KDIGO Guidelines and Italian Document for an integrated CKD Management

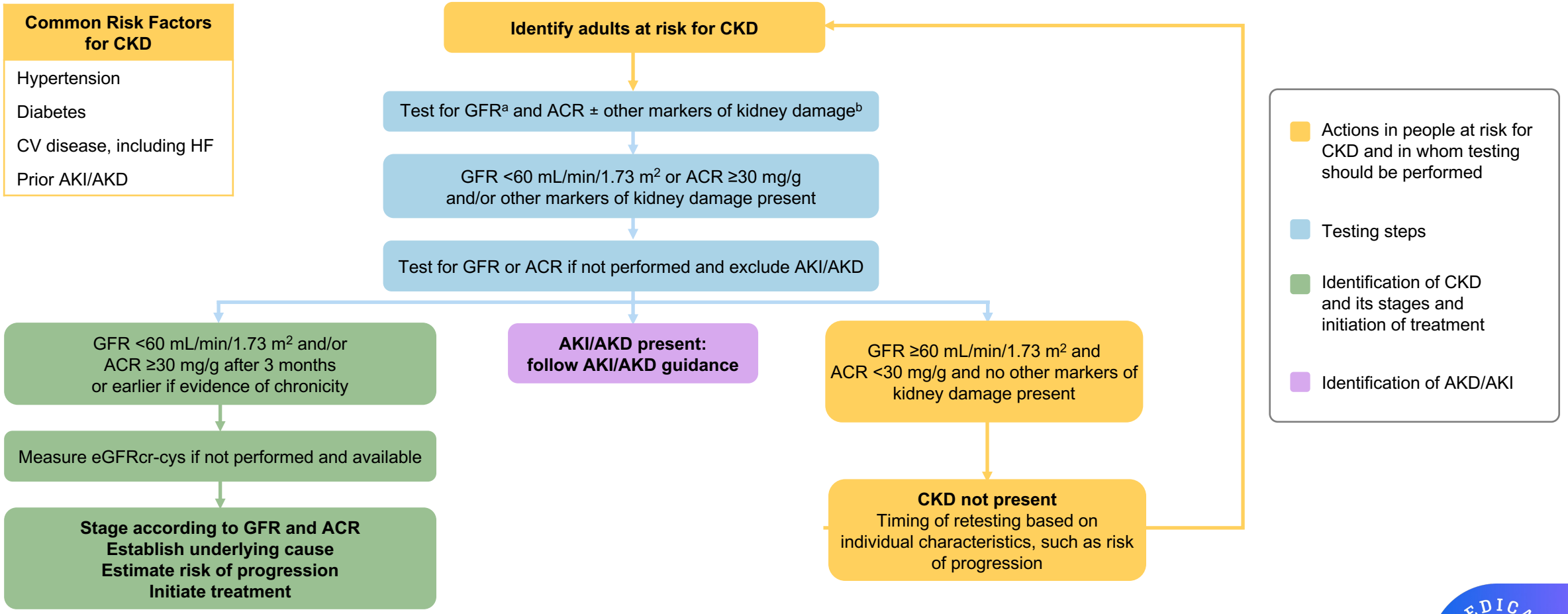
AstraZeneca

MEDICAL EXPERIENCE

Overview of Today's Presentation

- 2024 KDIGO Guidelines: Key Updates on CKD Screening and Staging
- GFR and Albuminuria Monitoring: Frequency and Risk Stratification
- CKD Classification: Cause, GFR, and Albuminuria (C-G-A)
- SGLT2 Inhibitors: Recommendations and Clinical Practice Points
- Holistic Approach to CKD Management
- Italian Consensus Document: Integrating Pharmacological and Nutritional Interventions
- Conclusions

2024 KDIGO Evaluation and Management of CKD Guideline: Screening Algorithm for Diagnosis and Staging of CKD



[a]For recommended methods to estimate glomerular filtration rate (eGFR), see Section 1.2 of the guidelines; [b]Markers of kidney damage other than albuminuria may also be used to diagnose CKD, but ACR and GFR are still required to determine stage and estimate risk of progression. AKD is defined by the abnormalities of kidney function and/or structure with implications for health and with a duration of ≤3 months.

