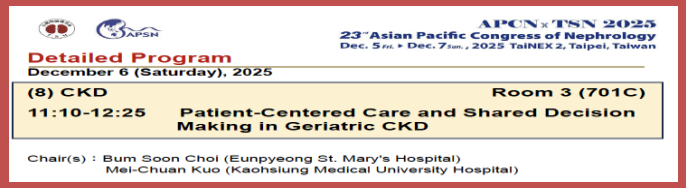
APCN×TSN 2025
23rd Asian Pacific Congress of Nephrology
Dec. 5 Fri. ▸ Dec. 7 Sun., 2025 TaiNEX 2, Taipei, Taiwan
Detailed Program
December 6 (Saturday), 2025
(8) CKD Room 3 (701C)
11:10-12:25 Patient-Centered Care and Shared Decision Making in Geriatric CKD
Chair(s) : Bum Soon Choi (Eunpyeong St. Mary's Hospital)
Mei-Chuan Kuo (Kaohsiung Medical University Hospital)

Treatment of Chronic Kidney Disease in Older Populations

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COI Disclosure Presenter: Seiji Kishi

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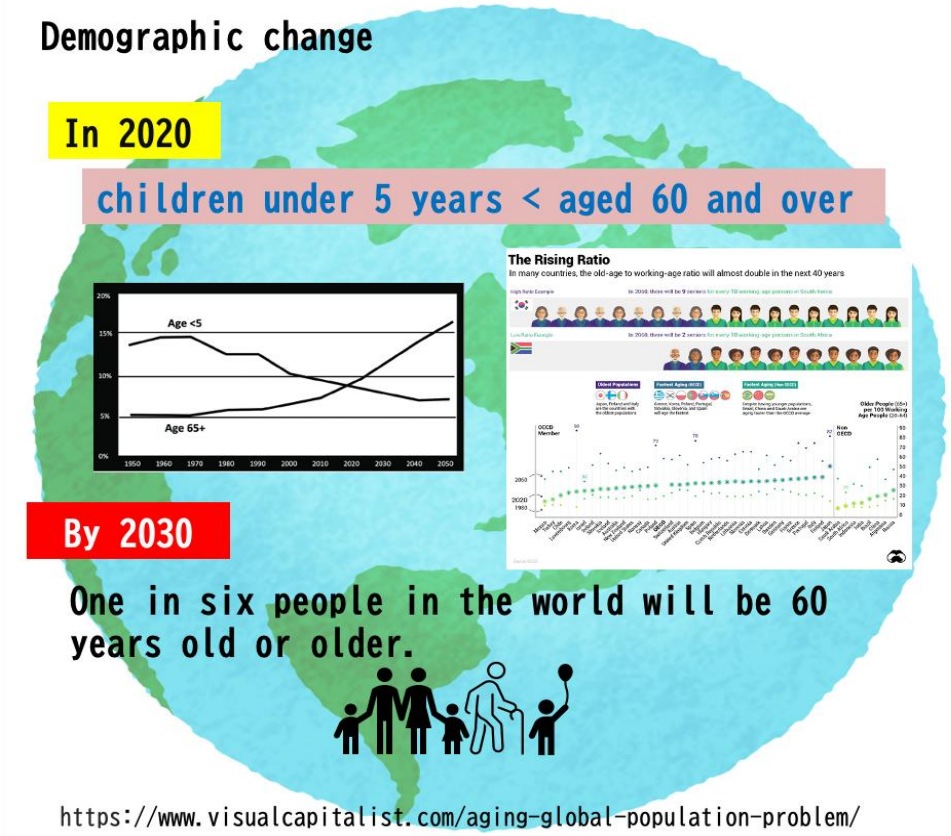
This presentation was based on
Kishi S, Kadoya H, Kashihara N.
Nat Rev Nephrology 2024
Sep:20(9):586–602.

Illustrations were generated by
ChatGPT

1) EPIDEMIOLOGY & CLINICAL BURDEN

Aging & CKD: why it matters



- Global aging is progressing
- CKD is the 9th leading cause of death worldwide
- Older-onset CKD: high CV risk, hospitalizations, disability

Lancet. 2020 ;395(10225):709-733. Kishi S, Kadoya H, Kashihara N. ***Nat Rev Nephrology*** 2024 Sep;20(9):586-602.

Challenges in Elderly CKD

Problems with diagnostic criteria (Cr-based eGFR (overestimation of renal function)

Should CKD in the elderly be treated?

Frailty

Polypharmacy

Trade-off between treatment and quality of life

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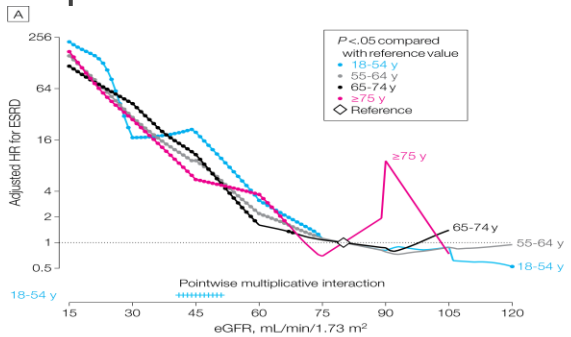
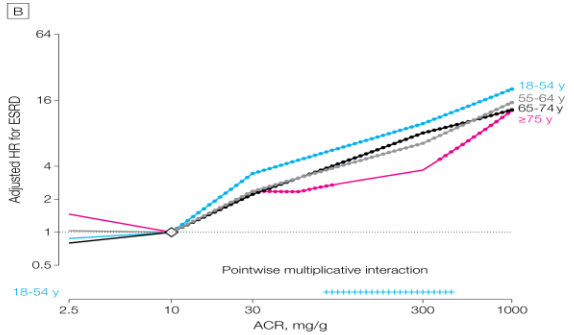
Kishi S, Kadoya H, Kashihara N. *Nat Rev Nephrology* 2024 Sep;20(9):586-602.

