 2001 NEJM)
- Subsequent DKD trials have required patients on maximum tolerated RAAS inhibitors (>90%)
  - “Why is my patient not on RAAS blockade?”
- What if my patient has:
  - Cough? Rotate from ACEi to ARB
  - Low blood pressure? Consider losartan, surmountable inhibition, short half life
  - Poor compliance? Consider candesartan
  - Potassium issues? Start SGLTi! 🤖



# SGLT2 INHIBITORS

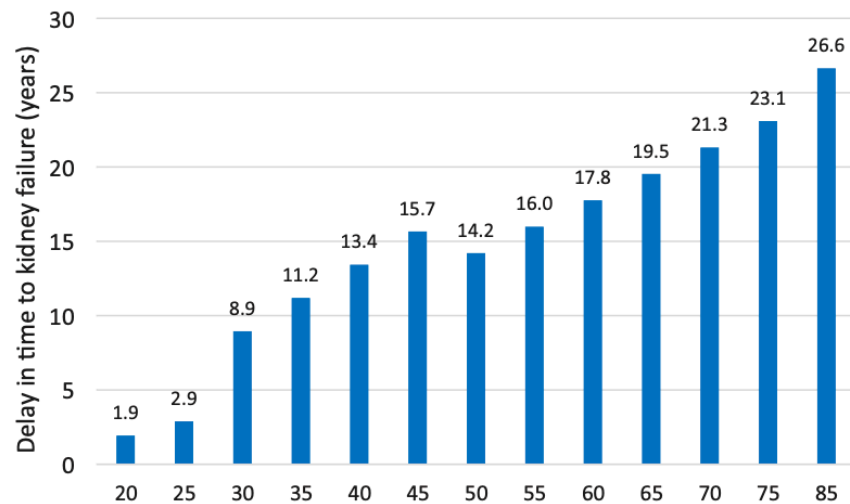
- Broad benefit across CKD spectrum including low risk patients
- Adverse effects?
  - UTI? Risk is likely overstated in recent studies
  - Patient education with acute illness
  - Risks of discontinuation (CKD, HF) likely outweigh risks of reinitiation



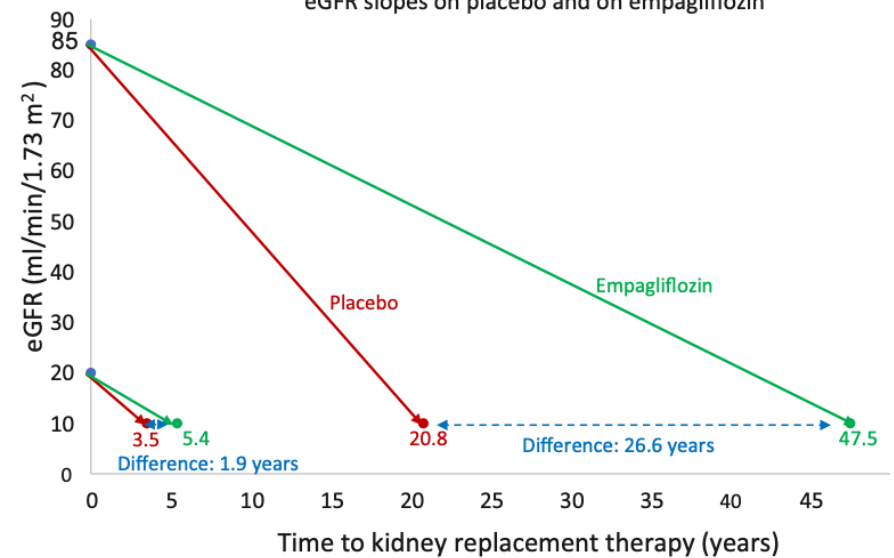


# SGLT2 INHIBITORS

B) Delay in time to kidney failure in years on empagliflozin vs placebo, according to baseline eGFR



C) Potential impact on time to kidney replacement therapy of the different eGFR slopes on placebo and on empagliflozin



