

GESTIONE INTEGRATA DEL PAZIENTE A RISCHIO ALTO/MOLTO ALTO: LE RACCOMANDAZIONI DEL NEFROLOGO

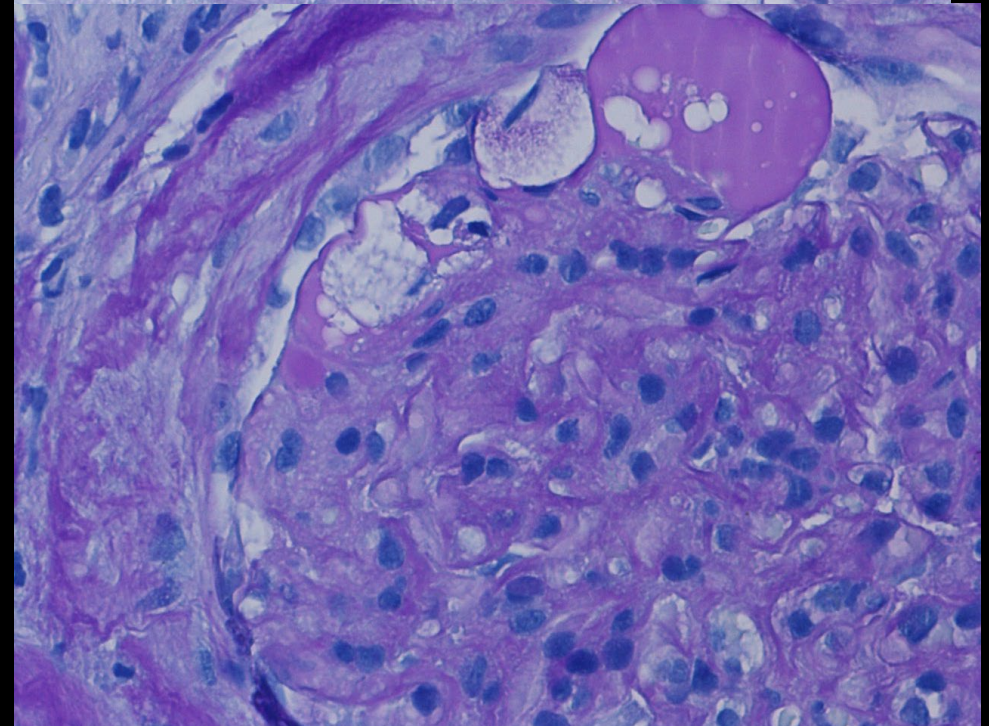
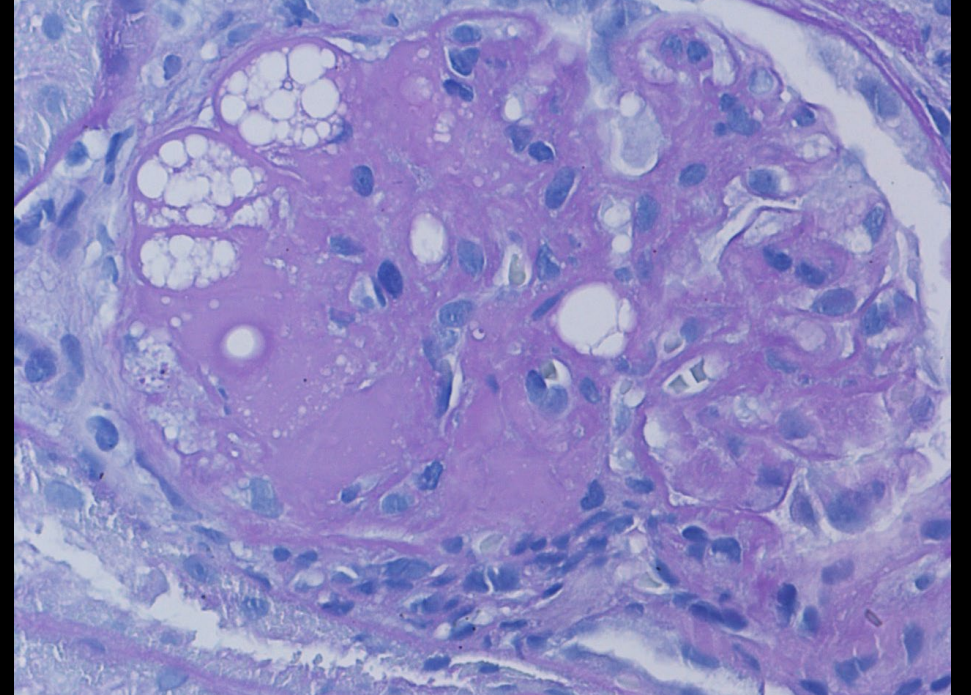
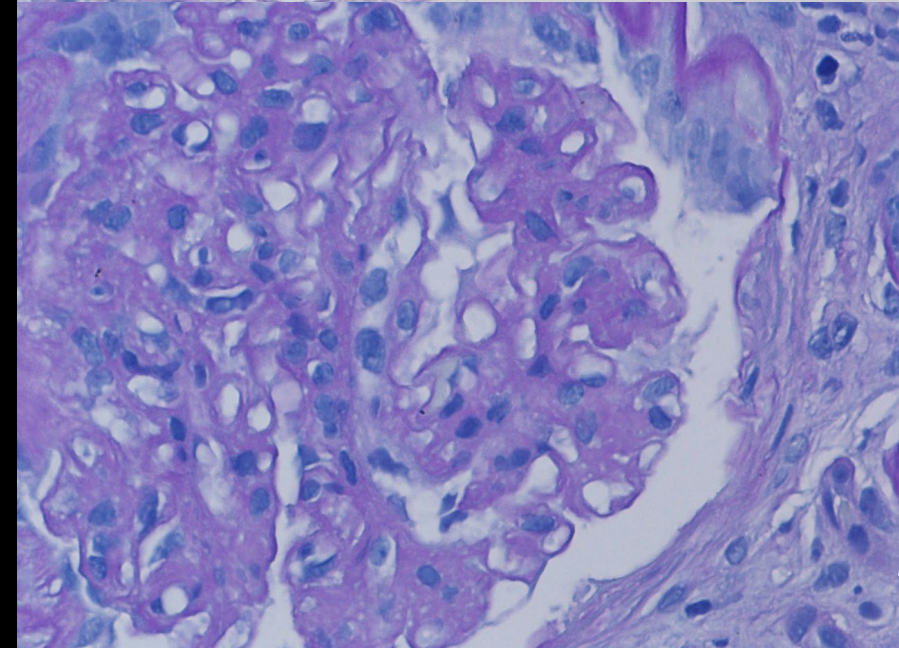
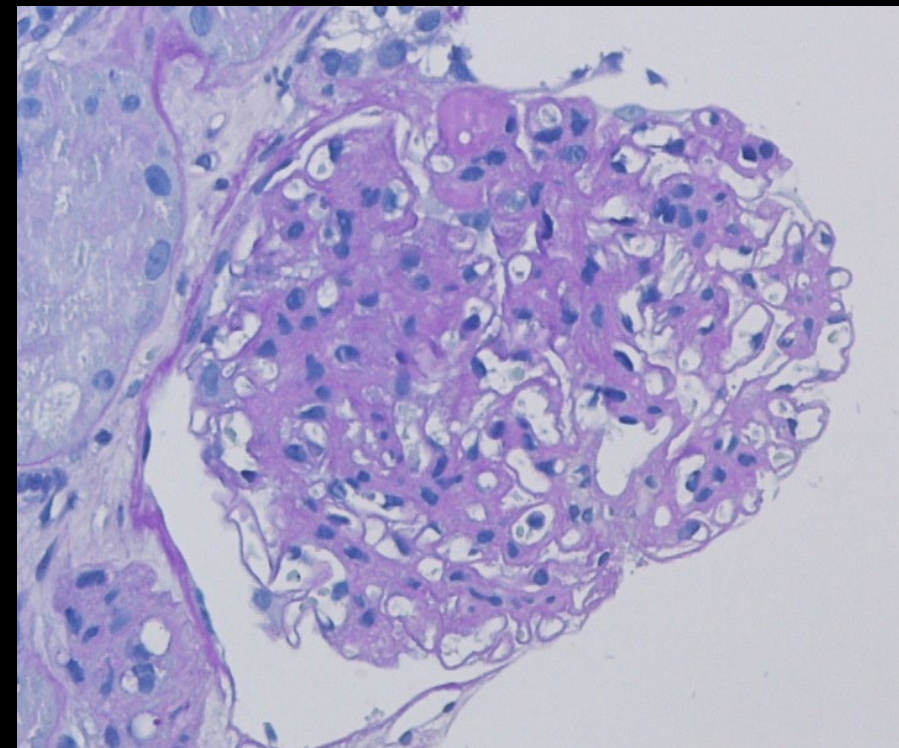