Why CKD in the Elderly Should Also Be Treated

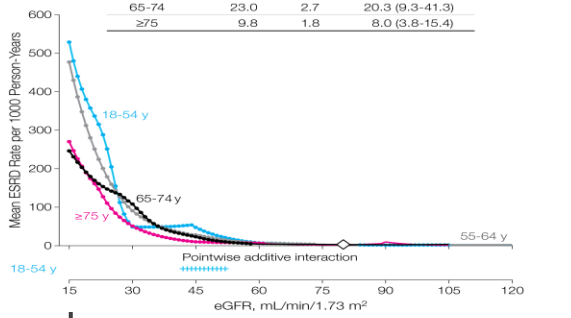




C

Mean ESRD Rate/1000 Person-Years

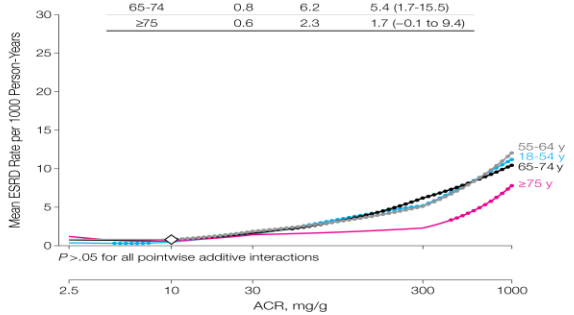
Age, y	eGFR, mL/min/1.73 m² 45	80	Difference (95% CI)
18-54	47.4	2.3	45.1 (20.8-94.6)
55-64	28.2	3.1	25.1 (13.8-44.1)
65-74	23.0	2.7	20.3 (9.3-41.3)
≥75	9.8	1.8	8.0 (3.8-15.4)



D

Mean ESRD Rate/1000 Person-Years

Age, y	ACR, mg/g 10	300	Difference (95% CI)
18-54	0.5	5.2	4.8 (1.4-14.1)
55-64	0.8	5.1	4.3 (1.5-10.6)
65-74	0.8	6.2	5.4 (1.7-15.5)
≥75	0.6	2.3	1.7 (−0.1 to 9.4)



Age <65	ACR, mg/g				ACR, mg/g			
eGFRcr-cys	<10	10–29	30–299	300+	<10	10–29	30–299	300+
	All-cause mortality				Myocardial infarction			
105+	0.99	1.2	1.5	2.4	0.93	1.0	1.1	2.6
90–104	ref	1.3	1.5	2.5	ref	1.2	1.3	1.9
60–89	1.2	1.6	2.0	2.9	1.3	1.4	1.6	2.1
45–59	2.1	2.7	2.9	4.5	1.8	2.6	3.1	3.5
30–44	2.7	3.8	4.2	5.6	1.9	2.3	3.0	3.9
<30	5.2	4.0	7.1	8.6	4.1	3.6	4.7	5.8
	Cardiovascular mortality				Stroke			
105+	0.95	1.4	1.7	4	0.96	1.2	1.6	2.7
90–104	ref	1.6	1.8	3.5	ref	1.2	1.5	2.2
60–89	1.3	1.7	2.3	3.9	1.2	1.4	1.7	2.6
45–59	2.5	4.0	4.6	6.0	1.9	2.0	2.5	3.8
30–44	3.1	6.6	5.3	7.1	2.6	3.7	3.5	3.5
<30	6.0	5.5	9.4	12	2.6	2.9	5.1	5.1
	Kidney failure replacement therapy				Heart failure			
105+	0.57	0.77	2.3	12	0.86	1.1	1.7	3.4
90–104	ref	1.4	3.9	11	ref	1.3	1.5	3.0
60–89	1.9	3.7	8.3	33	1.2	1.7	2.1	3.6
45–59	7.0	16	28	100	1.7	3.3	3.4	5.3
30–44	22	34	109	210	3.5	4.1	6.8	5.7
<30	335	267	419	625	7.5	6.3	9.7	8.9
	Acute kidney injury				Atrial fibrillation			
105+	0.75	1.0	1.4	3.4	0.93	1.0	1.3	1.9
90–104	ref	1.2	1.8	2.6	ref	1.2	1.4	2.3
60–89	1.6	2.7	2.9	5.8	1.1	1.3	1.5	1.8
45–59	4.2	6.0	5.6	7.6	1.5	2.0	2.1	2.6
30–44	5.7	9.4	9.8	9.4	1.8	2.4	3.0	2.8
<30	15	14	14	13	3.7	2.9	4.3	5.4
	Hospitalization				Peripheral artery disease			
105+	1.0	1.1	1.1	1.5	0.93	1.9	1.5	2.6
90–104	ref	1.1	1.2	1.3	ref	1.8	2.1	3.9
60–89	1.1	1.2	1.3	1.6	1.2	2.1	2.2	5.4
45–59	1.3	1.7	1.5	2.0	3.2	7.3	3.4	8.4
30–44	1.5	1.8	1.6	2.1	6.5	9.1	6.6	13
<30	2.1	2.4	2.4	3.5	1.4	7.6	18	16