First-line therapy

Metformin



eGFR < 45

Reduce dose



eGFR < 30

Discontinue

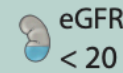


Dialysis

Discontinue

+

SGLT2 inhibitor



eGFR < 20

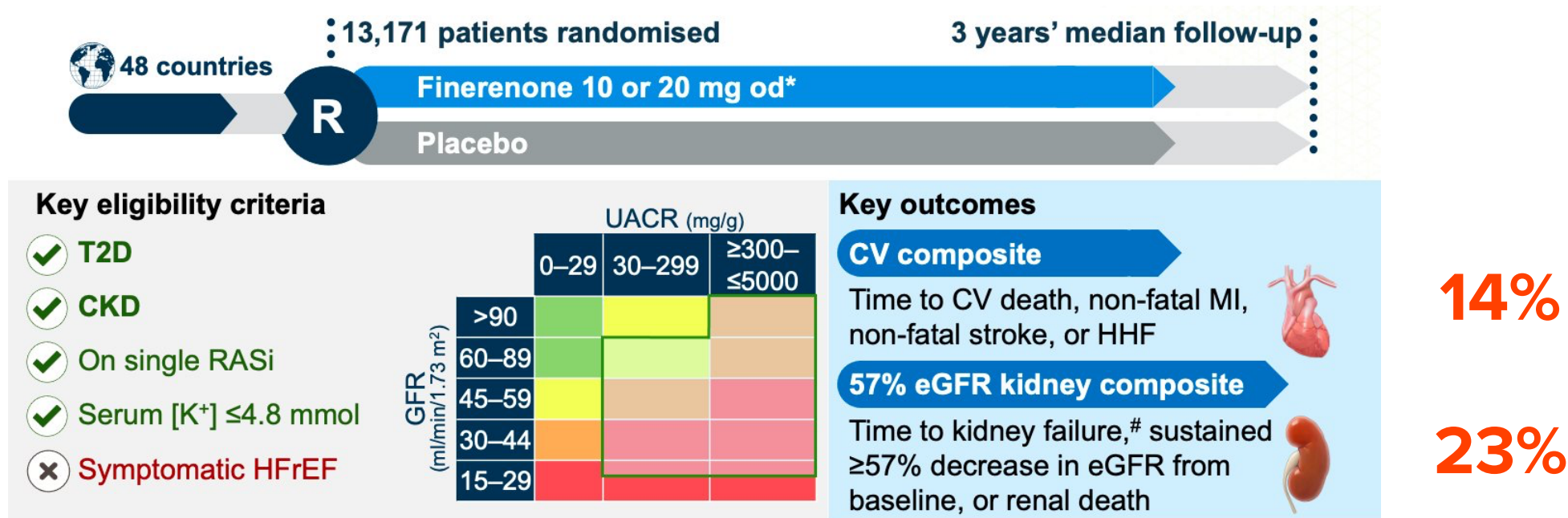
Do not initiate



Dialysis

Discontinue

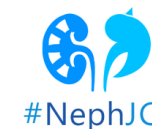
# NON-STEROIDAL MRA (FIDELITY)



Kerendia LU code 700



# Finerenone and empagliflozin: is the combination better than either agent alone in CKD and Type 2 Diabetes?



## Methods

- Randomized, double-blind trial
- CKD + T2D
- 14 countries
- 98% ACEi/ARB users  
23% GLP-1RA users
- Stratified according to eGFR and UACR

	UACR drop at day 180	Hyperkalemia	> 30% eGFR drop at day 30
 <b>Empagliflozin</b> 	29% ↓	3.8%	1.1%
 <b>Finerenone</b> 	32% ↓	11.4%	3.8%
 <b>Empagliflozin &amp; Finerenone</b> 	52% ↓	9.3%	6.3%

No unexpected adverse events

**Conclusion:** Among persons with both chronic kidney disease and type 2 diabetes, initial therapy with finerenone plus empagliflozin led to a greater reduction in the urinary albumin-to-creatinine ratio than either treatment alone.

VA by Michelle Fravel

Agarwal R, Green JB, Heerspink HJL, et al; CONFIDENCE Investigators. Finerenone with Empagliflozin in Chronic Kidney Disease and Type 2 Diabetes. N Engl J Med. 2025 Jun 5.

**Limitations:** short term follow up, surrogate outcome

**Agarwal 2025 NEJM**

# POTASSIUM =

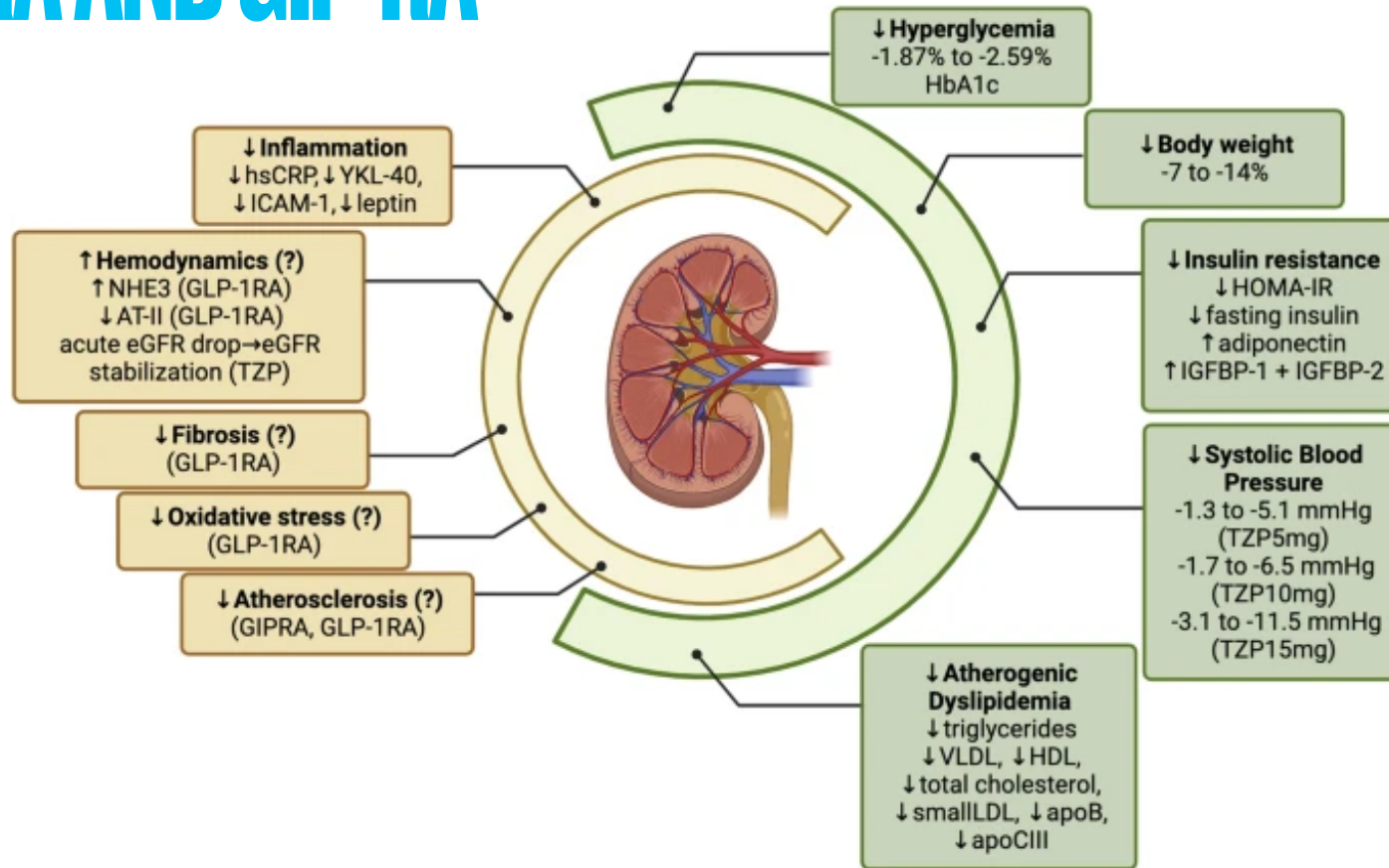
- Food awareness (OSMH website!)
- Addition of bowel exchangers
  - Dose 3x per week
- SGLT2i initiation with RAAS blockade may lower risk of hyperkalemia (HR 0.89, CI 0.82-0.96)
  - Lower risk of RAAS discontinuation (35% vs 45%)
- GLP1-RA associated with lower hyperkalemia (HR 0.61, CI 0.5-0.76)
  - Lower risk of RAAS discontinuation