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DISCLOSURES

Professor Sandro Feriozzi has received travel assistance and honoraria for lecturing and participating in advisory boards from Sanofi, Takeda, Otsuka and Amicus

HISTOPATHOLOGY OF DIABETIC NEPHROPATHY



Nephropathology Lab, Viterbo

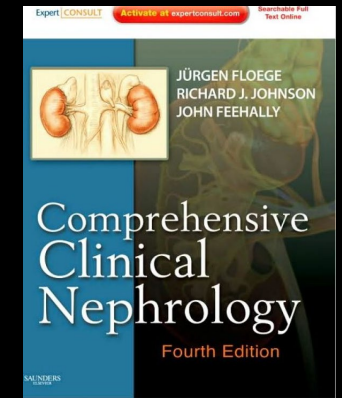
DEFINITIONS

Diabetic nephropathy (DN) is the leading cause of end-stage renal disease (ESRD) in most Western societies. It can develop in the course of both type 1 and type 2 diabetes and as a consequence of other forms of diabetes mellitus (DM).

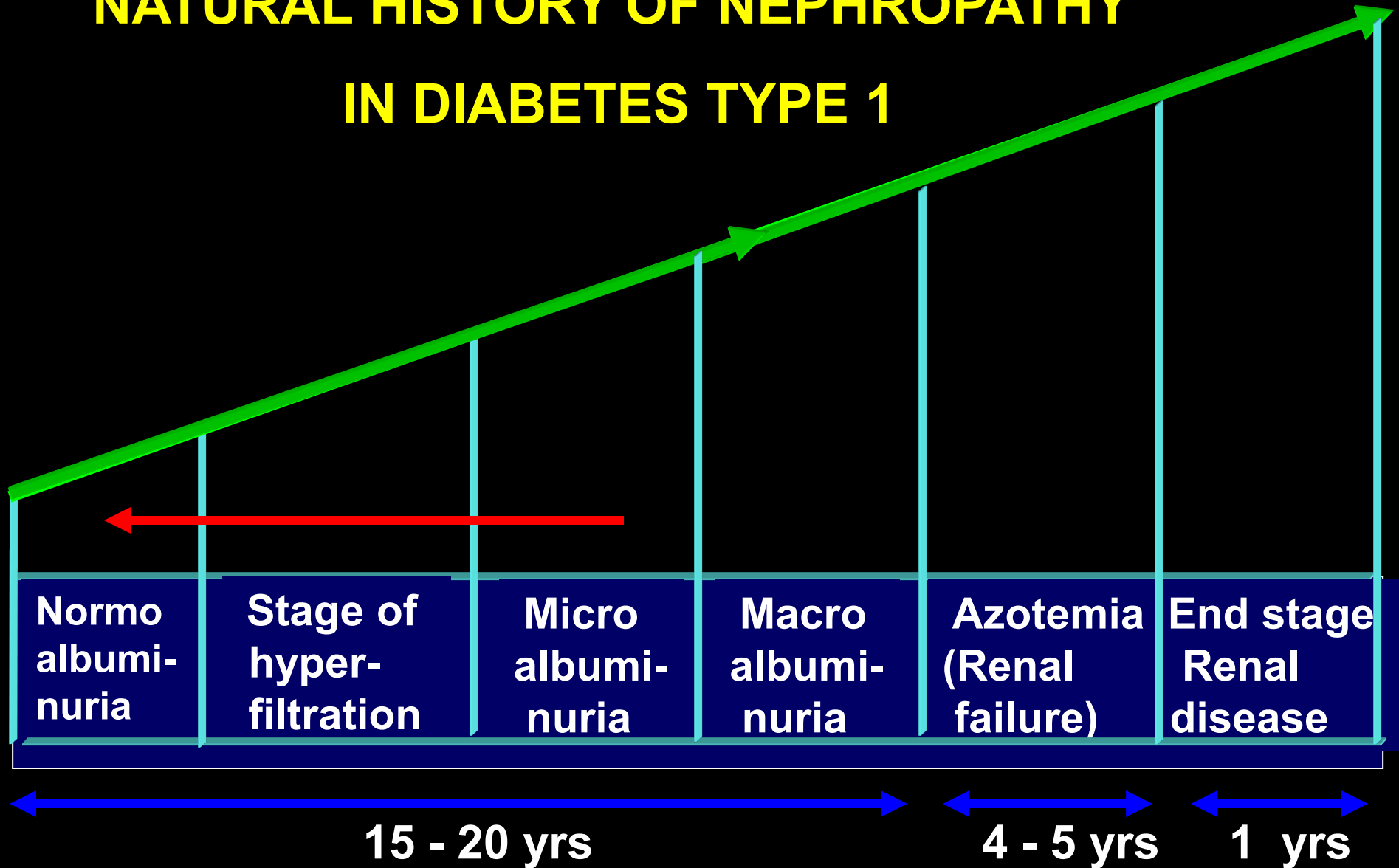
resistance and insulin deficiency. The metabolic syndrome (insulin resistance, visceral obesity, hypertension, hyperuricemia, and dyslipidemia with high triglyceride levels and low amounts of high-density lipoprotein [HDL]) is often followed by type 2 diabetes.

EPIDEMIOLOGY

In most Western countries, DN has become the leading cause of ESRD. According to the U.S. Renal Data System (www.USRDS.org), in 2006, DN was the most frequent primary diagnosis with 159 per million population per year. The proportion of diabetics among patients with ESRD varies considerably between countries but had consistently been on the rise in all countries until recently, when the incidence figures have stabilized. In patients admitted for renal replacement therapy



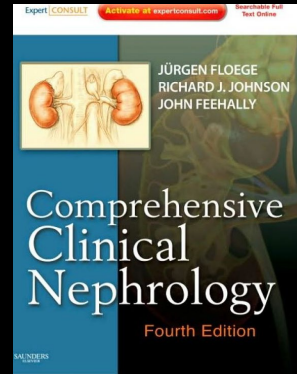
NATURAL HISTORY OF NEPHROPATHY IN DIABETES TYPE 1



DIABETIC NEPHROPATHY NOT ONLY KIMMESTIEL-WILSON

Since the original description of diabetic nephropathy, it has become clear that there are various forms of kidney disease attributable to diabetes, including nonclassical glomerular lesions and tubulointerstitial disease .

Diabetic kidney disease" is a clinical diagnosis based upon the presence of albuminuria, decreased estimated glomerular filtration **rate** (eGFR), or both, in patients with diabetes".