ACR = albumin-to-creatinine ratio; AKD = acute kidney disease; AKI = acute kidney injury; CKD = chronic kidney disease; CV = cardiovascular; eGFRcr-cys = creatinine and cystatin C–based estimated glomerular filtration rate; GFR = glomerular filtration rate; HF = heart failure; KDIGO = Kidney Disease: Improving Global Outcomes.

KDIGO CKD Work Group. *Kidney Int*. 2024;105(4S):S117-S314.

2024 KDIGO Evaluation and Management of CKD Guideline: Frequency of Monitoring GFR and Albuminuria in CKD

CKD is classified based on: Cause (C) GFR (G) Albuminuria (A)				Albuminuria categories Description and range		
				A1	**A2**	**A3**
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30-299 mg/g 3-29 mg/mmol	≥300 mg/g ≥30 mg/mmol
GFR categories (mL/min/1.73 m²) Description and range	**G1**	Normal or high	≥90	Screen 1	Treat 1	Treat 3
	G2	Mildly decreased	60-89	Screen 1	Treat 1	Treat 3
	G3a	Mildly to moderately decreased	45-59	Treat 1	Treat 2	Treat 3
	G3b	Moderately to severely decreased	30-44	Treat 2	Treat 3	Treat 3
	G4	Severely decreased	15-29	Treat 3	Treat 3	Treat 4+
	G5	Kidney failure	<15	Treat 4+	Treat 4+	Treat 4+

Low risk (if no other markers of kidney disease, no CKD)
Moderately increased risk
High risk
Very high risk

Reproduced from: de Boer IH et al. *Kidney Int.* 2022;102:974–989.

Notes: Albuminuria and GFR grid reflects the risk of progression by intensity of coloring (green, yellow, orange, red, and deep red). The numbers in the boxes are a guide to the frequency of monitoring (number of times per year).

CKD = chronic kidney disease; GFR = glomerular filtration rate; KDIGO = Kidney Disease: Improving Global Outcomes.

KDIGO CKD Work Group. *Kidney Int*. 2024;105(4S):S117-S314.

2024 KDIGO Evaluation and Management of CKD Guideline: Summary of SGLT2 Inhibitor Use

- **SGLT2i** is recommended in patients with T2D, CKD, and an eGFR ≥20 mL/min/1.73 m^2 (1A)[a]

  Practice Point:[b,c]

  - *Once an SGLT2i is initiated, it is reasonable to continue an SGLT2i even if the eGFR falls below 20 mL/min/1.73 m^2, unless it is not tolerated or KRT is initiated*
  - *It is reasonable to withhold SGLT2i during times of prolonged fasting, surgery, or critical medical illness (when people may be at greater risk for ketosis)*

- **SGLT2i** is recommended in adults with CKD for the following (1A):[a]
  - eGFR ≥20 mL/min/1.73 m^2 with uACR ≥200 mg/g, or
  - Heart failure, irrespective of level of albuminuria

  Practice Point:[b]

  - *SGLT2i initiation or use does not necessitate alteration of frequency of CKD monitoring and the reversible decrease in eGFR on initiation is generally not an indication to discontinue therapy*