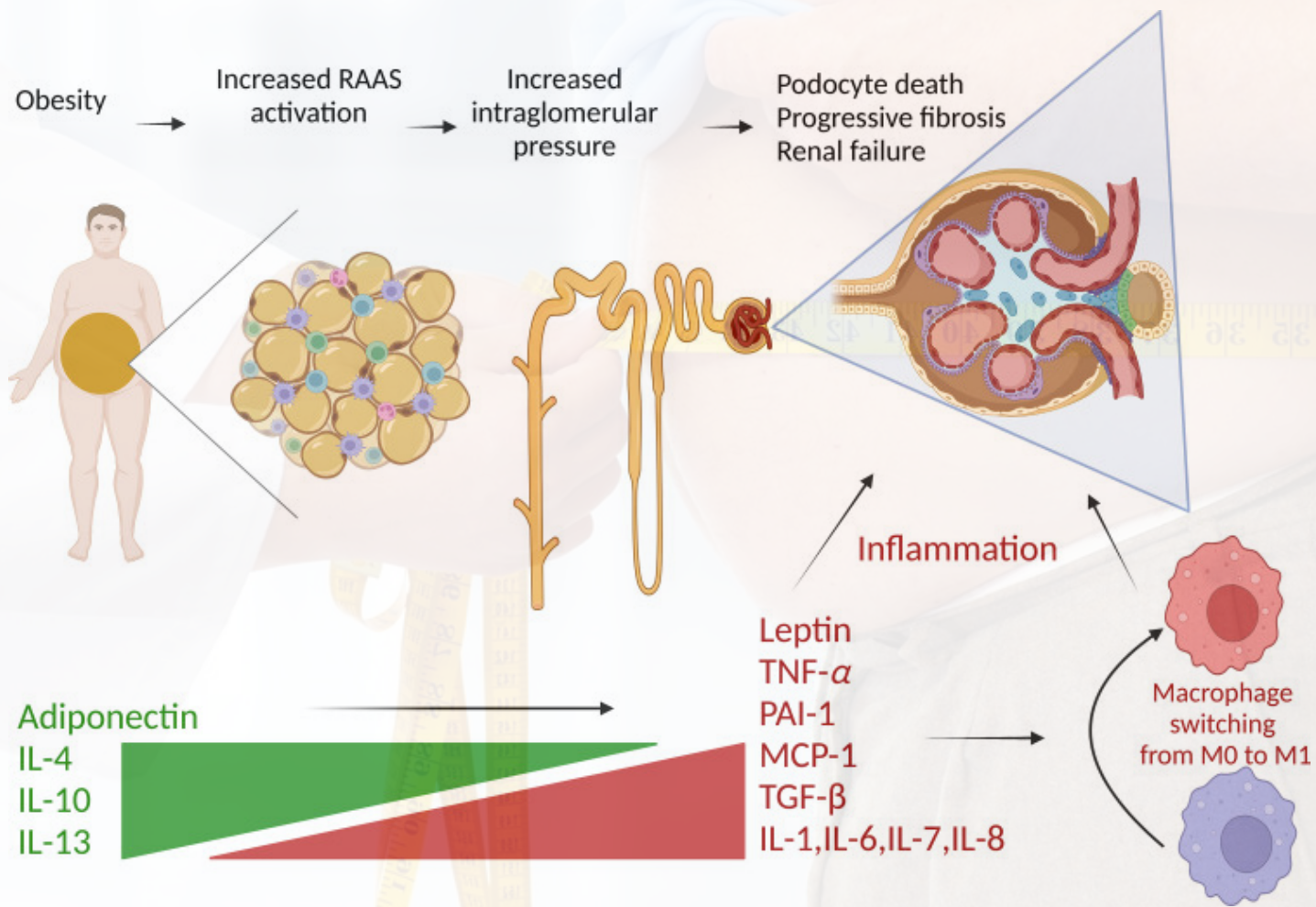
	Kayexylate	Lokelma
Dose	15-30g	5-10g
Frequency	Daily to QID	Up to TID
Site of action	Large bowel	Small bowel
Onset	Variable	Hours (1-6h)
Side effects	Bowel necrosis, hypernatremia	Edema
Cost	\$1.95 / 30g (ODB)	\$26.18 / 10g (non-ODB)