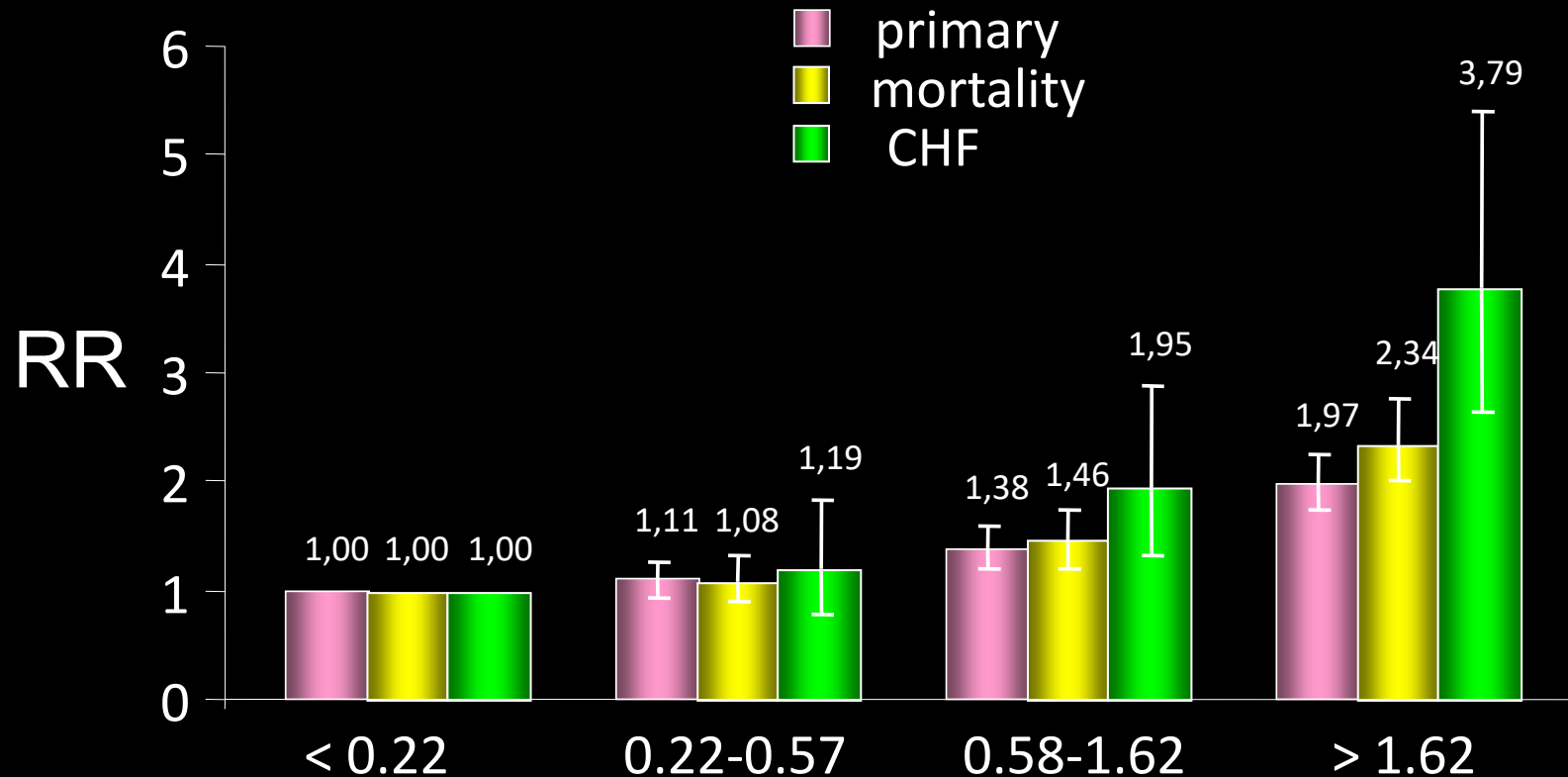


Notably, diabetic kidney disease (**DKD**) does not indicate the specific pathological phenotype of kidney damage due to diabetes.

Rather, the designation DKD (or "CKD in diabetes") is used to clarify that the underlying pathologic phenotype is unknown in most cases.

The likelihood that diabetic glomerulopathy is the underlying pathology of DKD varies widely depending upon the clinical circumstances.

HOPE: RELATIVE RISK ACCORDING TO QUARTILE OF ALBUMINURIA (N = 9,043)



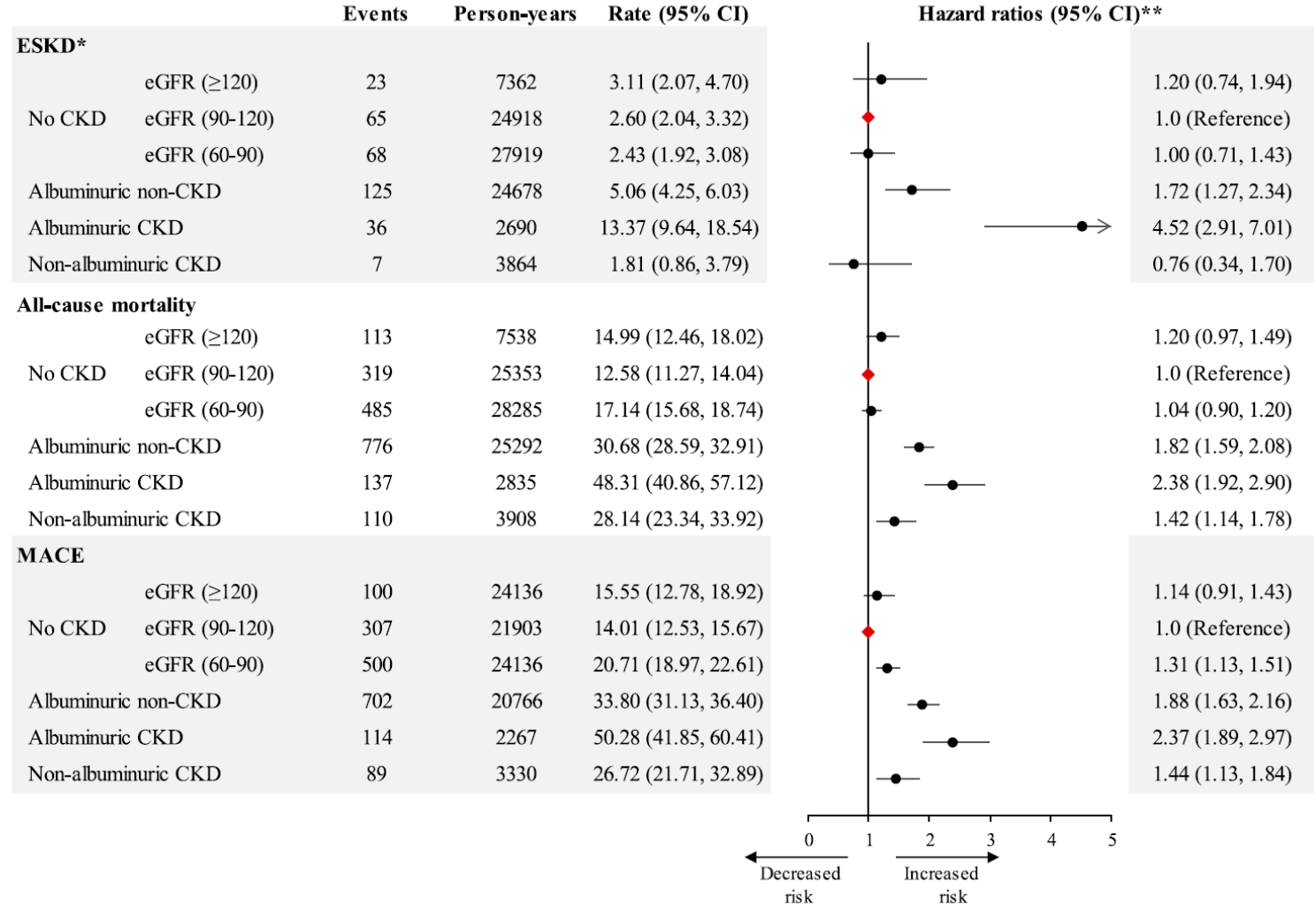
P for trend * < 0.0001 or ** < 0.05 after controlling for:
a) age, sex, SBP, DBP, WHR, DM, ramipril
b) age, sex, SBP, DBP, WHR, DM, ramipril
after removing MA participants