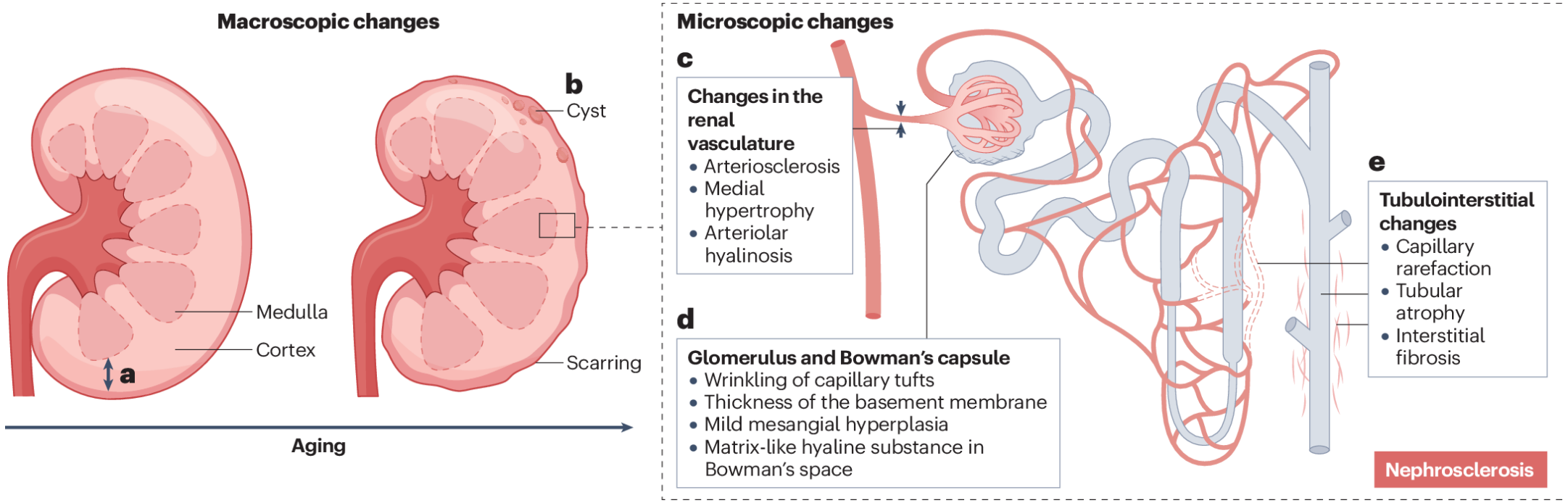
Age 65+	ACR, mg/g				ACR, mg/g			
eGFRcr-cys	<10	10–29	30–299	300+	<10	10–29	30–299	300+
	All-cause mortality				Myocardial infarction			
105+	1.2	1.4	1.9	3.5	0.97	1.4	2.0	19
90–104	ref	1.2	1.4	2.0	ref	1.2	1.1	1.9
60–89	1.2	1.5	1.8	2.3	1.1	1.4	1.5	1.9
45–59	1.6	2.0	2.4	2.9	1.6	1.9	2.3	3.4
30–44	2.0	2.4	3.2	4.1	2.1	2.6	3.1	3.8
<30	3.4	4.1	5.1	6.5	4.9	3.0	5.1	5.0
	Cardiovascular mortality				Stroke			
105+	1.1	1.5	2.0	13	1.2	1.3	1.5	3.3
90–104	ref	1.4	1.4	3.4	ref	1.3	1.3	2.8
60–89	1.2	1.7	2.2	3.1	1.1	1.4	1.8	2.5
45–59	1.7	2.4	3.0	4.3	1.5	1.7	2.0	2.3
30–44	2.4	3.1	4.5	5.8	1.5	2.0	2.1	2.3
<30	5.7	5.2	5.1	7.8	1.7	2.0	2.4	4.8
	Kidney failure replacement therapy				Heart failure			
105+	2.0	1.0	2.1		0.99	1.5	1.7	7.0
90–104	ref	1.9	4.7	10	ref	1.3	1.5	2.2
60–89	1.4	2.6	6.2	19	1.2	1.5	2.0	3.2
45–59	3.7	7.9	16	42	1.6	2.0	2.9	4.1
30–44	14	14	46	137	2.3	2.9	3.5	6.1
<30	87	364	241	406	4.4	4.1	5.5	7.2
	Acute kidney injury				Atrial fibrillation			
105+	0.91	1.1	1.3	1.9	0.95	1.1	1.0	1.7
90–104	ref	1.3	1.4	3.9	ref	1.2	1.3	2.4
60–89	1.5	2.1	2.7	4.7	1.1	1.2	1.5	2.0
45–59	3.6	4.3	5.1	7.3	1.2	1.4	1.7	1.9
30–44	5.7	5.9	7.2	9.8	1.5	1.8	2.0	2.2
<30	10	11	11	22	1.8	1.8	2.2	3.2
	Hospitalization				Peripheral artery disease			
105+	1.0	1.1	1.2	2.2	1.1	2.3	2.9	4.9
90–104	ref	1.1	1.3	1.4	ref	1.3	2.0	4.8
60–89	1.1	1.2	1.3	1.5	1.3	1.6	2.0	3.2
45–59	1.2	1.2	1.4	1.6	2.0	2.8	3.1	3.1
30–44	1.5	1.4	1.8	2.0	3.5	2.8	3.8	5.9
<30	1.9	1.9	2.0	2.6	8.4	4.1	5.9	10

Low eGFR and high albuminuria are independently associated with mortality and ESRD across a broad population, regardless of age.

JAMA. 2012; 308(22): 2349–2360. *Kidney Int.* 2024 ;105(4S):S117-S314.

2) BIOLOGY OF RENAL AGING

Age-related reduction in nephron number causes decreased GFR and reduced cortical volume.



(a) Kidney volume gradually decreases after age 30, characterized by cortical thinning, which becomes more pronounced after age 50

(b) With aging, the renal surface becomes irregular, with the appearance of scarring and cysts.

(c) Vascular lesions also become more common in the elderly.

(d) Chronic ischemia results in glomerulosclerosis at the cortex-medulla boundary.

(e) Tubular epithelial atrophy, lumen enlargement, basement membrane thickening, and tubulointerstitial fibrosis are observed.