Wing 2025 JAMA Int Med

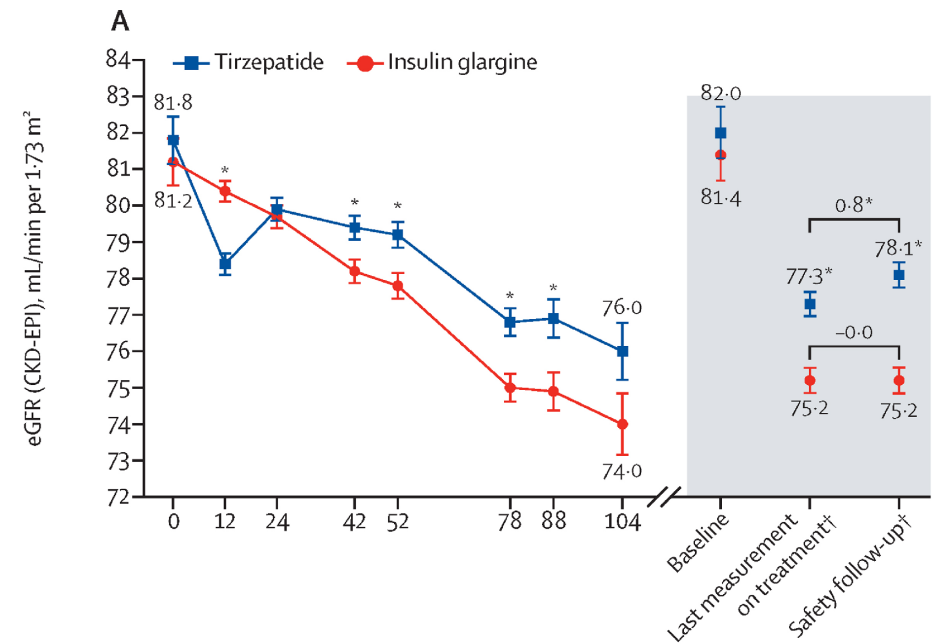
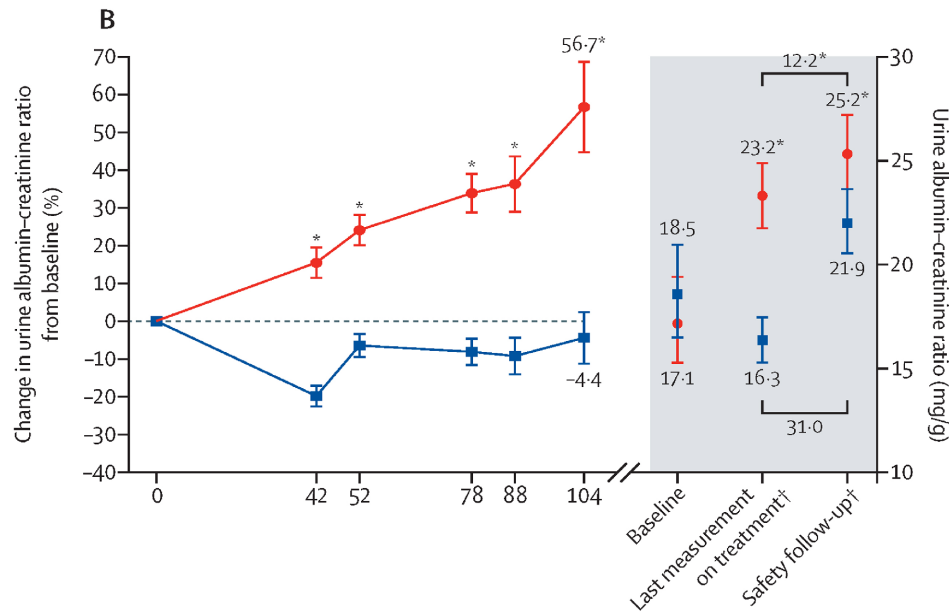
Huang 2024 JAMA Int Med

