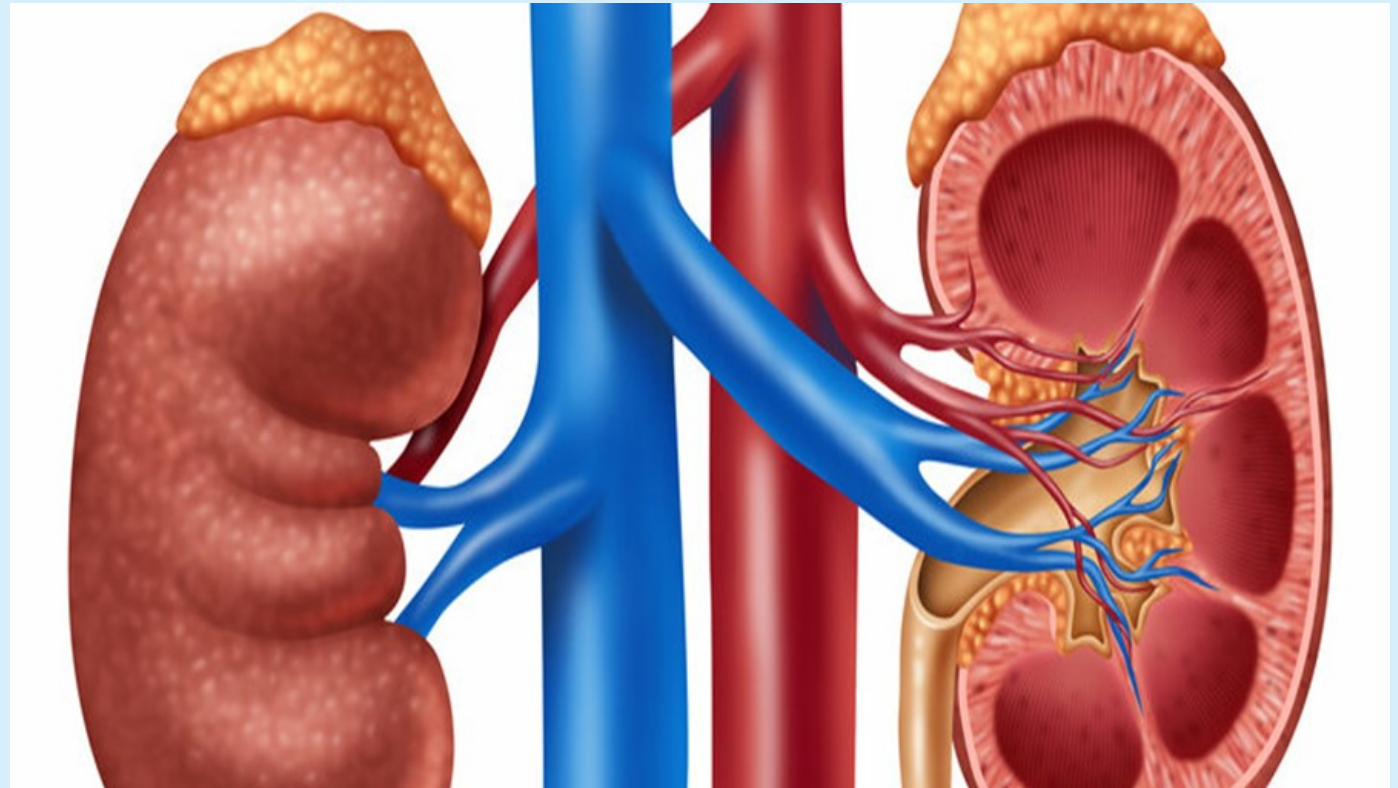
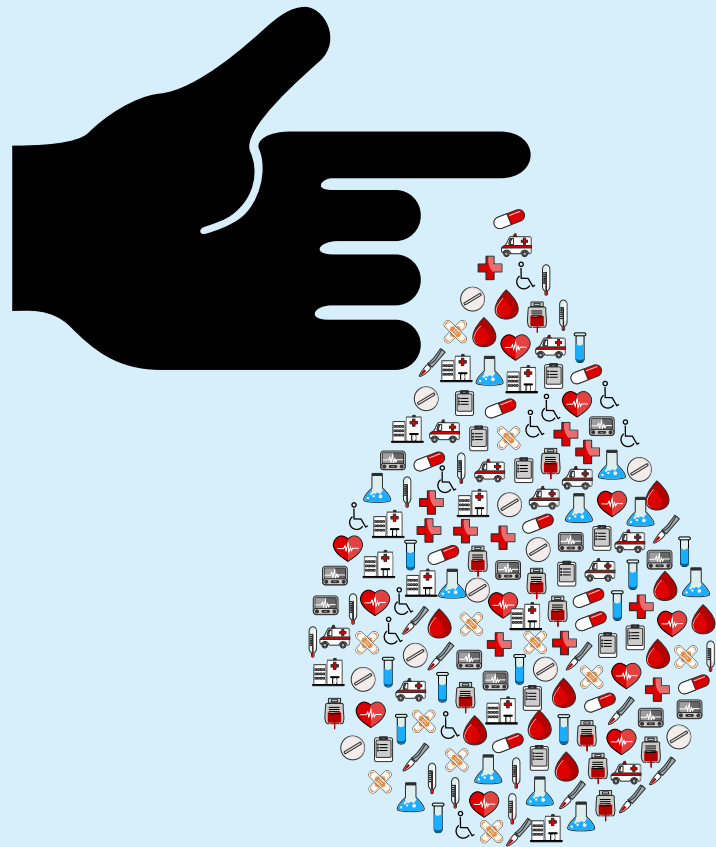