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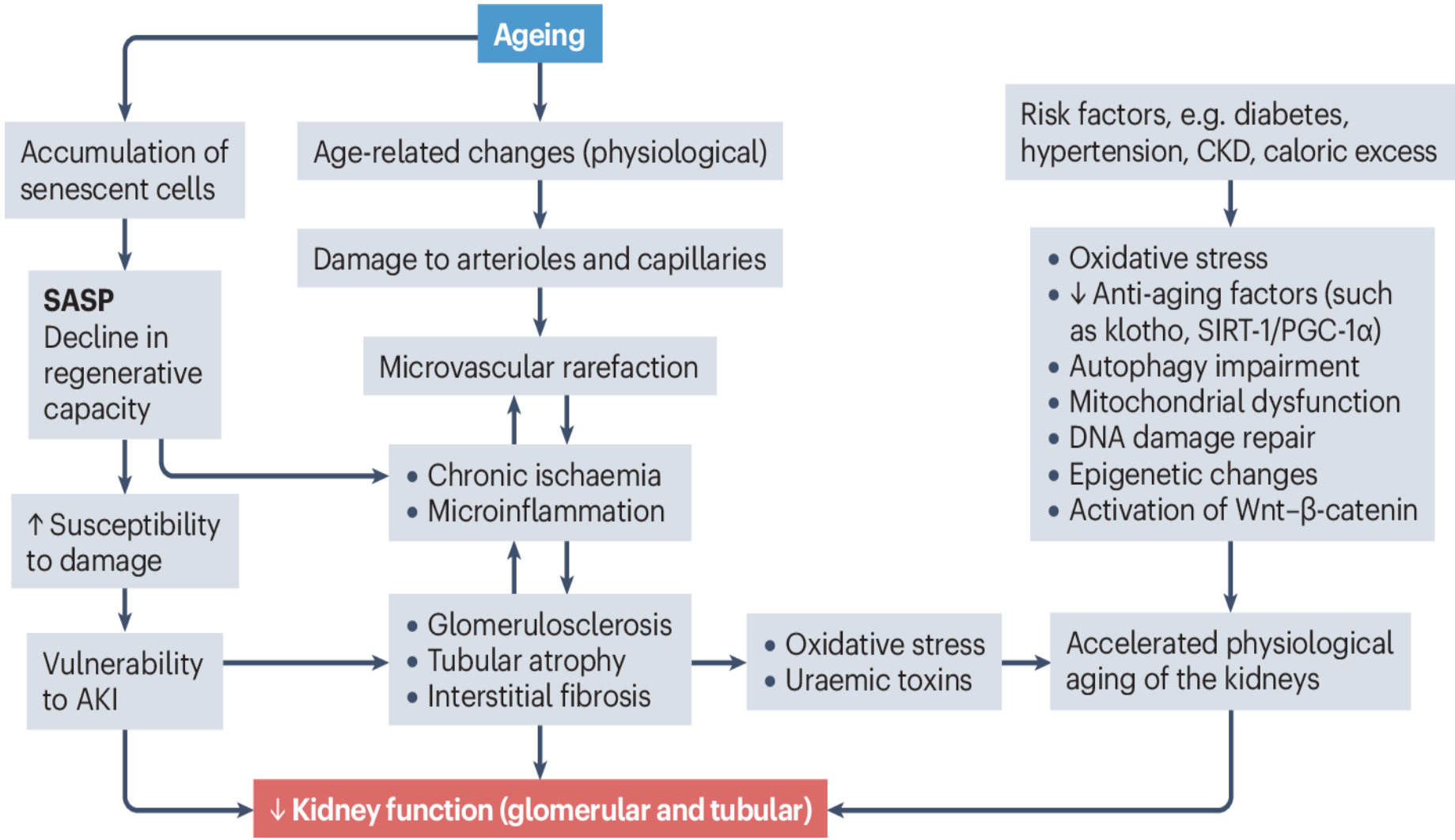
Kishi S, Kadoya H, Kashihara N. *Nat Rev Nephrology* 2024 Sep;20(9):586-602.

Molecular changes in the aging kidney



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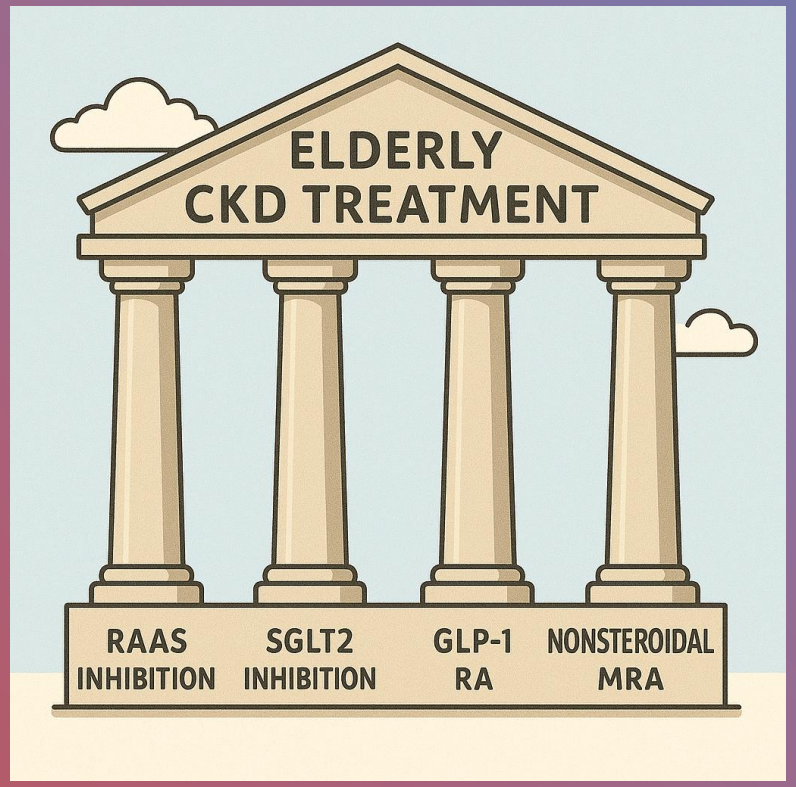
Kishi S, Kadoya H, Kashihara N. ***Nat Rev Nephrology*** 2024 Sep;20(9):586-602.