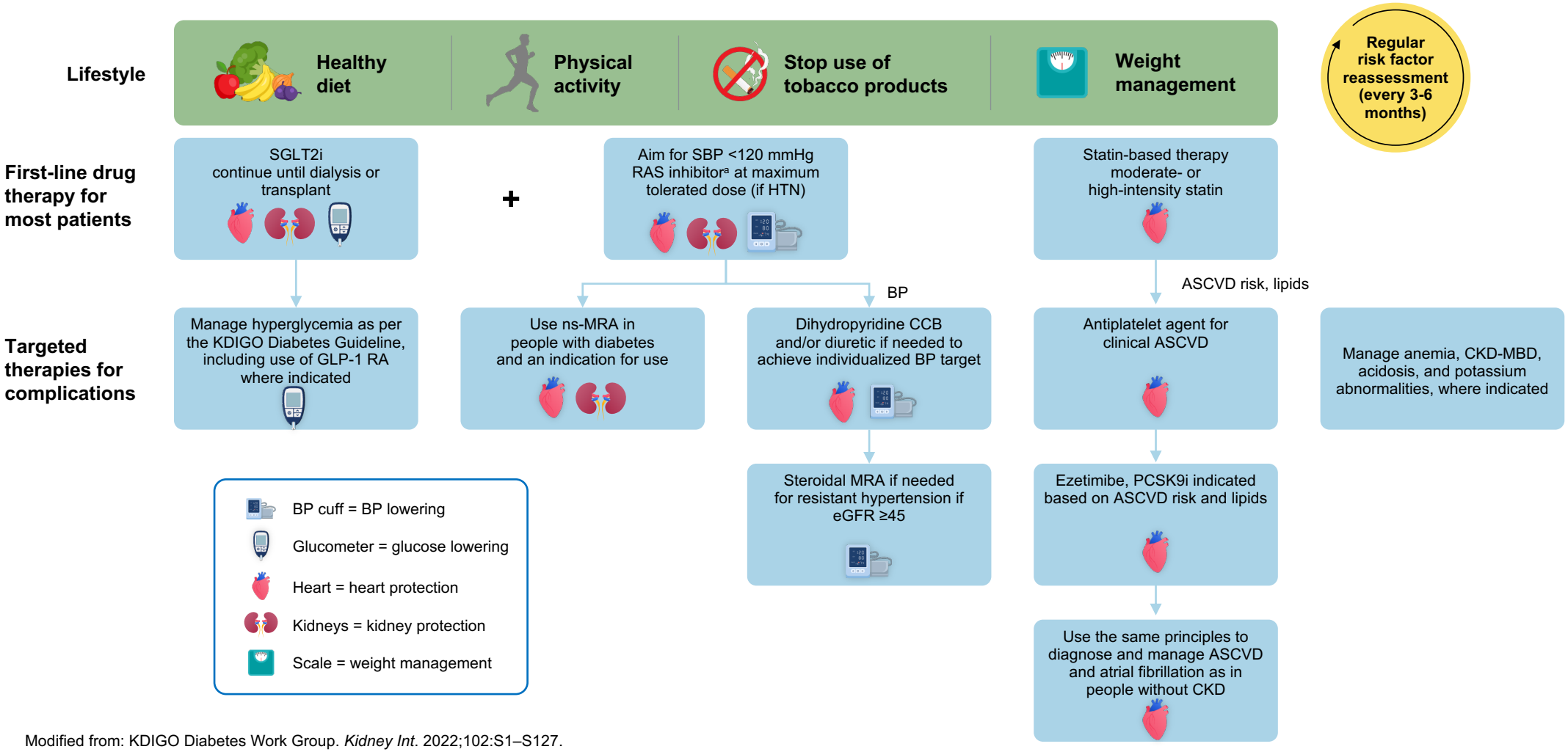
- **SGLT2i** is suggested in adults with eGFR ≥20 to 45 mL/min/1.73 m^2 with UACR <200 mg/g (2B)[a]

[a]Level 1 = "We recommend" and Grade A = High certainty of evidence. Level 2 = "We suggest" and Grade B = Moderate certainty of evidence; [b]This is a practice point - a consensus-based statement that represents the expert judgment of the Work Group and is not graded. It should be considered as expert guidance and used by clinicians as they see fit to inform the care of patients; [c]The 2024 KDIGO Guideline highlights that these practice points from the 2022 KDIGO Diabetes Management in CKD Guideline are also relevant for people with CKD without diabetes.

CKD = chronic kidney disease; eGFR = estimated glomerular filtration rate; KDIGO = Kidney Disease: Improving Global Outcomes; KRT = kidney replacement therapy; SGLT2i = sodium-glucose cotransporter 2 inhibitor; T2D = type 2 diabetes; uACR = urine albumin-to-creatinine ratio.

KDIGO CKD Work Group. *Kidney Int.* 2024;105(4S): S117-S314.