# GLP1-RA AND GIP-RA



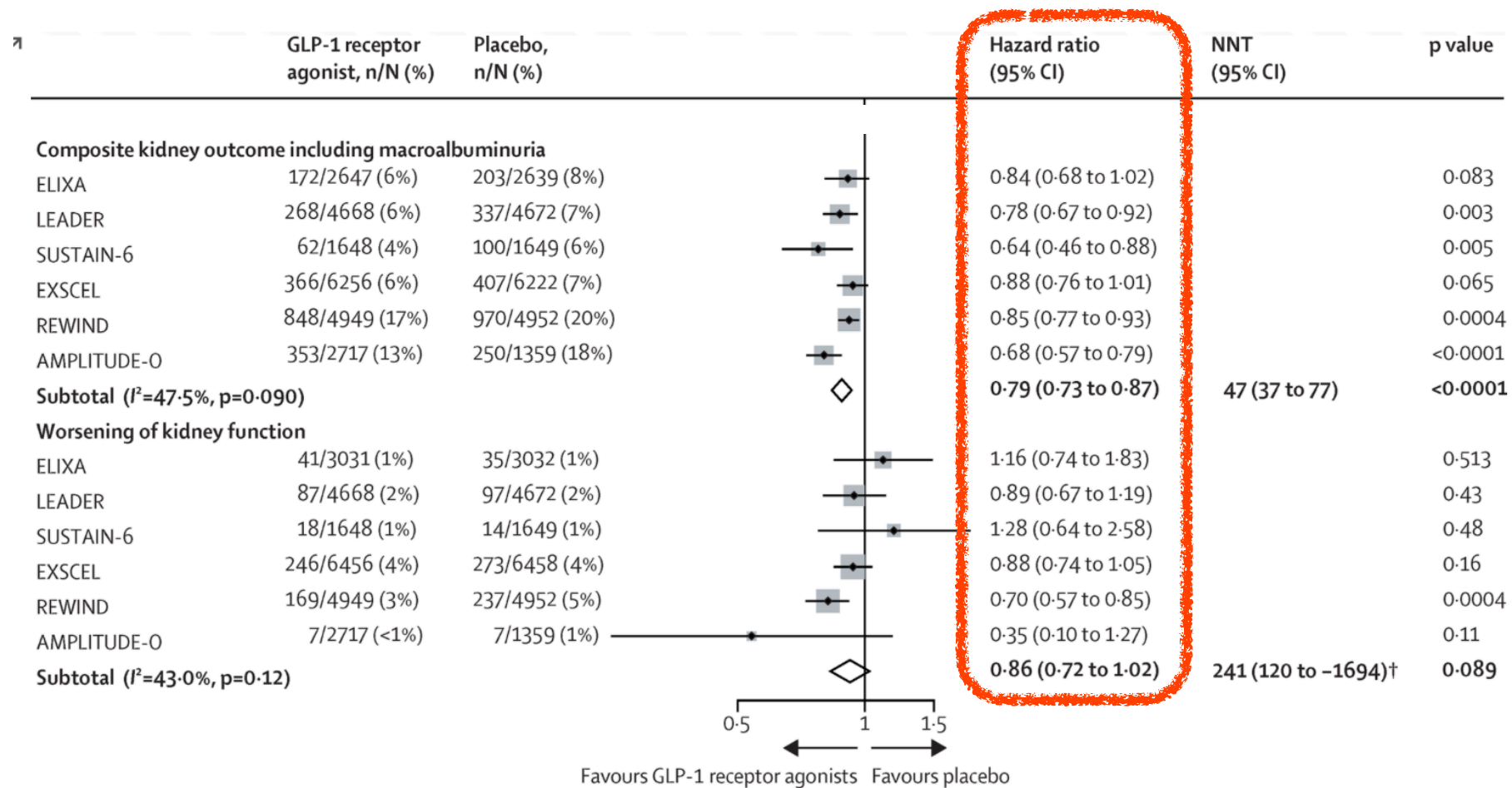


# SURPASS-4 POST HOC



**Tirzepatide reduces albuminuria, slower rate of GFR decline vs insulin**

**Heerspink 2022 Lancet Diab Endo**






# FLOW TRIAL

- First kidney outcome GLP1-RA trial
- Adults with T2DM (A1c <10%)
  - 66y male, Caucasian
  - A1c 7.8%, >50% DM >15y
  - BMI 31
- High risk CKD with GFR 25-75 with uACR 11-565mg/mmol
- Stable RAAS blockade x4 weeks
- Kidney composite outcome: kidney failure, >50% reduction in GFR, death from kidney/CV
- Trial stopped in 2023 due to interim analysis showing overwhelming benefit

eGFR



Urinary ACR

	<30	≥30 to <300	≥300
≥90	1 (<0.1)	7 (0.2)	23 (0.6)
≥60 to <90	24 (0.7)	173 (4.9)	491 (13.9)
≥45 to <60	37 (1.0)	324 (9.2)	694 (19.6)
≥30 to <45	40 (1.1)	414 (11.7)	905 (25.6)
≥15 to <30	7 (0.2)	87 (2.5)	306 (8.6)

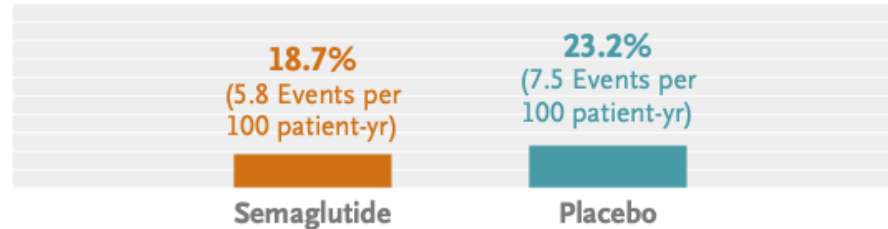
Low risk n=25 (0.7%)	High risk n=878 (24.8%)
Moderate risk n=217 (6.1%)	Very high risk n=2413 (68.2%)



- **Primary composite outcome**
  - **HR 0.76, 95% CI 0.66-0.88**
  - **>50% reduction in GFR HR 0.73 (0.59-0.89)**
  - **Death from CVD HR 0.71 (0.56-0.89)**
  - **Persistent GFR <15, dialysis, death from kidney cause not sig. but trended towards semaglutide**
- **Intermediate outcomes:**
  - **uACR reduction 38%**
  - **Body weight 4.1kg**
  - **A1c reduction 0.81%**
- **Adverse events**
  - **DM retinopathy, GI were equivalent in both groups**