3)PHARMACOTHERAPY UPDATES



Risk-based and goal-concordant planning

Low eGFR & high albuminuria predict adverse outcomes regardless of age

01

RCT gaps in the very old population

→lean on subgroup/real-world data + clinical judgment

02

Shared decision-making aligns therapy with patient values and function

RAAS Inhibition in Older Adults With CKD

Benefits: Reduction in proteinuria, slower eGFR decline, and cardiovascular protection in high-risk patients.

Evidence gaps: Very elderly patients and advanced CKD (stage 4–5) are under-represented in major RCTs.

Practical points in older adults: Start low, titrate carefully, and monitor serum creatinine, potassium, and blood pressure. Reassess continuation when recurrent hyperkalemia, symptomatic hypotension, or progressive frailty occur.

Kishi S, Kadoya H, Kashihara N. *Nat Rev Nephrology* 2024 Sep;20(9):586-602.

SGLT2is and GLP-1RAs may be effective in patients older than 65 years

Table 1 | Effects of SGLT2 inhibitors and GLP-1RAs in older adults

Study	Medication	Population studied	Key findings	Refs.
EMPA-REG OUTCOME	Empagliflozin	Adults aged above or below 65 years	No significant difference in CV or renal outcomes between age groups	91
DECLARE-TIMI	Dapagliflozin	Patients with HF; various age groups including <65, 65–75, >75 years of age	Consistent efficacy in reducing CV death or hospitalization across age groups	92
DAPA-HF	Dapagliflozin	Patients with HF, various age groups	Uniform CV benefits across younger (<65 years) and older (>65 years) cohorts	85,93
Taiwan Study	SGLT2 inhibitors	Patients with T2DM and advanced CKD (eGFR <20 ml/min/1.73 m^2)	Safe with reduced risks of dialysis initiation, HF hospitalization, acute myocardial infarction, diabetic ketoacidosis and AKI	94
DAPA-CKD	Dapagliflozin	Older populations with CKD, including frail or aged >75 years	Reduced risk of renal outcomes, CV events, and all-cause mortality across all frailty levels	95
VERTIS CV	Ertugliflozin	Adults aged 75 or older	Risk–benefit profile in older patients aligns with that for younger cohorts	96
LEADER	Liraglutide	Patients with T2DM and high CV risk; 60–74 years and ≥75 years	34% risk reduction in MACE and 29% in expanded MACE in patients aged ≥75 years compared with placebo	106
SUSTAIN-6	Semaglutide	Patients with T2DM; 43% aged 65 years or older	Reduced risk of first occurrence of MACE across all age subgroups	107

AKI, acute kidney injury; CKD, chronic kidney disease; CV, cardiovascular; GLP-1RAs, Glucagon-like peptide 1 receptor agonists; HF, heart failure; MACE, major adverse cardiovascular events, SGLT2, Sodium-glucose cotransporter-2; T2DM, type 2 diabetes mellitus.

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Kishi S, Kadoya H, Kashihara N. *Nat Rev Nephrology* 2024 Sep;20(9):586-602.

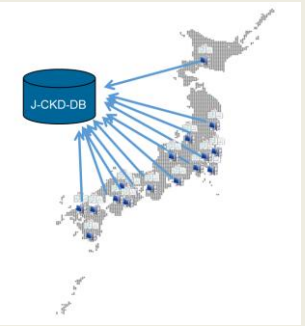
SGLT2 Inhibitors: Kidney and Heart Protection in Older Adults

- Large outcome trials (EMPA-REG, CANVAS, CREDENCE, DAPA-CKD, EMPA-KIDNEY) show **consistent kidney and cardiovascular benefits across age groups**, including ≥65 or ≥75 years.
- In older adults with CKD and/or heart failure, SGLT2 inhibitors:
  Slow **eGFR decline** and reduce risk of **ESKD or sustained ≥40–50% eGFR loss**.
  Lower **hospitalization for heart failure and cardiovascular death**.
- Real-world data in elderly DKD (including ≥75 years) suggest **better eGFR slope and fewer kidney events** compared with other glucose-lowering drugs.

N Engl J Med. 2020;383:1436–1446. N Engl J Med. 2023;388:117–127. *JAMA Cardiol.* 2021;6:148–158..
Kishi S, Kadoya H, Kashihara N. ***Nat Rev Nephrology*** 2024 Sep;20(9):586-602.

Effects of SGLT2 Inhibitors in Patients Aged 75 Years or Older with Diabetic Kidney Disease