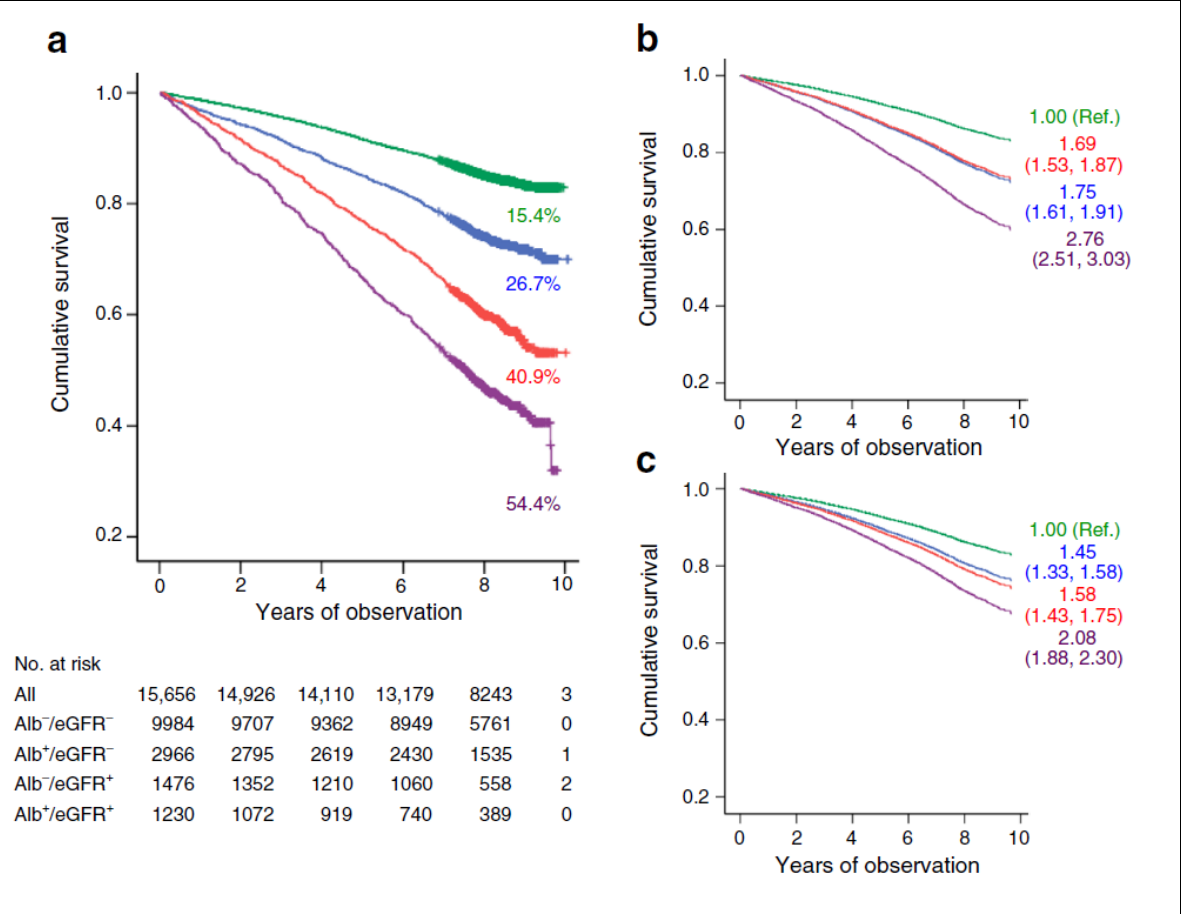
Risk of Rapid Kidney Function Decline, All-Cause Mortality, and Major Cardiovascular Events in Nonalbuminuric Chronic Kidney Disease in Type 2 Diabetes

Diabetes Care 2020;43:122–129 | <https://doi.org/10.2337/dc19-1438>

Oyunchimeg Buyadaa,^{1,2}
Dianna J. Magliano,^{1,2} Agus Salim,^{1,4}
Digsu N. Koye,^{1,2} and Jonathan E. Shaw^{1,2}



“Those with nonalbuminuric CKD showed a slower rate of decline in eGFR than did any other group; however, these individuals still carry a greater risk for death and MACE than do those with no CKD.”



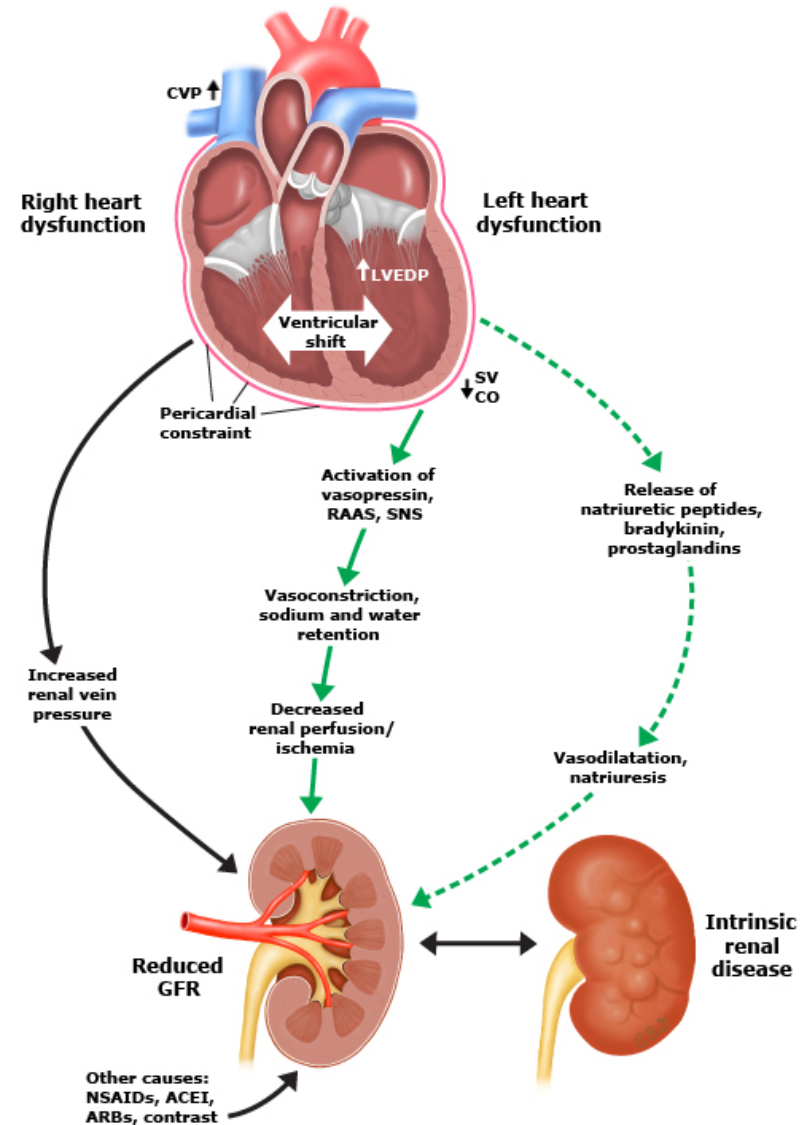
KDIGO category	A1a	A1b	A2	A3
G1	1 (Ref.)	0.94 (0.78, 1.12)	1.31 (1.08, 1.60)	2.19 (1.55, 3.11)
G2a	0.80 (0.67, 0.96)	1.05 (0.89, 1.25)	1.31 (1.09, 1.58)	2.48 (1.82, 3.38)
G2b	1.10 (0.83, 1.12)	1.06 (0.88, 1.27)	1.39 (1.15, 1.68)	1.71 (1.23, 2.36)
G3a	1.32 (1.07, 1.62)	1.39 (1.14, 1.69)	1.48 (1.22, 1.80)	2.26 (1.71, 3.00)
G3b	1.85 (1.40, 2.44)	2.25 (1.79, 2.82)	2.09 (1.69, 2.59)	2.78 (2.14, 3.63)
G4-5	1.61 (0.88, 2.97)	2.25 (1.49, 3.37)	2.79 (2.09, 3.70)	4.66 (3.59, 6.05)

« Non-albuminuric renal impairment is a strong predictor of mortality... »

CARDIORENAL SYNDROME

- *Type 1 (acute)* – Acute HF results in AKI
- *Type 2 – Chronic cardiac dysfunction* causes chronic kidney disease (CKD)).
- *Type 3 – Abrupt and primary worsening of kidney function* Ex. renal ischemia or glomerulonephritis with acute cardiac dysfunction
- *Type 4 – Primary CKD* with contributes to cardiac dysfunction
- *Type 5 (secondary)* – *Acute or chronic systemic disorders* (eg, sepsis or diabetes mellitus) that cause both cardiac and renal dysfunction.