Velkommen til Diabetes og nyresygdom





Hvilke særlige udfordringer oplever I som sygeplejersker i mødet i med personer der både diabetes og nedsat nyrefunktion?"



quiz

1

Albuminuri (protein i urinen) er et tidligt tegn på diabetisk nyresygdom?



Ditte Nøddeskov Ludvigsen

Steno diabetes center Copenhagen

Definition på diabetisk nyresygdom

- Urin albumin kreatinin ratio
 - > 30-300 mg/g moderat forhøjet
 - 300 svært forhøjet
(i mindst 2 ud 3 prøver)
 - GFR<60 ml/min/1.73 m²
 - Eller begge dele
-
- I mere end 3 måneder

Klassifikation af grad af nyresygdom

Nyresygdom med normal eGFR, ml/min (inkl albuminuri)	eGFR>90
CKD2	eGFR 60 – 89
CKD3a	eGFR 45 -60
CKD3B	eGFR 30 – 44
CKD 4	eGFR 15 – 30
CKD 5	eGFR < 15

2

eGFR og albuminuri vurderes som uafhængige risikofaktorer for både nyresygdom og hjerte-kar-sygdom?



CKD is classified based on: • Cause (C) • GFR (G) • Albuminuria (A)				Albuminuria categories		
				Description and range		
				A1	A2	A3
				Normal to mildly increased <30 mg/g <3 mg/mmol	Moderately increased 30–299 mg/g 3–29 mg/mmol	Severely increased ≥300 mg/g ≥30 mg/mmol
GFR categories (ml/min/1.73 m ²) 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

3

**Kan diabetisk nyresygdom ofte være
til stede i mange år uden symptomer?**



Symptomerne på kronisk nyresygdom

- Lette grader af kronisk nyresygdom giver ingen symptomer og kan kun opdages via blod- og urinprøver. 
- Sværere grader kan give symptomer som f.eks. træthed, kvalme og kløe. 
- De fleste har kun svage symptomer, som ofte overses, da sygdommen udvikler sig langsomt. 