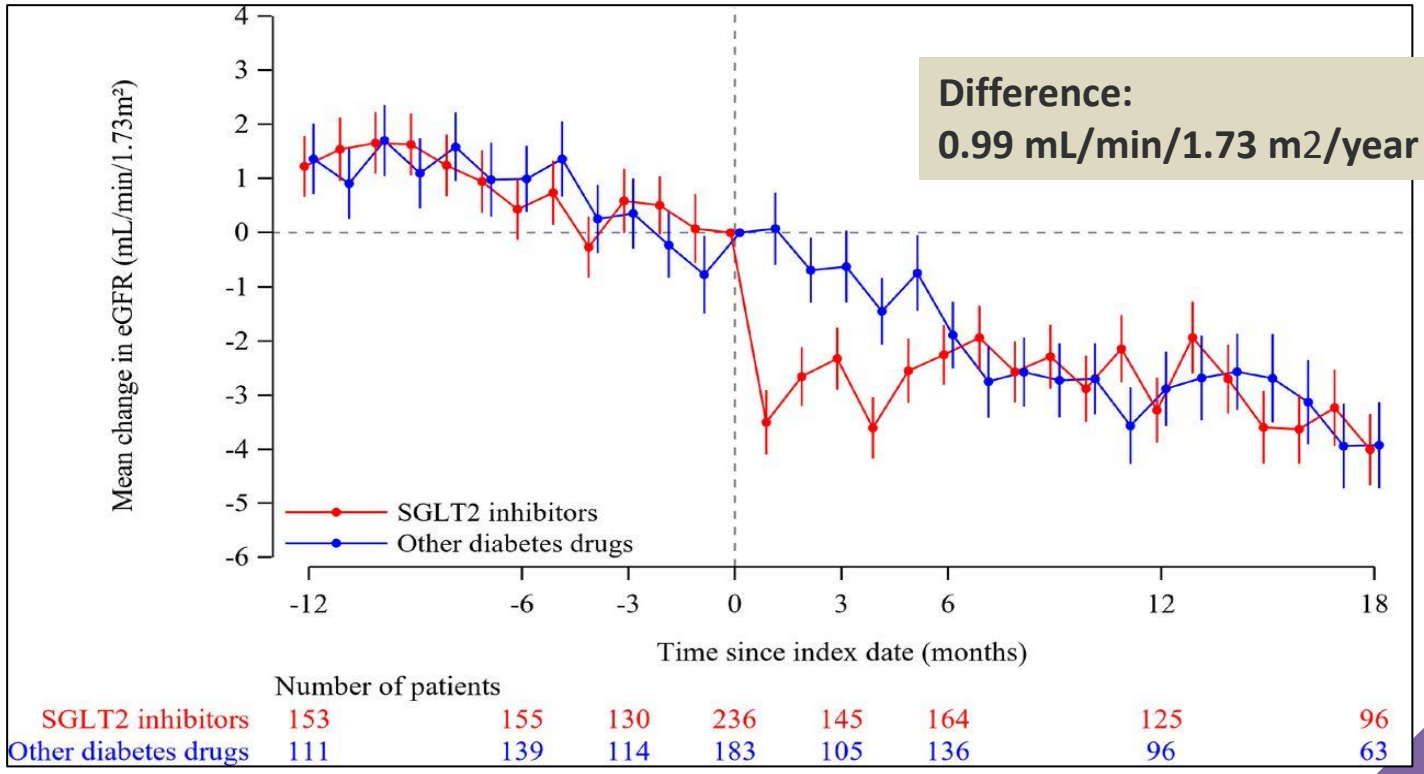
Study Objective	To compare kidney outcomes between DKD patients aged ≥75 years initiating SGLT2 inhibitors versus other glucose-lowering drugs
Study Design	**Observational Cohort Study** conducted in a real-world setting.
Data Source	Japan Chronic Kidney Disease Database Ex (**J-CKD-DB-Ex ;**EHRs from 21 Japanese university hospitals).
Population	T2DM patients aged ≥**75 years**.
Methodology	**1:1 Propensity Score (PS) Matching** to control for confounding factors. (Final Sample N=696: 348 SGLT2 users vs. 348 Other Glucose-Lowering Drugs users).
Key Outcomes & Analysis	**Primary:** Rate of eGFR decline (Analyzed using Linear-mixed regression model).
	Secondary: Composite Renal Endpoint (≥40% sustained eGFR reduction or progression to ESKD) (Analyzed using Cox proportional hazards model)



BMJ Open Diabetes Res Care. 2024 May 30;12(3):e004115.

Effects of SGLT2 Inhibitors in Patients Aged 75 Years or Older with Diabetic Kidney Disease

Group	Annual eGFR Decline Rate (mL/min/1.73 m2/year)	95% CI
SGLT2 Inhibitors	−0.80	−1.05 to −0.54
Other GLDs	−1.78	−2.08 to −1.49



Difference:
0.99 mL/min/1.73 m2/year favoring SGLT2 (p<0.001)

BMJ Open Diabetes Res Care. 2024 May 30;12(3):e004115.

SGLT2 Inhibitors: Kidney and Heart Protection in Older Adults

Safety considerations in older adults:

- Monitor for **volume depletion, hypotension, genital infections, and AKI** in the setting of acute illness.
- Apply **"sick-day rules"** (temporary discontinuation during dehydration, sepsis, or surgery).

Conclusion:

SGLT2 inhibitors are now a **first-line kidney- and heart-protective therapy** in older CKD patients, provided they are monitored carefully.

N Engl J Med. 2020;383:1436–1446. N Engl J Med. 2023;388:117–127. JAMA Cardiol. 2021;6:148–158.

GLP-1 Receptor Agonists in CKD

The FLOW trial (Semaglutide 1.0 mg weekly in T2DM with CKD) demonstrated:

- Significant reduction in a **composite kidney outcome** (sustained eGFR decline, ESKD, or kidney/CV death).
- Slower **annual eGFR decline** compared with placebo.
- Additional reduction in **major adverse cardiovascular events**.

Meta-analyses indicate that GLP-1RA:

Reduce **albuminuria**, **MACE**, and **all-cause mortality** in patients with T2DM, including those with CKD.

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N Engl J Med. 2024;doi:10.1056/NEJMoa2403347. Kishi S, Kadoya H, Kashihara N. ***Nat Rev Nephrology*** 2024 Sep;20(9):586-602.

Considerations in GLP-1RA

In older adults with CKD, GLP-1RA are particularly attractive when:

Obesity, ASCVD, or high cardiovascular risk is present.