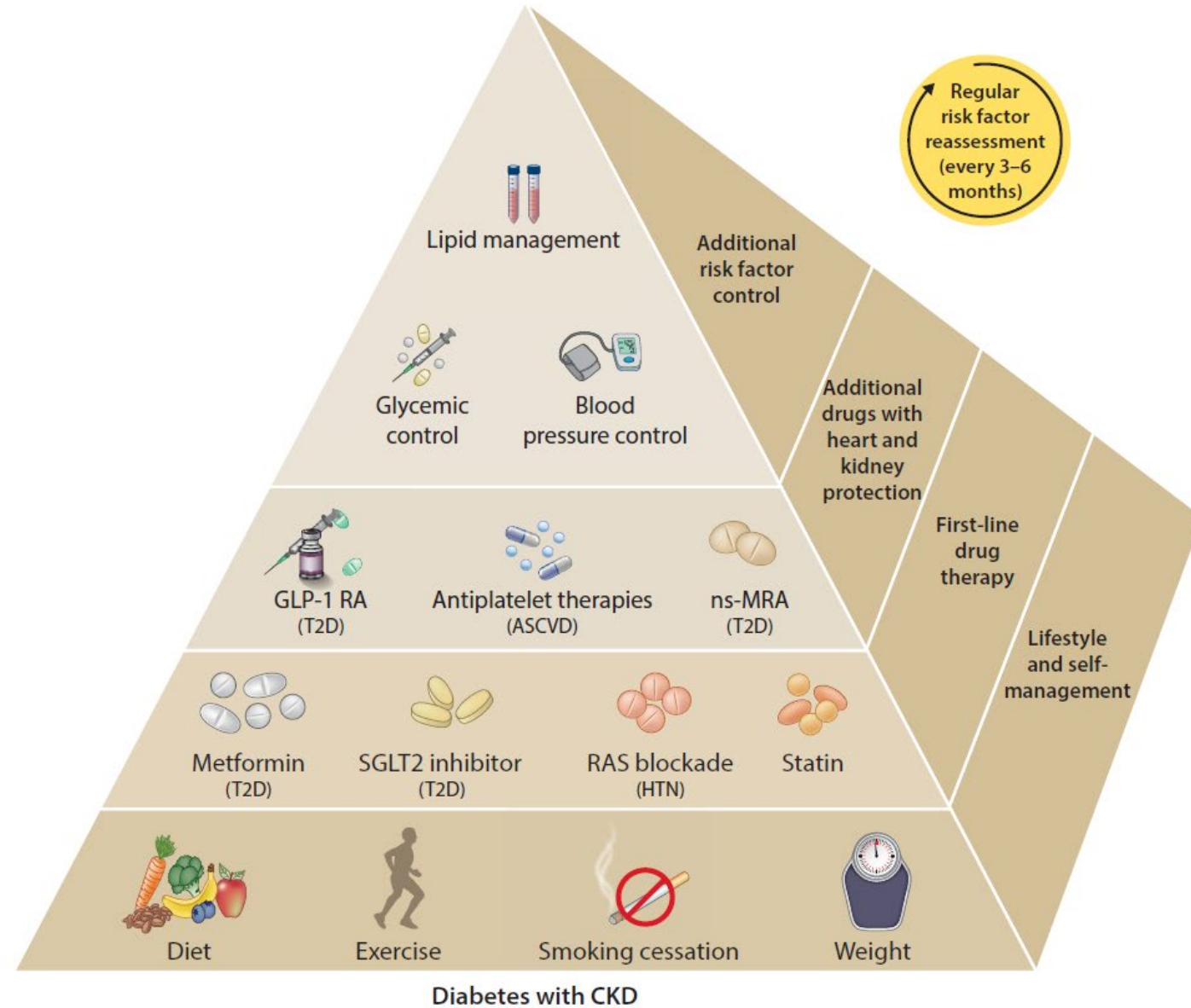
Pathophysiology of cardiorenal syndrome





KDIGO 2022 CLINICAL PRACTICE GUIDELINE FOR
DIABETES MANAGEMENT IN CHRONIC KIDNEY DISEASE

Kidney–heart risk factor management





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DIABETES MANAGEMENT IN CHRONIC KIDNEY DISEASE

Holistic approach for improving outcomes in patients with diabetes and chronic kidney disease

Lifestyle



Healthy diet



Physical activity



Smoking cessation



Weight management



First-line drug therapy

SGLT2i
(Initiate eGFR ≥ 20 ;
continue until dialysis
or transplant)



Metformin
(if eGFR ≥ 30)



RAS inhibitor at maximum
tolerated dose (if HTN*)



Moderate- or
high-intensity statin



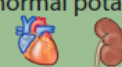
Regular reassessment
of glycemia, albuminuria,
BP, CVD risk, and lipids

Additional risk-based therapy

GLP-1 RA if needed to
achieve individualized
glycemic target



Nonsteroidal MRA[†] if
ACR ≥ 30 mg/g
[≥ 3 mg/mmol]
and normal potassium



Dihydropyridine CCB
and/or diuretic* if
needed to achieve
individualized
BP target



Antiplatelet
agent for
clinical ASCVD



Ezetimibe, PCSK9i,
or icosapent ethyl if
indicated based on
ASCVD risk and lipids