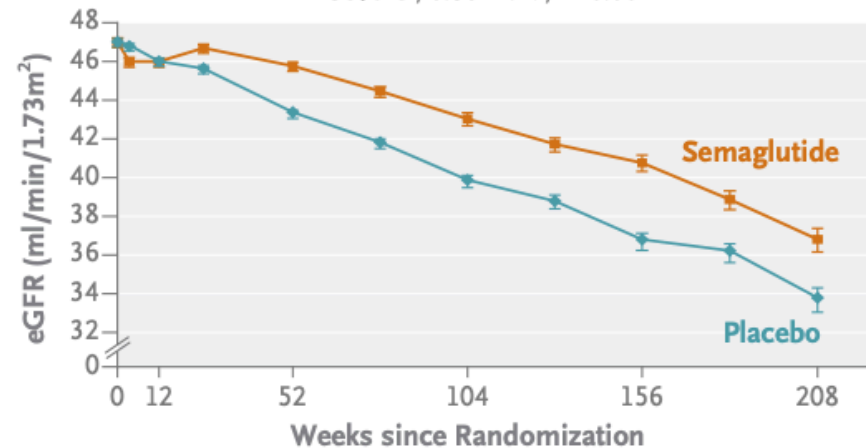
### Major Kidney Disease Events

Hazard ratio, 0.76 (95% CI, 0.66–0.88); P=0.0003



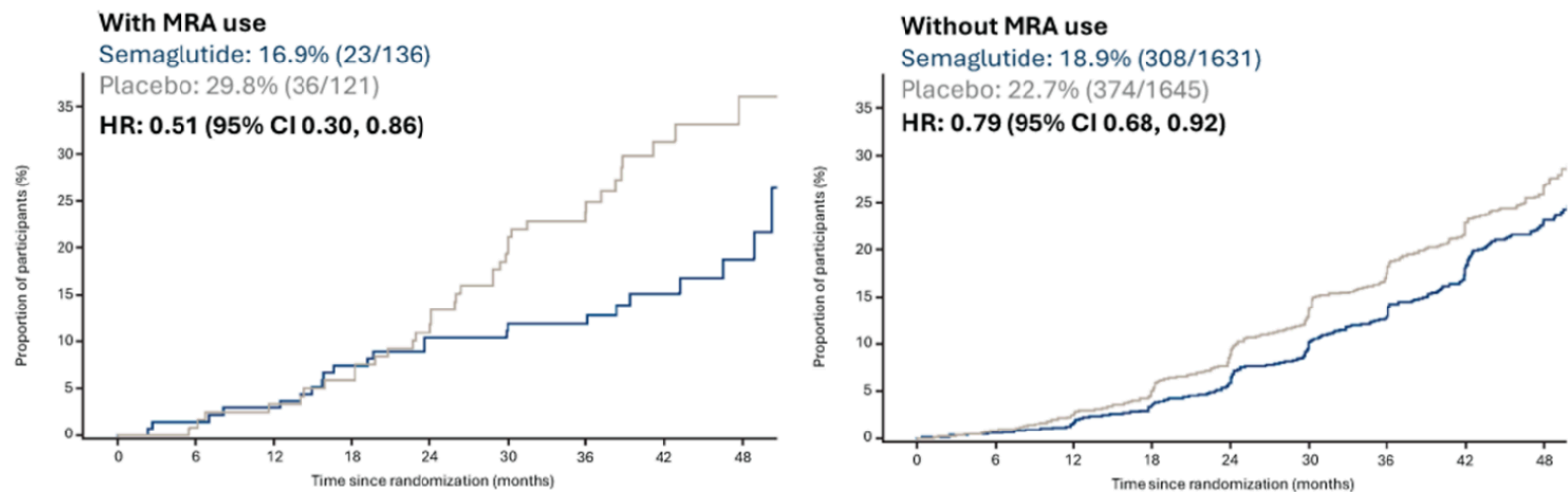
### Decline in Kidney Function

Difference in mean annual decline, 1.16 ml/min/1.73 m<sup>2</sup>  
95% CI, 0.86–1.47; P<0.001



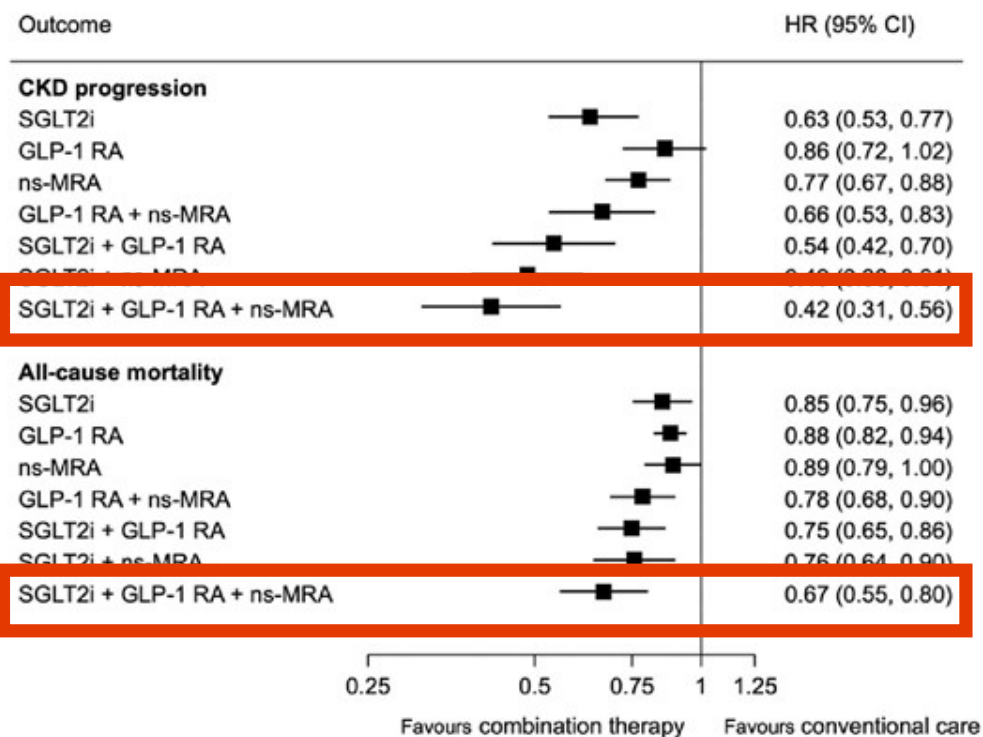
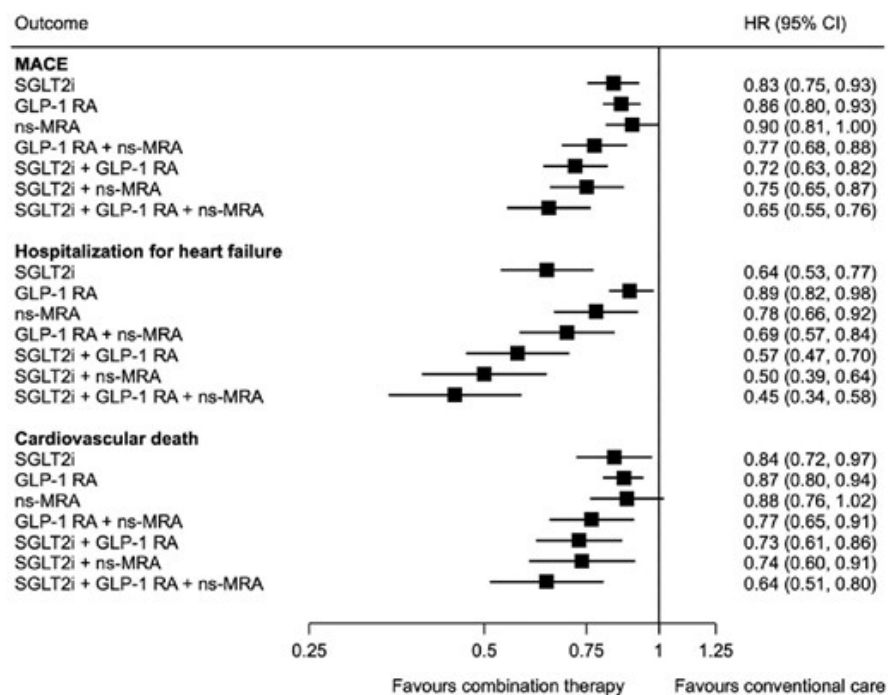
## PRIMARY OUTCOME