2024 KDIGO Evaluation and Management of CKD Guideline: Holistic Approach to CKD Treatment and Risk Modification



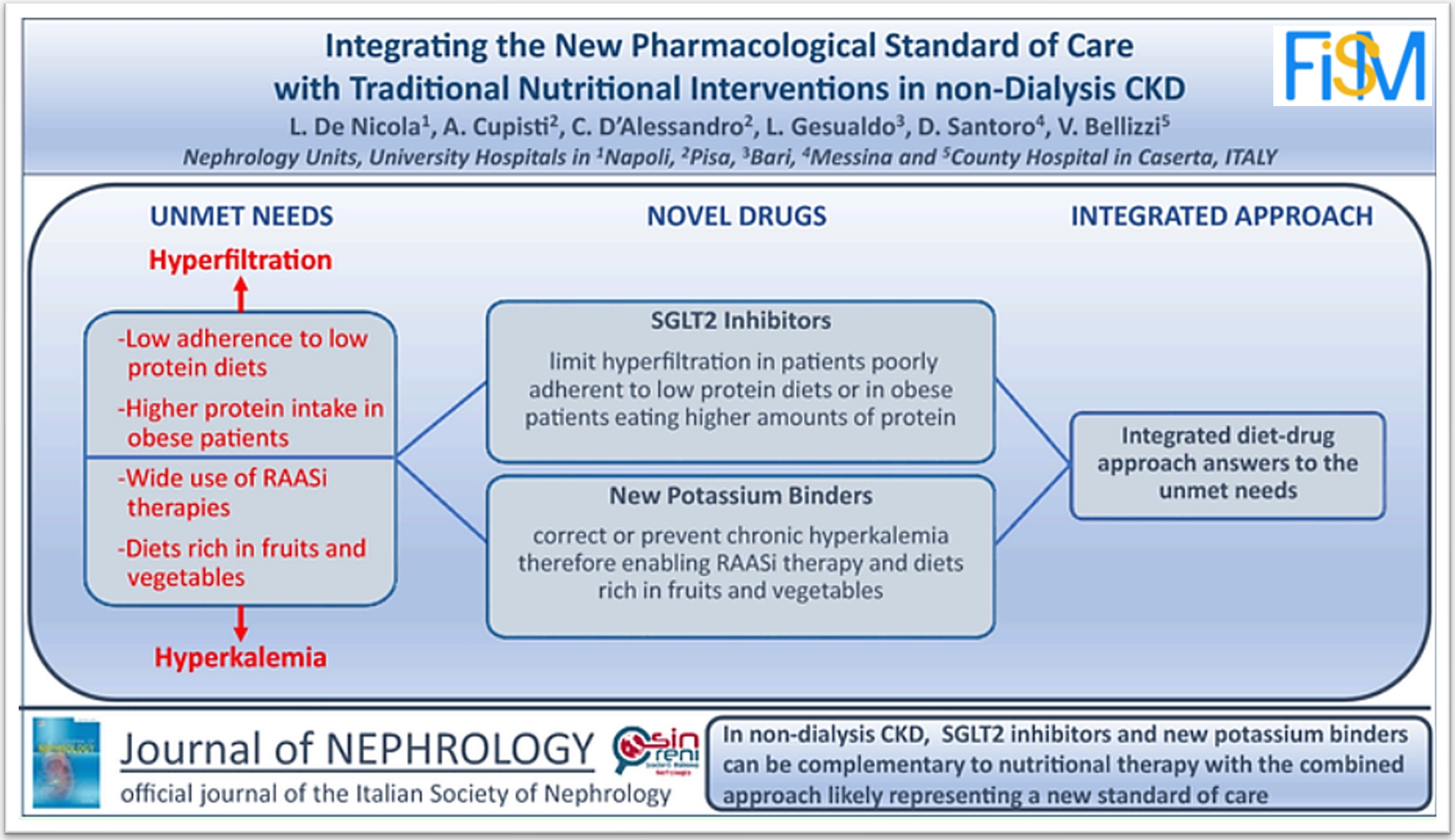
Modified from: KDIGO Diabetes Work Group. *Kidney Int*. 2022;102:S1–S127.

[a]ACEi or ARB should be first-line therapy for BP control when albuminuria is present; otherwise dihydropyridine CCB or diuretic can also be considered. All 3 classes are often needed to attain BP targets.

ACEi = angiotensin-converting enzyme inhibitor; ARB = angiotensin II receptor blocker; ASCVD = atherosclerotic cardiovascular disease; BP = blood pressure; CCB = calcium-channel blocker; CKD = chronic kidney disease; CKD-MBD = chronic kidney disease-mineral and bone disorder; eGFR = estimated glomerular filtration rate; GLP-1 RA = glucagon-like peptide-1 receptor agonist; HTN = hypertension; KDIGO = Kidney Disease: Improving Global Outcomes; MRA = mineralocorticoid-receptor antagonist; ns-MRA = nonsteroidal mineralocorticoid-receptor antagonist; PCSK9i = proprotein convertase subtilisin/kexin type 9 inhibitor; RAS = renin-angiotensin system; SBP = systolic blood pressure; SGLT2i = sodium-glucose cotransporter 2 inhibitor.