Other glucose-lowering
drugs if needed to
achieve individualized
glycemic target

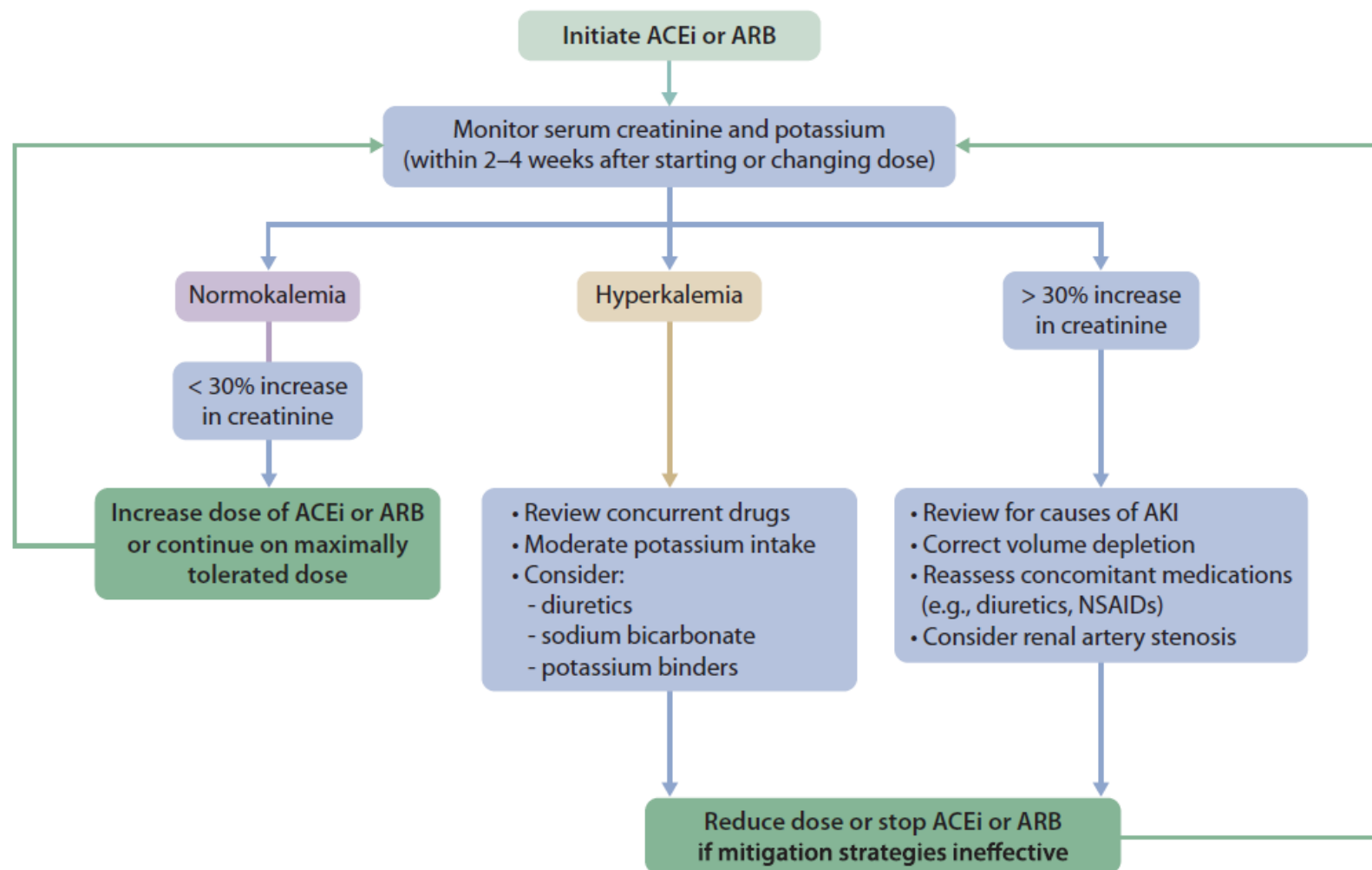


Steroidal MRA if
needed for resistant
hypertension
if eGFR ≥ 45



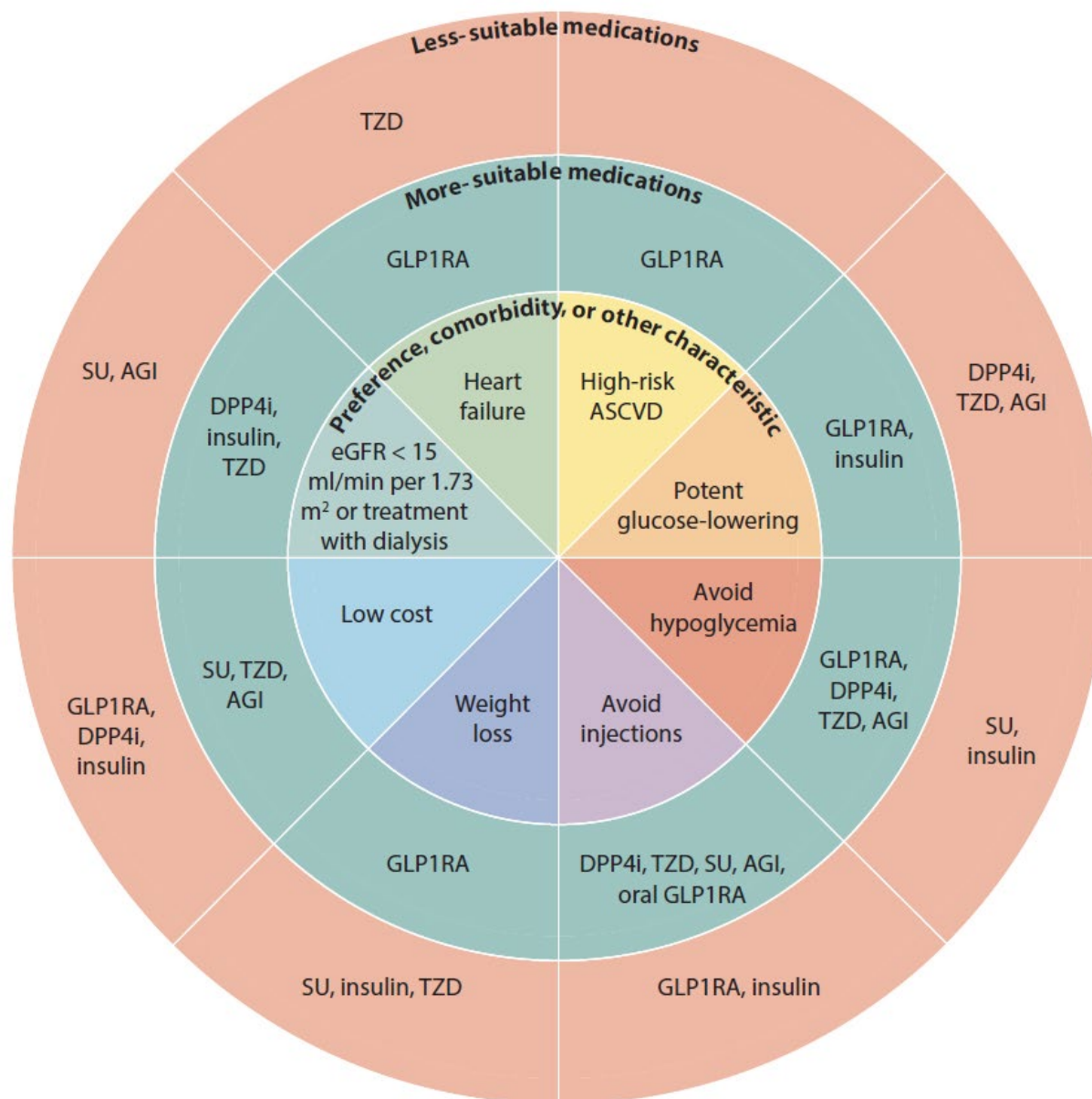
■ T2D only
■ All patients
(T1D and T2D)

Monitoring of serum creatinine and potassium during angiotensin-converting enzyme inhibitor (ACEi) or angiotensin II receptor blocker (ARB) treatment—dose adjustment and monitoring of side effects.



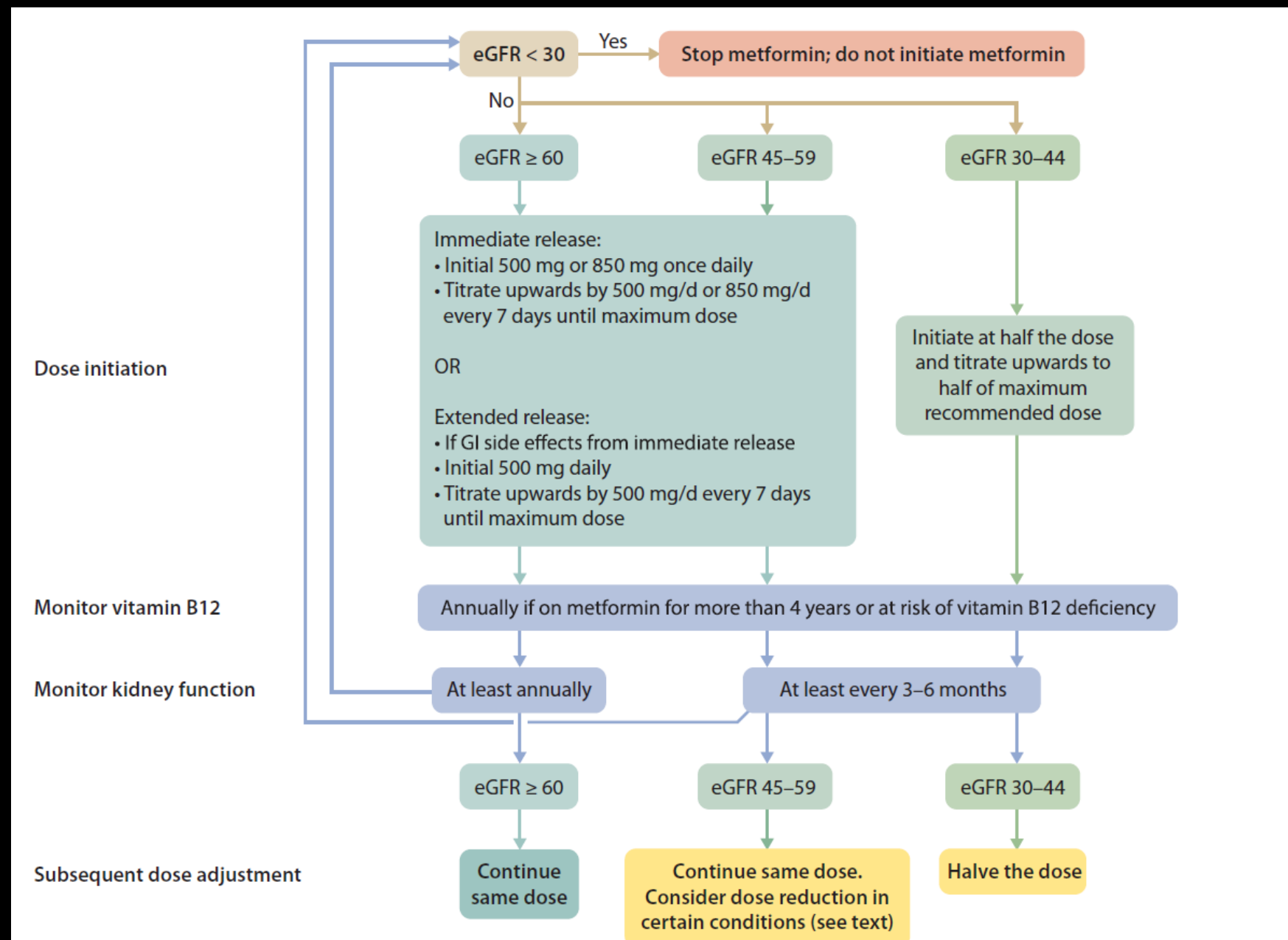


Patient factors influencing the selection of glucose-lowering drugs other than sodium–glucose cotransporter-2 inhibitor (SGLT2i) and metformin in type 2 diabetes (T2D) and chronic kidney disease (CKD).