Additional weight loss and blood pressure/lipid improvements are desired on top of SGLT2i.

Practical issues in the elderly:

Gastrointestinal adverse events, weight loss, and potential loss of lean mass require careful monitoring.

Dose escalation should be slow and individualized.

Lancet Diabetes Endocrinol. 2021;9:653–662. *Circulation.* 2022;146:1882–1894. Kishi S, Kadoya H, Kashihara N. ***Nat Rev Nephrology*** 2024 Sep;20(9):586-602.

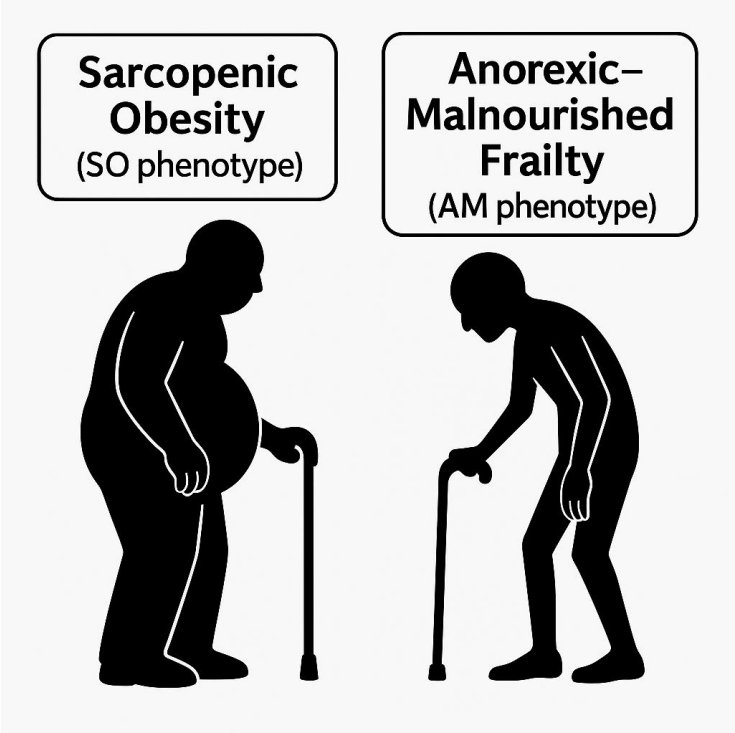
Frailty Phenotypes and the Use of SGLT2i / GLP-1RA

- Who Benefits From SGLT2i and GLP-1RA?-

Frailty is **heterogeneous**; treatment decisions should consider the **frailty phenotype**, not age alone.

High visceral adiposity, insulin resistance,
and cardiovascular risk.

Weight loss beneficial →
GLP-1RA / SGLT2i ideal



Low BMI, unintentional weight loss, poor appetite, and sarcopenia.

Risk of muscle loss
→ Evaluate frailty, nutrition first

Kishi S, Kadoya H, Kashihara N. ***Nat Rev Nephrology*** 2024 Sep;20(9):586-602.
Metabolites. 2025 Jan 14;15(1):49.

Frailty Phenotypes and the Use of SGLT2i / GLP-1RA

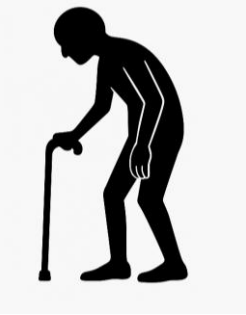
Sarcopenic Obesity
(SO phenotype)

SGLT2 inhibitors and GLP-1RA are often well-suited:

Reduce weight and visceral fat; improve BP, glycemia, and lipids.

Provide kidney and cardiovascular protection with meaningful absolute risk reduction.

Anorexic–Malnourished Frailty
(AM phenotype)



SGLT2i and GLP-1RA may exacerbate weight and muscle loss, increase risk of orthostatic hypotension, falls, and functional decline.

Use these drugs only with clear indications, close monitoring, and parallel nutritional and exercise interventions—or consider alternative regimens.

Key message:

"Frailty type, not just chronological age, should guide the use of SGLT2i and GLP-1RA in older CKD patients."

Kishi S, Kadoya H, Kashihara N. ***Nat Rev Nephrology*** 2024 Sep;20(9):586-602.
Metabolites. 2025 Jan 14;15(1):49.

Resolving Concerns: Muscle Preservation & Efficacy in Frailty

【Safety / Muscle Quality】
EMPA-ELDERLY (Japan)
RCT of Empagliflozin in T2D patients aged ≥ 65

Question: Does SGLT2i cause sarcopenia in elderly Japanese patients?
Result: Significant weight loss (-2.37 kg) was achieved WITHOUT compromising muscle mass.
↓Fat mass (-1.84 kg) & Body water (-0.63kg)
↔ Skeletal Muscle Index (SMI) & Grip strength (Preserved)
Implication: Weight loss by SGLT2i is "quality" weight loss, sparing muscle even in older adults.
(Yabe D. et al. Diabetes Obes Metab 2023)

【Efficacy / Absolute Benefit】
CV Outcomes by Frailty Status
(Medicare Cohort) *SGLT2i & GLP-1RA vs. DPP-4i*

Question: Is it worth treating the frailest patients?
Result: Absolute Benefit is Amplified in Frailty.
Relative Risk Reduction (HR ~0.73) was consistent across all frailty levels.
Absolute Risk Reduction (IRD) was largest in the frailest group.
NNT (1-year CV event):

