Screening and identification of Chronic Kidney Disease
for general practitioners

Swiss Society of Nephrology

1 CKD in Switzerland

- Due to the aging of the Swiss population and growing prevalence of diseases, which harm the kidney (e.g. diabetes mellitus, arterial hypertension), chronic kidney disease (CKD) prevalence is increasing.[1] Data suggests that 1 in 10 adults in Switzerland is affected by CKD.[2]
- It is important to prevent CKD, detect CKD early and to optimally manage patients with CKD.
- This goal can only be achieved in a collaborative effort involving general practitioners and specialists.

2 Definition of CKD

- CKD is defined as «abnormalities of kidney structure or function, present for >3 months with implications for health».[3]
- CKD is classified based on cause, eGFR, and albuminuria category (Figure 1).

3 Detection of CKD

- Treatments are available to prevent CKD progression, reduce its complications (such as CV disease) and thus significantly reduce CKD morbidity and mortality.
- However, because CKD is often asymptomatic, it is vastly underdiagnosed. 9 out of 10 people with CKD are unaware that they are affected.[4] Therefore, individuals with a high risk for CKD should be screened.
- Patients with arterial hypertension, diabetes mellitus, and cardiovascular disease should be screened for CKD at least once annually.[3,5,6]
- Other populations at risk should also be screened on a regular basis (Figure 2).
- The screening approach consists of both determination of eGFR (by measurement of creatinine, cystatin C, or both) and quantification of albuminuria.[3,5]

CKD

is classified based on:

- Cause (C)
- eGFR (G)
- Albuminuria (A)

Low risk
can reflect CKD with normal eGFR and albumin-to-creatinine ratio only in the presence of other markers of kidney damage)
Moderately increased risk
Moderately to greatly increased risk
High risk
Very high risk

eGFR categories (ml/min/1.73m²) Description and range				Albuminuria categories Description and range		
				A1	A2	A3
				Normal to mildly increased	Moderately increased	Severely increased
				<30 mg/g <3 mg/mmol	30-300 mg/g 3-30 mg/mmol	>300 mg/g >30 mg/mmol
	G1	Normal to high	≥90	1 if CKD	Treat 1	Refer 2
	G2	Mildly decreased	60-89	1 if CKD	Treat 1	Refer 2
	G3a	Mildly to moderately decreased	45-59	Treat 1	Treat 2	Refer 3
	G3b	Moderately to severely decreased	30-44	Treat 2	Treat 3	Refer 3
	G4	Severely decreased	15-29	Refer 3	Refer 3	Refer 4+
	G5	Kidney failure	≤15	Refer 4+	Refer 4+	Refer 4+

Figure 1 – Staging, classification and risk stratification of CKD according to KDIGO. The numbers in the boxes are a guide to the frequency of visits (number of times per year). The GFR and albuminuria grid depicts the risk of progression, morbidity, and mortality by color, from best to worst (green, yellow, orange, red, dark red). (ADA Standards of Medical Care in Diabetes 2021 – Abridged for Primary Care Providers).[3,7]

Conditions with increased CKD risk

- Arterial Hypertension
- Diabetes mellitus
- Cardiovascular disease
- History of acute kidney injury
- Family history of kidney disease
- Systemic diseases which predispose to CKD (e.g. HIV, SLE, Vasculitis)
- Treatment with nephrotoxic drugs
- Obesity
- Older age

yes

Screen for CKD

- Urinary albumine to creatinine ratio (ACR) to detect albuminuria*

and

- Serum creatinine or cystatin C to estimate glomerular filtration rate (eGFR)

*To determine the ACR, albumin and creatinine should be performed from a spot urine at least once a year. The ratio of albumin to creatinine provides the ACR. The units given vary depending on the diagnostic laboratory. The ACR in mg/g roughly corresponds to the daily albumin excretion in mg. If the ACR is given in mg/mmol, it must be multiplied by a factor of 10 to arrive at the daily albumin excretion.

Any of the following present for ≥ 3 months?

- eGFR < 60 ml/min/1.73 m^2

or

- ACR ≥ 30 mg/g (3 mg/mmol)*

yes

Diagnosis of CKD confirmed!
Classify/risk stratify CKD according to Figure 1

no

Periodically repeat evaluation if risk status persists

Manage CKD or refer to nephrologist

Therapeutic interventions

- Smoking cessation, regular exercise, and healthy diet
- Weight loss if BMI > 25 kg/m^2
- Avoid nephrotoxic drugs
- Adjust medication to kidney function
- Optimize blood pressure and lipid control
- RAAS inhibition if ACR > 30 mg/g (3 mg/mmol) and no contraindication
- Initiation of SGLT2i approved for use in CKD if eGFR ≥ 25 ml/min and no contraindication
- T2DM and CKD
  - Optimize glycemic control in T2DM
  - Consider SGLT-2i if no contraindications
  - Consider GLP-1RA (if SGLT2i and/or metformin not tolerated)
  - Consider Finerenone when approved for this indication and no contraindication

Refer to a nephrologist if

- AKI or abrupt sustained fall in eGFR
- CKD of unknown origin
- eGFR < 30 ml/min/1.73 m^2
- ACR consistently > 300 mg/g (30 mg/mmol)
- Progression of CKD/deterioration of eGFR
- Glomerular microhematuria
- CKD + resistant hypertension
- Persistent abnormalities of serum K+
- Hereditary kidney disease
- Recurrent or extensive nephrolithiasis

Figure 2 - Suggested algorithm how to screen, stratify, and manage individuals at risk of or with CKD and when to refer to a nephrologist (AKI: acute kidney injury, SGLT2i sodium-glucose co-transporter 2 inhibitor, GLP1-RA: glucagon-like peptide 1 receptor agonist, CKD: chronic kindey disease, RAAS renin-angiotensin-aldosterone system, ACR: urine albumin-creatinine ratio, eGFR estimated glomerular filtration rate, K^+: potassium, HIV: human immunodeficiency virus, SLE: systemic lupus erythematosus).[3,5,8]

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