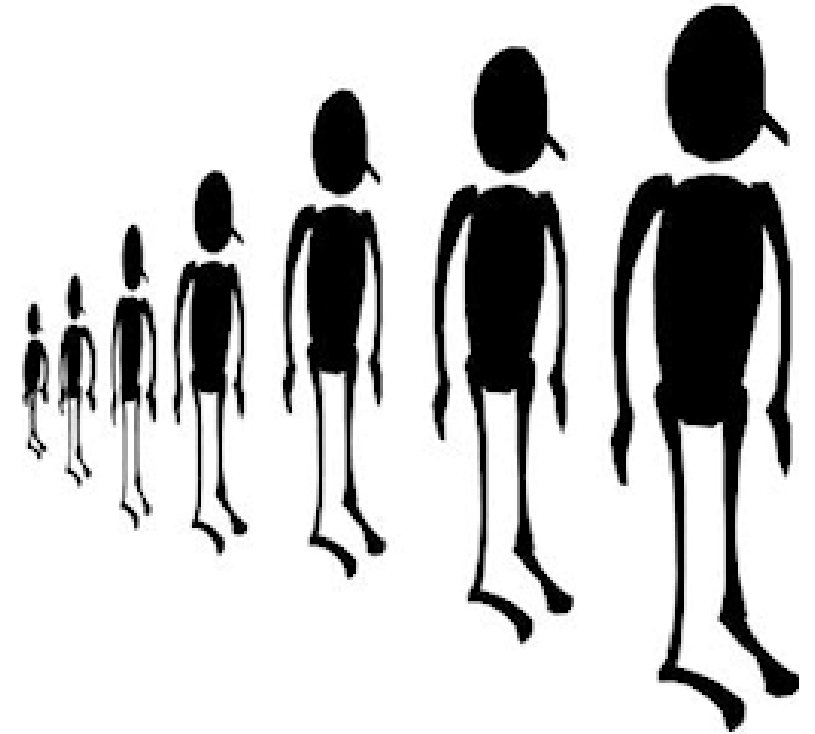
Forekomst

Over tid udvikler:

40 % af alle personer med type 2 diabetes moderat albuminuri

5-10 % af personer med type 2 diabetes svært forhøjet albuminuri

Diabetisk nyresygdom er den hyppigste årsag til kronisk nyresygdom (CKD) og end-stage kidney disease (ESKD).



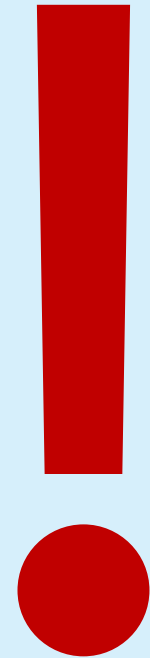
Prævalensen af diabetisk nyresygdom blandt personer i dialysebehandling i Danmark er ca. **25%**

4

Et blodtryk er uden betydning for udviklingen af diabetisk nyresygdom?



- Højt blodtryk er en af de vigtigste risikofaktorer for diabetisk nyresygdom.
- Skader de små blodkar i nyrerne, så filtreringen bliver dårligere.
- God blodtrykskontrol kan bremse udviklingen af nyreskade.



5



Er Metformin helt kontraindiceret ved let nedsat nyrefunktion (eGFR 50–60) ?

METFORMIN

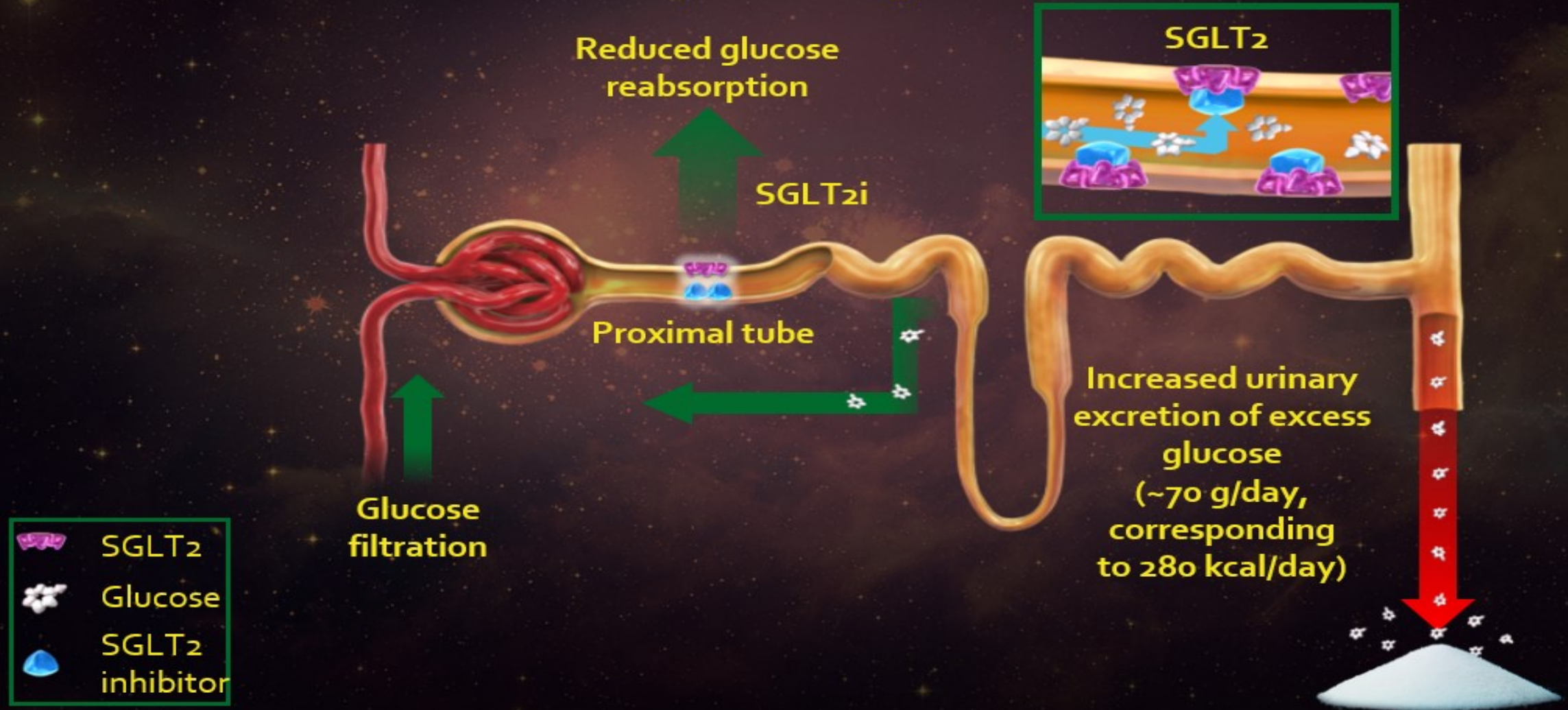
eGFR (ml/min/1.73 m ²)	Anbefaling
≥ 60	Fuldt doseringsinterval – ingen begrænsninger
45–59	Forsigtig anvendelse – monitorér nyrefunktion regelmæssigt
30–44	Reducér dosis – max 1000 mg dagligt og tæt monitorering
< 30	Kontraindiceret – Metformin bør seponeres