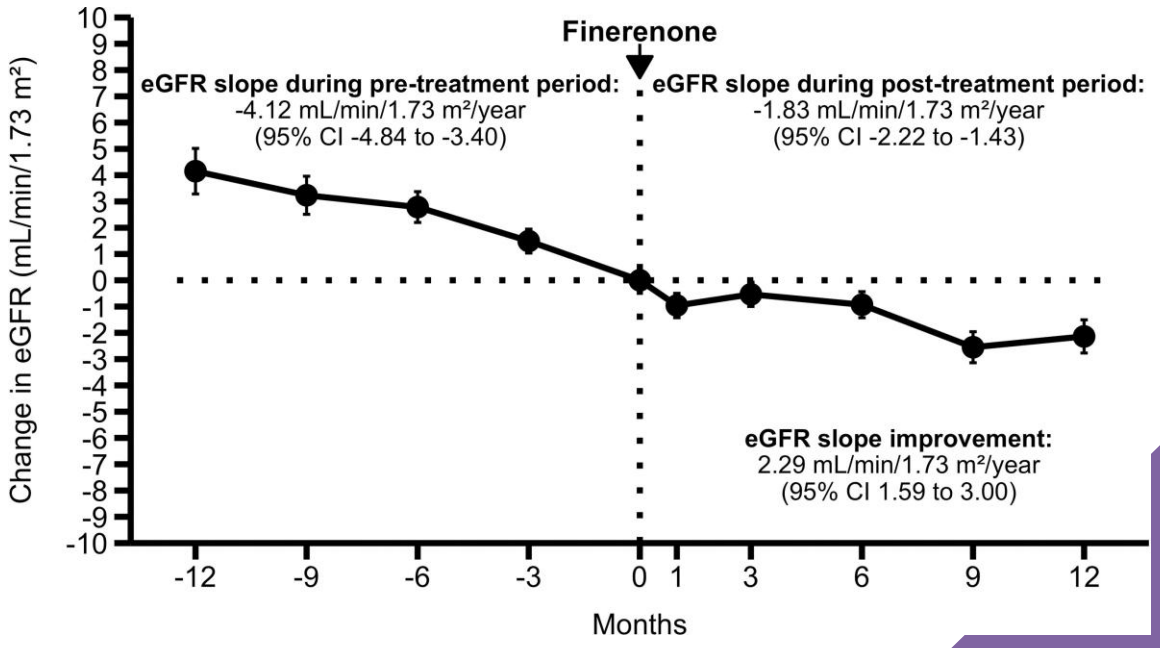
- **Frail: 39** (High Reward)
- Non-Frail: 159

Safety: Severe AE rates comparable to DPP-4i (Caution: Genital infections ↑ in frail).
(Kutz A. et al. *Diabetes Care 2023.*)

"Frail older adults are not 'too sick to treat'—they often gain the most benefit while preserving muscle function."

The effect of finerenone in patients with T2D and CKD in real world

The mean age was 70.8 years (SD: 10.4）
The median eGFR was 38.9 ml/min per 1.73 m^2
The majority of patients were classified as G3b or lower.
The median urine albumin-to-creatinine ratio was 265 mg/g with 49.1% categorized as A3.
Most patients were receiving kidney-protective medications



Real-world analysis provides evidence that finerenone may improve the eGFR slope in patients with T2D and CKD, regardless of baseline eGFR and albuminuria levels, without notable hyperkalemia.

Yamanouchi M et al. Kidney International Reports, Volume 10, Issue 7, 2461 - 2465

4) NON-PHARMACOLOGIC THERAPY

Non-pharmacologic Therapy: Exercise and Nutrition

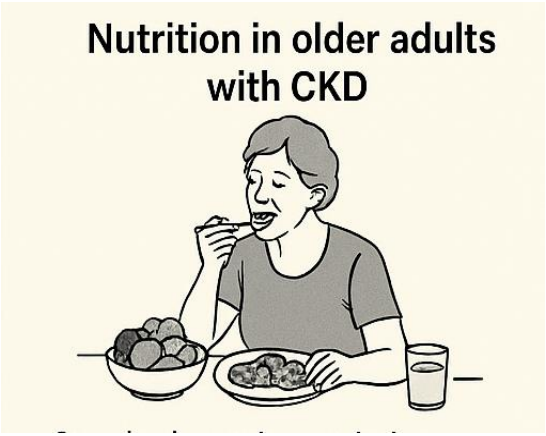
Physical activity and exercise training

- Resistance and combined training improve **muscle strength, physical performance, and quality of life** in older CKD patients.
- Walking and regular activity are associated with **lower mortality and progression to KRT**.

"Protecting the legs" is often as important as **protecting the kidneys**.

JAMA Intern Med. 2022;182:650–659.
Kishi S, Kadoya H, Kashihara N. Nat Rev Nephrology **2024 Sep;20(9):586-602.**

Non-pharmacologic Therapy: Exercise and Nutrition First



- Standard protein restriction (0.6–0.8 g/kg/day) must be balanced against the risk of **sarcopenia and protein–energy wasting**.
- In many frail older patients, **preserving nutritional status** may take priority over strict protein restriction.
- Tailor energy and protein intake based on **frailty status, comorbidities, and patient preferences**, ideally with dietitian support.

Kishi S, Kadoya H, Kashihara N. Nat Rev Nephrology 2024 Sep;20(9):586-602.

Key Messages in Treating CKD in Older Adults

Do not ignore CKD in older adults:

Reduced eGFR and albuminuria predict **mortality and kidney failure** regardless of age.

Build pharmacologic therapy on four pillars where appropriate:

RAASis, SGLT2is, non-steroidal MRAs, and now **GLP-1RA**—with individualization for comorbidities and frailty.

Frailty phenotype matters:

In obese or sarcopenic-obese patients, SGLT2i and GLP-1RA offer **substantial heart–kidney benefits**.

In lean, malnourished frailty, carefully weigh benefits against **weight and muscle loss**.

Non-pharmacologic care is fundamental:

Exercise, nutrition, and shared decision-making (including CKM when appropriate) are crucial to **align treatment with the patient's goals and quality of life**.

See you in Yokohama!