5-component composite of onset of a persistent  $\geq 50\%$  reduction in eGFR, kidney failure, or death due to kidney or CV causes

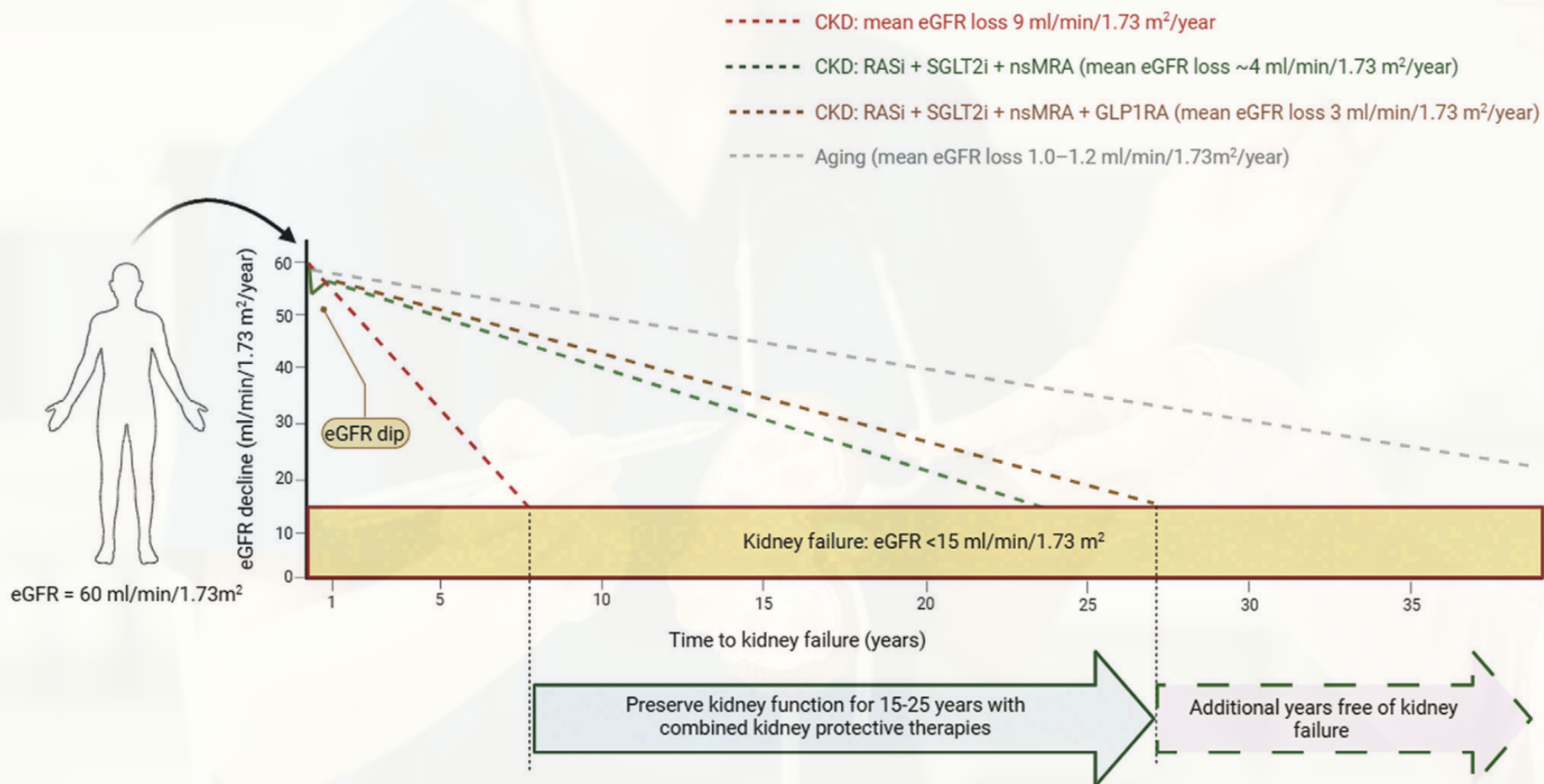


FLOW trial secondary analysis: effect of semaglutide is independent of MRA (finerenone) use