6

**SGLT2-hæmmere kan have en
nyrebeskyttende effekt hos personer med
diabetes og albuminuri?**



SGLT2-inhibitorer: En insulinuafhængig tilgang til fjernelse af overskydende glukose



7



Proteinindtaget bør altid øges ved nedsat nyrefunktion for at kompensere for tab?

8



Reduceret saltindtag (ca. 5 g/dag- 2 g natrium) anbefales ved diabetisk nyresygdom?

Hvad skal sygeplejersker vide om kost til personer med diabetes og nedsat nyrefunktion?

- At KDIGO guidelines fra 2022 anbefaler: Individuel diæt med højt indhold af grøntsager, frugt, fuldkorn, fibre, bælgrugter, plantebaserede proteiner, umættet fedt og nødder. Lavt indhold af forarbejdet kød, simple kulhydrater og sukkerholdige drikke.
- Ved hyperkaliæmi anbefales frugt og grønt med lavt indhold af kalium og begræns nødder
- Proteinindtag på 0,8 g/kg kropsvægt. Eks: vægt på 70kg =56g protein

Sygeplejersker skal ikke vejlede i kost ændringer – men hvornår skal vi henvise til diætist?

Magda på 74 år. Har Type 2 DM. Er femur amputeret i 2013. Er i hæmodialyse 3-4 gange om ugen.

I min konsultation bryder hun pludselig grædende sammen og fortæller at hun savner at spise grøntsager!





Cases

Hvad vil du ligge vægt på i din næste konsultation ved denne nyrepåvirket diabetespatient.

Top 10 Takeaways on Management for Primary Care Physicians from the KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease



Promote participation in high-quality research in CKD across the lifespan

1

Comprehensive treatment strategy

CKD is a long-term condition. Treat people with CKD with a comprehensive treatment strategy to reduce risks for complications (e.g., cardiovascular disease) and for progression to more advanced stages of CKD; ideal strategies encompass education, lifestyle, exercise, smoking cessation, diet, and medications, where indicated (Figure 1).

2

Healthy and diverse diet

Adopting a healthy and diverse diet with a higher consumption of plant-based foods compared to animal-based foods and a lower consumption of ultra-processed foods has the potential to benefit complications related to progressive CKD such as acidosis, hyperkalemia, and hyperphosphatemia with less risk of protein energy-wasting.

3

Individualize BP control

Ideal BP target in CKD is <120/80 mm Hg; however, BP-lowering therapy should be individualized in people with frailty, high risk of falls and fractures, very limited life expectancy, or symptomatic postural hypotension (Figure 1).

4

RASi and SGLT2i

Evidence-based treatments that delay progression of CKD include renin-angiotensin inhibitors (RASi) and SGLT2i in people with and without diabetes. In people with CKD and without diabetes, the presence of even mild albuminuria indicates benefits from RASi, and severe albuminuria indicates substantial benefits from SGLT2i.