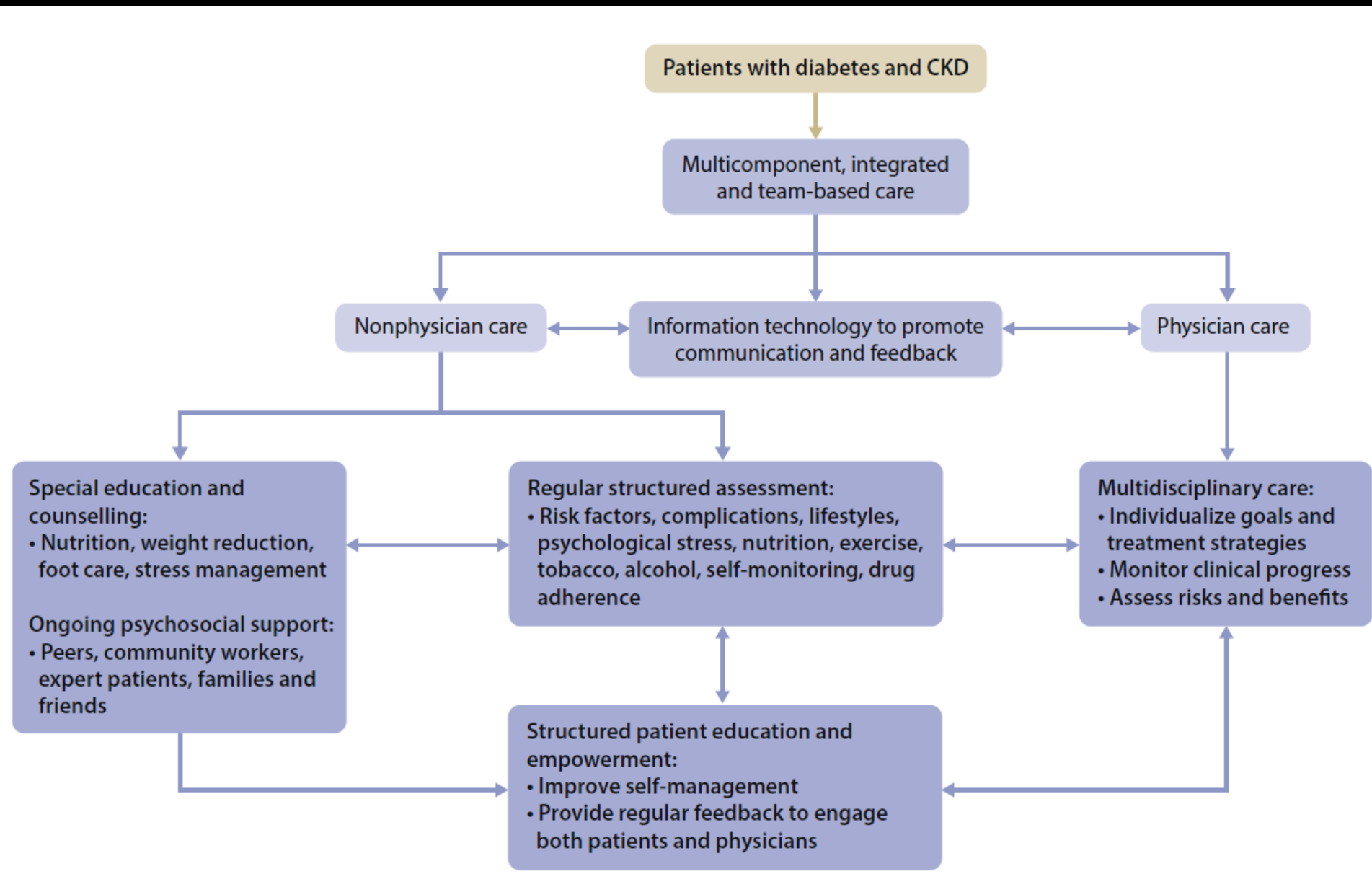


Suggested approach in dosing metformin based on the level of kidney function





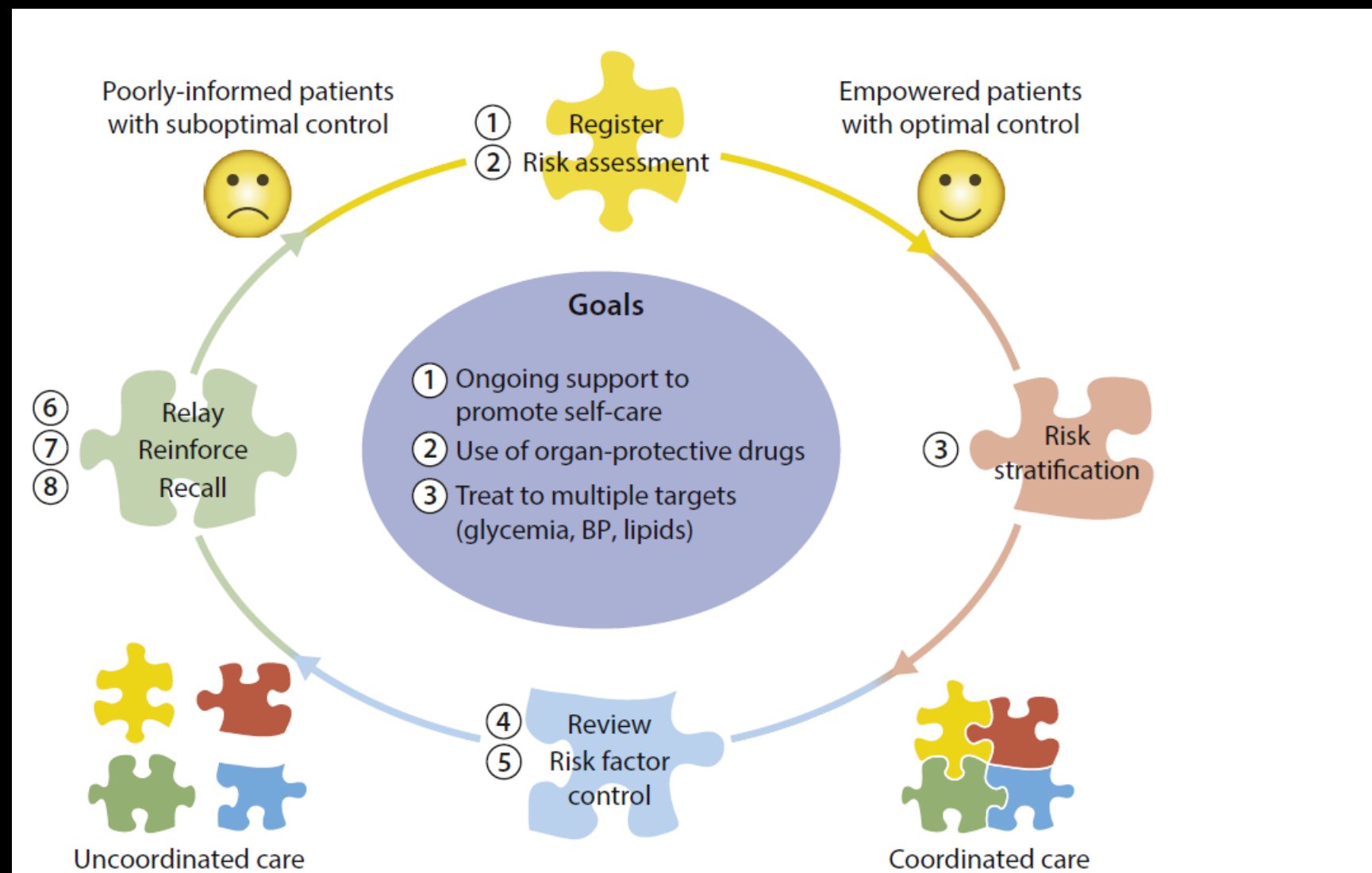
Integrated care approach to improve outcomes, self-management, and patient–provider communication in patients with diabetes and chronic kidney disease (CKD).^{429–}