KDIGO CKD Work Group. *Kidney Int*. 2024;105(4S):S117-S314.

Italian Document for an integrated CKD management



De Nicola L, Cupisti A, D'Alessandro C, Gesualdo L, Santoro D, Bellizzi V. Integrating the new pharmacological standard of care with traditional nutritional interventions in non-dialysis CKD. J Nephrol. 2024 Nov 7. doi: 10.1007/s40620-024-02135-y

Integrating the new pharmacological standard of care with traditional nutritional interventions in non-dialysis CKD

Phenotype	Protein prescription g/Kg IBW/day	Objective	Warning	Advice
CKD 1–2	0.8	Reduce proteinuria + slow progression	Low adherence to prescriptions	Increase awareness of disease, enable RAASi
< 75 y	0.8	Reduce proteinuria	Low protein adherence	+ SGLT2i
> 75 y	0.8–1.0	Reduce proteinuria, preserve nutrition	Low energy intake	No protein restriction; + SGLT2i
BMI ≤ 20 kg/m^2	Free diet, energy first	Avoid sarcopenia reduce proteinuria	Low nutrient intake	Energy supplements
BMI ≥ 30 kg/m^2	1.2–1.4	Reduce fat mass	Hyperfiltration	Close nutritional monitoring; + SGLT2i + GLP1-RA*
CKD 3	0.6–0.8 0.6/0.7 plant based	Improve metabolism + slow progression + reduce ECV expansion	Low protein adherence, hyperkalemia	Continue low salt, continue LPD, + SGLT2i enable RAASi; + K binder
< 75 y	0.6–0.8	Reduce progression improve metabolism	Low protein adherence	Continue LPD; + SGLT2i
> 75 y	0.8	Preserve nutrition minimize progression	Low energy intake volume depletion	No protein restriction salt no < 6–8 g/day; + SGLT2i
BMI ≤ 20 kg/m^2	Free diet, energy first	Avoid sarcopenia reduce progression	Low nutrient intake	Energy supplements + SGLT2i; + K binder
BMI ≥ 30 kg/m^2	0.8–1.0, reduced energy	Reduce weight	Hyperfiltration uremic complications	Close nutritional monitoring + SGLT2i + GLP1-RA*
CKD 4	0.6 0.3 + KA	Improve metabolism + improve CV + delay dialysis + lower ECV severe proteinuria delay dialysis transition / refuse KRT	Low protein adherence high motivation partial adherence hyperkalemia	Continue LPD + SGLT2i (eGFR > 20) close monitoring close nutritional monitoring continues sVLPD; + SGLT2i; + potassium binders
< 75 y	0.6		Low protein adherence	Continue LPD; + SGLT2i
> 75 y	0.6–0.8	Preserve nutrition minimize progression	Low energy intake volume depletion	Minimize protein salt no < 6–8 g/day; + SGLT2i
BMI ≤ 20 kg/m^2	Free diet, energy first	Avoid sarcopenia minimize progression	Low nutrient intake	Energy supplement + SGLT2i; + K binder
BMI ≥ 30 kg/m^2	0.7 vegetal/0.8, reduced energy	Reduce weight	Hyperfiltration uremia, fast progression	Close nutritional monitoring + SGLT2i + GLP1-RA*

**Limited to patients with diabetes as second line treatment*

The higher the baseline eGFR, the greater the extent of nephroprotection in the long term with SGLT2 inhibitors

- **SGLT2 inhibitors are indicated in all stages of CKD regardless of age and BMI.**
- **GLP1-RA limited to patients with diabetes as second line treatment**

De Nicola L, Cupisti A, D'Alessandro C, Gesualdo L, Santoro D, Bellizzi V. Integrating the new pharmacological standard of care with traditional nutritional interventions in non-dialysis CKD. J Nephrol. 2024 Nov 7. doi: 10.1007/s40620-024-02135-y.

Conclusions

- The new 2024 KDIGO guidelines provide clear tools for diagnosis, monitoring, and treatment of CKD.
- SGLT2 inhibitors play a central role in kidney protection.
- The integration of pharmacological treatment with nutritional interventions is essential for an effective and sustainable management of patients with CKD.

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