5

CKD, cardiovascular disease, and heart failure

Estimate 10-year cardiovascular risk using a validated risk tool that incorporates CKD to guide treatment for prevention of cardiovascular disease. Use statins for most people with CKD to prevent cardiovascular disease (Figure 1). In people with CKD and heart failure, SGLT2i confers benefits irrespective of albuminuria.

6

Hemodynamically active therapies

Changes in eGFR are expected following initiation of hemodynamically active therapies, but GFR reductions of $\geq 30\%$ on subsequent testing exceed the expected variability and warrant evaluation (Figure 2).

7

Perform thorough medication review

Perform thorough medication review periodically and at transitions of care to assess adherence, continued indication, and potential drug interactions. People with CKD have increased risk for adverse events due to over-the-counter medicines, dietary, or herbal remedies, so encourage your patients to limit their use.

8

Equations for drug-dosing

For most people and clinical settings, validated eGFR equations using SCr are appropriate for drug-dosing, but the combined eGFR_{cre-lys} is more accurate and should be used when a more accurate kidney function estimation is important.

9

Discontinued medications

If medications are discontinued during an acute illness, communicate a clear plan of when to restart the discontinued medications and ensure documentation in the medical record. Unfortunately, medications are frequently not restarted, which leads to undertreatment and unintentional harm.

10

Referral to specialist kidney care services

Common reasons for referral to specialist kidney care services include the evaluation of cause of CKD, GFR <30 mL/min/1.73 m², significant decline in GFR, $>3\%$ – 5% risk of requiring KRT in 5 years, significant albuminuria, microscopic hematuria, changes in symptoms, or management of CKD complications.

Figure 1

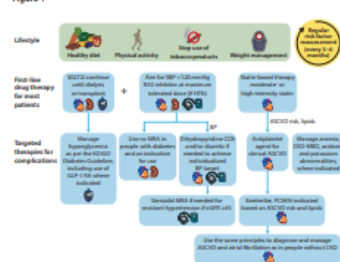
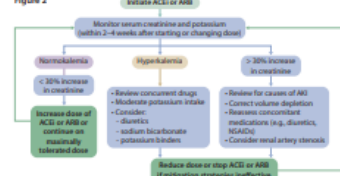


Figure 2



ACR, albumin-creatinine ratio; CKD, chronic kidney disease; Cr, creatinine; Cr_{cre-lys}, creatinine-lysine; eGFR, estimated glomerular filtration rate; KRT, kidney replacement therapy; RASi, renin-angiotensin inhibitors; SGLT2i, sodium-glucose cotransporter-2 inhibitors.

Zoom

<https://kdigo.org/wp-content/uploads/2024/03/KDIGO-2024-CKD-Guideline-Top-10-Takeaways-for-PCPs-Management.pdf>

1

CKD diagnosis and staging

Your doctor may do additional tests to understand the cause of your kidney disease and, based on the level of GFR and amount of protein in your urine, will determine your stage of CKD (severity and risk).

2

Comprehensive care

Combining a healthy diet, exercise, stopping smoking, controlling weight, and lowering blood pressure and lipids with appropriate medications can slow down how quickly CKD progresses and reduce the risks of kidney failure, heart attack, stroke, and heart failure (Figure 1).

3

Holistic approach to care

The best care for you is a holistic approach built by knowledge and trust in your healthcare team. Have the confidence to discuss your physical, social and emotional health and lifestyle issues with them. You will have different priorities depending on where you are in your lifespan.

4

Positive approach by patients to managing CKD

Understanding your condition and creating a partnership through shared decision-making with your healthcare team will be of great benefit. Become a proactive and empowered patient. This will help you protect kidney function and reduce the risk of side effects.

- Ask for access to your test results and understand your parameters.
- Understand each medication you are required to take and why you are taking it.
- Ask for a medication review if you feel you are overwhelmed by the number of pills you have to take.
- Ask for clear medical advice on drug therapy during acute episodes of illness especially dehydration (Figure 2).
- For healthcare team appointments, write down questions to ask about your care.
- Understand your risk factors and what are good lifestyle choices, now and in the long term.
- Research and ask for early education about dialysis and transplantation options.

5

Healthy and diverse diet

Eating a balanced, healthy diet that suits reduced kidney function may benefit complications related to CKD (Figure 3).