KDIGO 2022 CLINICAL PRACTICE GUIDELINE FOR
DIABETES MANAGEMENT IN CHRONIC KIDNEY DISEASE

Team-based integrated care delivered by physicians and nonphysician personnel supported by decision-makers.



CARDIOVASCULAR MANAGEMENT

Diuretics

RAS-RAAS

ARNI

SGLT2 inhibitors

Vasodilators

Inotropic drugs

Ultrafiltration

Vasopressin receptor antagonists

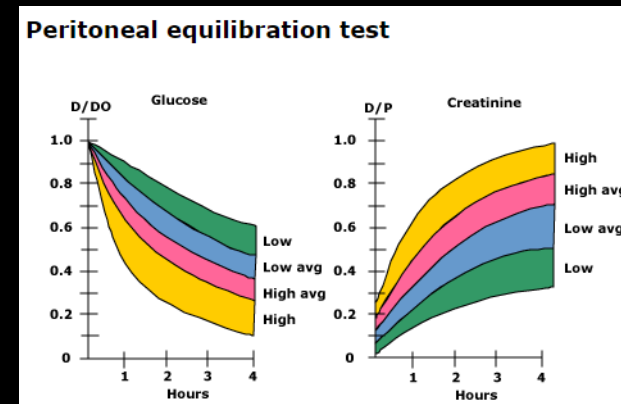
TREATMENT

GENERAL MANAGEMENT interference with ESA; glycated albumin

PATIENTS NOT ON DIALYSIS doubts on AC1 values and outcome; insulin dose empiric

PATIENTS ON HEMODIALYSIS long acting insulin (?)

PATIENTS ON PERITONEAL DIALYSIS



TROUBLESHOOTING

Hyperglycemia: microvascular disease can cause erratic absorption of insulin from the subcutaneous tissue

Severe hyperglycemia and ketoacidosis (dialysis): hypovolemia and marked hypernatremia do not occur, since glucosuria is absent in anuric individuals. The net effect is minimal symptoms, even among those with extreme hyperglycemia marked hyperkalemia due to potassium efflux from cells

Hypoglycemia severe underdialysis, with poor calorie intake, or occult disease, such as infection or malignancy. Drugs that interfering with the counter regulatory response to hypoglycemia (BB, long-acting insulin and oral agents)

Alternating hypoglycemia and hyperglycemia: gastroparesis, timing of insulin injections, poor compliance, erratic eating habits, and poor timing of CAPD)

VITERBO: CARTELLA CONDIVISA NEFRO-DIABETOLOGIA

Anamnesi

Insufficienza Renale cronica
Insufficienza Renale cronica
Ateromasia vasi epiaortici
Malattia epatica cronica e cirr...

Occhio

Rene

Insufficienza Renale cronica
Insufficienza Renale cronica
Insufficienza Renale cronica
Insufficienza Renale cronica

Cuore

Ipertensione Arteriosa
(riscontro per 3-6 mesi di valori
PAO > 130/86 mmHg)
Ipertensione Arteriosa (riscon...

Vasi periferici

Non Arteriopatia arti inferiori
Non Arteriopatia arti inferiori
ECOCOLORDOPPLER
ARTERIOSO ARTI INFERIORI

Nervi periferici

Polineuropatia sensitivo
motoria simmetrica distale
Polineuropatia distale,
simmetrica.

Piede

Vasi cerebrali

Ateromasia vasi epiaortici
Ateromasia vasi epiaortici -
Con stenosi <60%
Ateromasia vasi epiaortici - C...

Altro

Dieta

Classificazioni

Diagnosi (classificazione)	Dal	Attivo	Ricovero
Insufficienza Renale cronica	17/04/2023	Non Attivo	No

Modifica

Storico Diagnosi

Descrizione	Dal	AI	Ricovero
Insufficienza Renale cronica	23/02/2021		No
Insufficienza Renale cronica	25/11/2020		No
Insufficienza Renale cronica	18/06/2020		No
Insufficienza Renale cronica	22/01/2020		No
Insufficienza Renale cronica	24/04/2019		No

Visualizza tutte le complinanze

Aggiungi

Prestazioni

Questionario ipercolesterolemia

Nota

Giunge a prima visita la figlia portando in visione esami ematici della madre che mostrano quadro di IRC con e-GFR 12 ml/min.

In APR:

- DIABETE MELLITO TIPO 2 DA CIRCA 15 ANNI IN INSULINO-TERAPIA
- IPERTENSIONE ARTERIOSA
- CIRROSI EPATICA (Eziologia non riferita, ultimo controllo ecografico con MDC assente patologia neoplastica)
- IPOTIROIDISMO
- BRONCHITE CRONICA ASMATICA
- PORTATRICE PROTESI GINOCCHIO SN
- DA DICEMBRE 2022 DOLORE LOMBO-SACRALE (SEGUITA DALLA TERAPIA DEL DOLORE)
- IRC (VALORI PRECEDENTI AD ULTIMI ESAMI NON VISIONABILI)

Ad esami ematici K 5.9 si rilasciano indicazioni per dieta ipokaliemica, inizia terapia con lokelma 1 bustina/die. (si rilascia piano terapeutico).

Il 24/04/2023 ripete prelievo potassemia.

Esame urine ndr, urinocoltura negativa, prodidogramma nella norma, proteinuria assente.

Si consiglia sospendere Bivis, inizia Norvasc 10 mg ore 8.00, se la pressione è maggiore di 140/80 mmHg aggiunge Cardura 4 mg (ore 20.00)

Proseguirà follow-up in ambulatorio dedicato alle complinanze del diabete mellito, prossimo controllo tra 2 mesi con esami richiesti.

Modifica

08/02/2023

33,2 / 90,0

Aggiungi

Mostra altri

C-LDL

04/04/2023

- / 103,2

13/01/2023

- / 94,6

Aggiungi

Mostra altri

Creatinina / eGFR EPI-CDK

28/04/2023

1,77 / -

21/04/2023

1,91 / -

Aggiungi

Mostra altri

HbA1c

21/04/2023

41 / -

04/04/2023

37 / 5,5

Aggiungi

Mostra altri

PAS / PAD

13/04/2023

120 / 60

08/02/2023

120 / 60

Aggiungi

Mostra altri

Score Q

07/05/2021

25/40

2020

30/40

Stile di vita

Fumatore

No

Sigarette

CONCLUSIONIS

Diabetic patient with advanced renal disease is a complex clinical feature.

The variables involved are many; patient, drugs, cardiopathy, impaired GFR etc.)

It needs to create a close interaction among all players, including all specialists (multidisciplinary approach).

The aim is to improve the patient's quality of life



KDIGO 2022 CLINICAL PRACTICE GUIDELINE FOR
DIABETES MANAGEMENT IN CHRONIC KIDNEY DISEASE

Key objectives are to:

Improve diabetes-related knowledge, beliefs, and skills

Improve self-management and self-motivation

Encourage adoption and maintenance of healthy lifestyles

Improve vascular risk factors

Increase engagement with medication, glucose monitoring, and complication screening programs

Reduce risk to prevent (or better manage) diabetes-related complications

Improve emotional and mental well-being, treatment satisfaction, and quality of life