# COMBINATION THERAPY WORKS.



Neuen 2024 Circulation



# CLINICAL INERTIA AND COLLAPSE OF GDMT THERAPY

- Ontario cohort of 208,303 patients >65y, with T2DM or ASCVD from 2016 to 2020



65.5%



20.1%

Drug	NNT
ASA (life saved after STEMI)	42
Statin (non-fatal heart attack in ASCVD)	39
RAAS blockade (CKD)	18-25
SGLT2i (CKD)	22

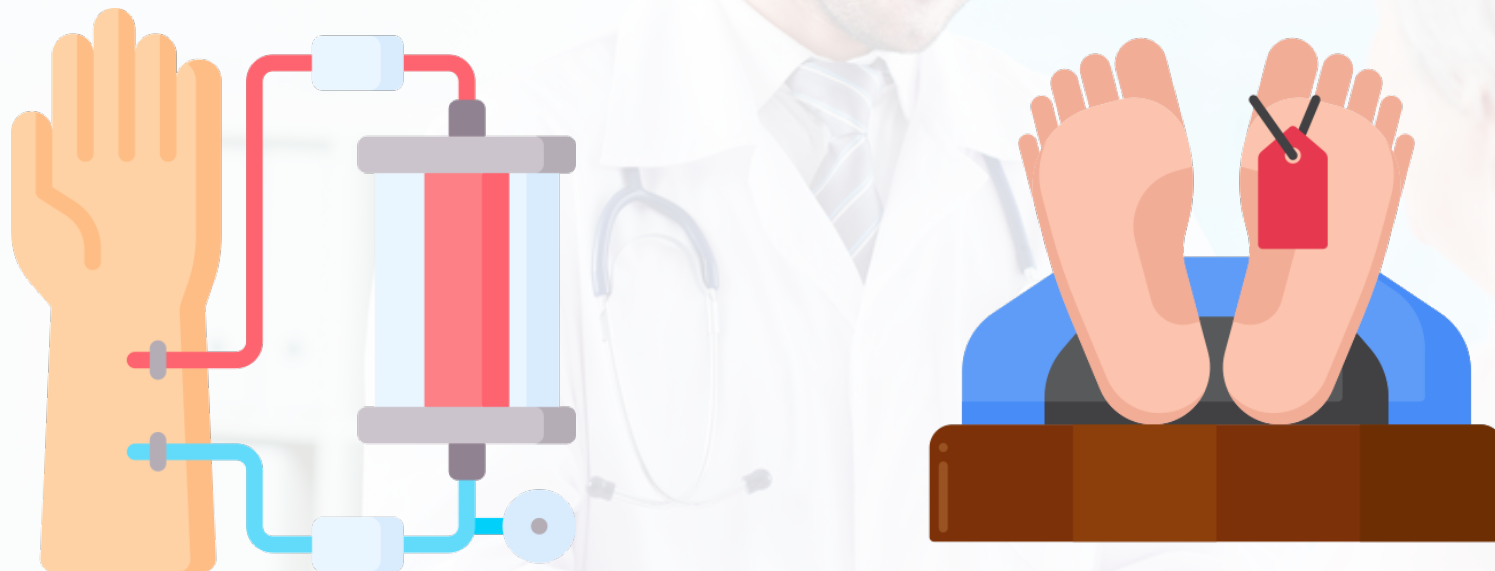


**Will I die before I  
need dialysis?**

**What will my quality of life be  
with kidney disease?**

**Can I travel? What can  
I eat?**

# TALKING ABOUT CKD RISK



KFRE provides 2- and 5-year risk of kidney failure

KDPredict balances CKD risk vs death

<https://kdpredict.com/>

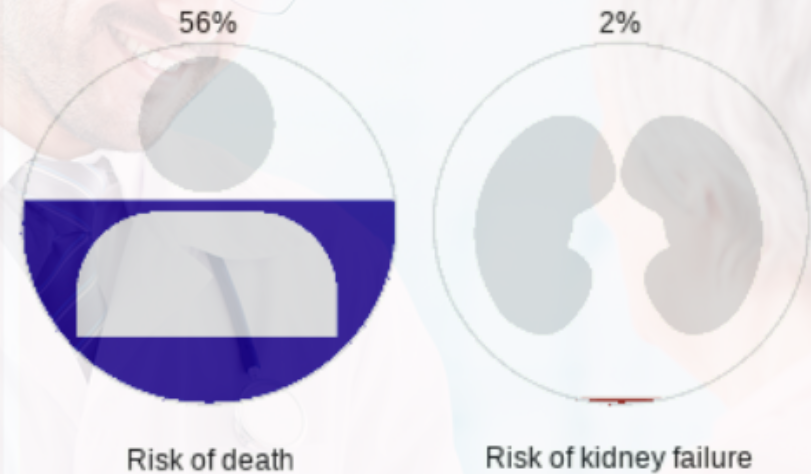


## CKD 3-4

Compares competing risk  
of death to kidney failure

Better prediction for low  
risk patients

Better discussion for low  
risk patients



*Of 100 people who are like you now, within 5 years we would expect 2 to have developed kidney failure, and 56 to die with or without kidney failure.*

# FINAL TAKEAWAYS

A faint, stylized illustration in the background shows a medical setting. On the left, there's a desk with a computer monitor displaying a kidney diagram. In the center, a group of people are gathered: a doctor in a white coat, a nurse in a pink uniform, and two patients, one seated and one standing. On the right, another doctor in a white coat is holding a clipboard. The overall style is clean and professional, using a light blue and white color palette.

- 1. Diabetic kidney disease screening - early and aggressive**
- 2. RAAS blockade and SGLT2 inhibitors are first line**
- 3. Combination therapy for more added benefit**
- 4. Use new CKD tools to help patients understand risk**