- Consume diets higher in vegetables, fruits, whole grains, fiber, legumes, plant-based proteins, unsaturated fats, and nuts, and lower in processed meats, and ultra-processed foods which are high in salt, sugars and carbohydrates.
- Salt intake should be <5 grams per day (equivalent to 2 grams of sodium) and protein <0.8 grams of protein per kg bodyweight per day.
- Initially, potassium rich foods like fruits are encouraged but as kidney function deteriorates, diet will need to be reviewed to prevent heart rhythm issues.
- Diet should be reviewed with a dietitian or nutrition provider and monitored on a regular basis.

6

BP control

BP control is at the heart of CKD care and can be controlled by BP-lowering therapy customized for you together with treatment targets that are adjusted if you are frail, at high risk of falls, have very limited life expectancy, or suffer from low blood pressure or dizziness when you stand up. As kidney function falls, BP can be elevated by water overload from eating and drinking as the kidney produces reduced levels of urine, usually identified by swelling at the ankles. Use of diuretic drugs (water pills) help increase water excretion.

7

RASi, SGLT2i, Statins

There is significant evidence to support drugs shown to slow down or limit progression of kidney and cardiovascular disease (Figure 1).

- RASi (ACEi or ARBi) have kidney protective effects and should be given if you have high BP or albuminuria
- SGLT2i reduce the risk of kidney failure and cardiovascular disease and have proven benefit in CKD with and without diabetes
- Moderate- or high-intensity statins are also part of first-line therapy

8

Symptom control

As CKD progresses, patients report more symptoms as the kidney struggles to clear toxins and water, and to send the correct signals to your endocrine system. Having a positive partnership with your healthcare team can help identify your symptom burden, and find possible treatment strategies that are best for you (Figure 4).

- Tiredness can be very challenging, so reduce stress by setting small, daily goals to help manage what needs to be done. Symptoms of tiredness from anemia may require a regimen of iron and possibly epoetin.
- Losing appetite is very common from acidosis and can limit healthy eating, so research meals you can enjoy taken in smaller portions and with less fluid intake.
- Gout can be very debilitating and painful, and needs urgent and long-term drug control.

9

Coping strategies for patients

Kidney disease is challenging and can be isolating, but coping strategies may allow you to achieve life priorities while living with kidney disease. You may struggle to appreciate medical advice if you are struggling with mental health or social, welfare, and financial issues.

- Identify specialist welfare and financial advice services
- Ask or join kidney charities and patient groups who can offer a range of help, grants, counselling and lived experience.
- CKD treatment is universally agreed, so using trusted websites from all health care systems can help educate and answer many common patient questions.

10

Understand long-term risks

Untreated CKD can lead to problems with heart function, blood vessel health, diabetes, and bone issues. It is important to work with your team to help them help you keep you in the best health possible.

Figure 1

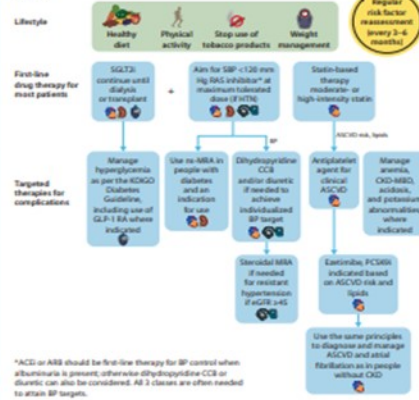


Figure 2



Figure 3

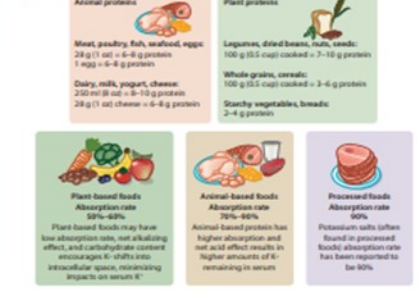
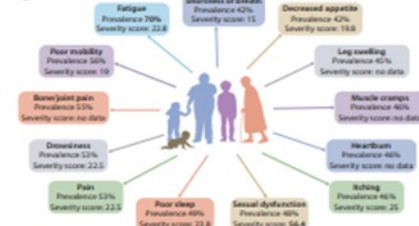


Figure 4



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; no MRA, nonsteroidal mineralocorticoid receptor antagonist; PCSK9, proprotein convertase subtilisin/kexin type 9 inhibitor; RASi, renin-angiotensin system inhibitor; SBP, systolic blood pressure; SGLT2i, sodium-glucose cotransporter-2 inhibitor.

https://kdigo.org/wp-content/uploads/2025/01/Key-Takeaways_KDIGO-2024-CKD-Guideline_People-Living-with-CKD.pdf