MENINGKATKAN KUALITAS HIDUP PASIEN DENGAN PENYAKIT GINJAL KRONIS: PERSPEKTIF KLINIS DAN PSIKOSOSIAL

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PENYAKIT GINJAL KRONIS

- Suatu kondisi kerusakan ginjal yang terjadi selama 3 bulan atau lebih, abnormalitas struktural atau fungsional ginjal, dengan atau tanpa penurunan Laju Filtrasi Glomerulus (GFR) yang bermanifestasi sebagai kelainan patologis atau kerusakan ginjal; termasuk ketidakseimbangan komposisi zat di dalam darah atau urin serta ada atau tidaknya gangguan hasil pemeriksaan pencitraan.
- GFR yang kurang dari 60mL/menit/1,73 m^2 lebih dari 3 bulan dengan atau tanpa kerusakan ginjal

BPJS Kesehatan Ungkap 8 Penyakit dengan Pembiayaan Termahal!

"Ini penyakit yang mahal, 8 penyakit saja habisnya tahun 2024, Rp37 triliun lebih, tahun 2023, Rp33 triliun, naik Rp4 triliun, karena masyarakat percaya, pada pake," ujar Ghufron dalam Public Expose Pengelolaan Program dan Keuangan BPJS Kesehatan tahun 2024, dikutip Selasa (15/7/2025).

Penyakit jantung menjadi beban terbesar dengan 22,55 juta kasus dan pembiayaan mencapai Rp19,25 triliun. Diikuti kanker dengan 4,2 juta kasus dan beban biaya Rp6,48 triliun. Stroke berada di posisi ketiga dengan 3,8 juta kasus senilai Rp5,81 triliun.

Penyakit gagal ginjal menelan biaya Rp2,76 triliun untuk 1,48 juta kasus, sementara *haemophilia* menyumbang beban Rp1,09 triliun dari 131 ribu kasus. Penyakit darah lain seperti *thalassemia* dan *leukaemia* masing-masing menghabiskan Rp794,4 miliar dan Rp599,9 miliar, dari 353 ribu dan 168 ribu kasus.

Sumber: https://wartaekonomi.co.id/read574798/bpjs-kesehatan-ungkap-8-penyakit-dengan-pembiayaan-termahal (diakses 9 Juni 2026)

CURRENT CHRONIC KIDNEY DISEASE (CKD) NOMENCLATURE USED BY KDIGO

CKD is defined as abnormalities of kidney structure or function, present for a minimum of 3 months, with implications for health. CKD is classified based on Cause, Glomerular filtration rate (GFR) category (G1–G5), and Albuminuria category (A1–A3), abbreviated as CGA.

KDIGO: Prognosis of CKD by GFR and albuminuria categories

GFR categories (ml/min/1.73 m²) Description and range				Persistent 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 or high	≥90			
	G2	Mildly decreased	60–89			
	G3a	Mildly to moderately decreased	45–59			
	G3b	Moderately to severely decreased	30–44			
	G4	Severely decreased	15–29			
	G5	Kidney failure	<15			

Green: low risk (if no other markers of kidney disease, no CKD); Yellow: moderately increased risk; Orange: high risk; Red: very high risk. GFR, glomerular filtration rate.

KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease

eGFR and Albuminuria Parameter

Table 4 | Use of GFR and albuminuria

Clinical decisions	Current level		Change in the level of GFR
	GFR	Albuminuria	
Diagnosis and staging	• Detection of CKD • Evaluation for kidney donation	• Detection of CKD	• Detection of AKI and AKD • Detection of CKD progression
Treatment	• Referral to nephrologists • Patient and family education about CKD and benefit of lifestyle changes • Monitor progression of GFR decline • Referral for kidney transplantation • Placement of dialysis access • Dosage and monitoring for medications cleared by the kidney • Determine safety of diagnostic tests or procedures • Eligibility for clinical trials	• Referral to nephrologists • Patient and family education about CKD and benefit of lifestyle changes • Monitor progression of GFR decline • Eligibility for clinical trials	• Treatment of AKI • Monitoring drug toxicity • Re-evaluate CKD treatment strategies
Risk assessment	• Risk of CKD complications • Risk for CKD progression • Risk of CVD • Risk for medication errors • Risk for perioperative complications • Risk for mortality • Fertility and risk of complications of pregnancy	• Risk for CKD progression • Risk for CVD • Risk for mortality • Fertility and risk of complications of pregnancy	• Risk for kidney failure • Risk for CVD, HF, and mortality • Risk for adverse pregnancy outcome

AKD, acute kidney disease; AKI, acute kidney injury; CKD, chronic kidney disease; CVD, cardiovascular disease; GFR, glomerular filtration rate; HF, heart failure.

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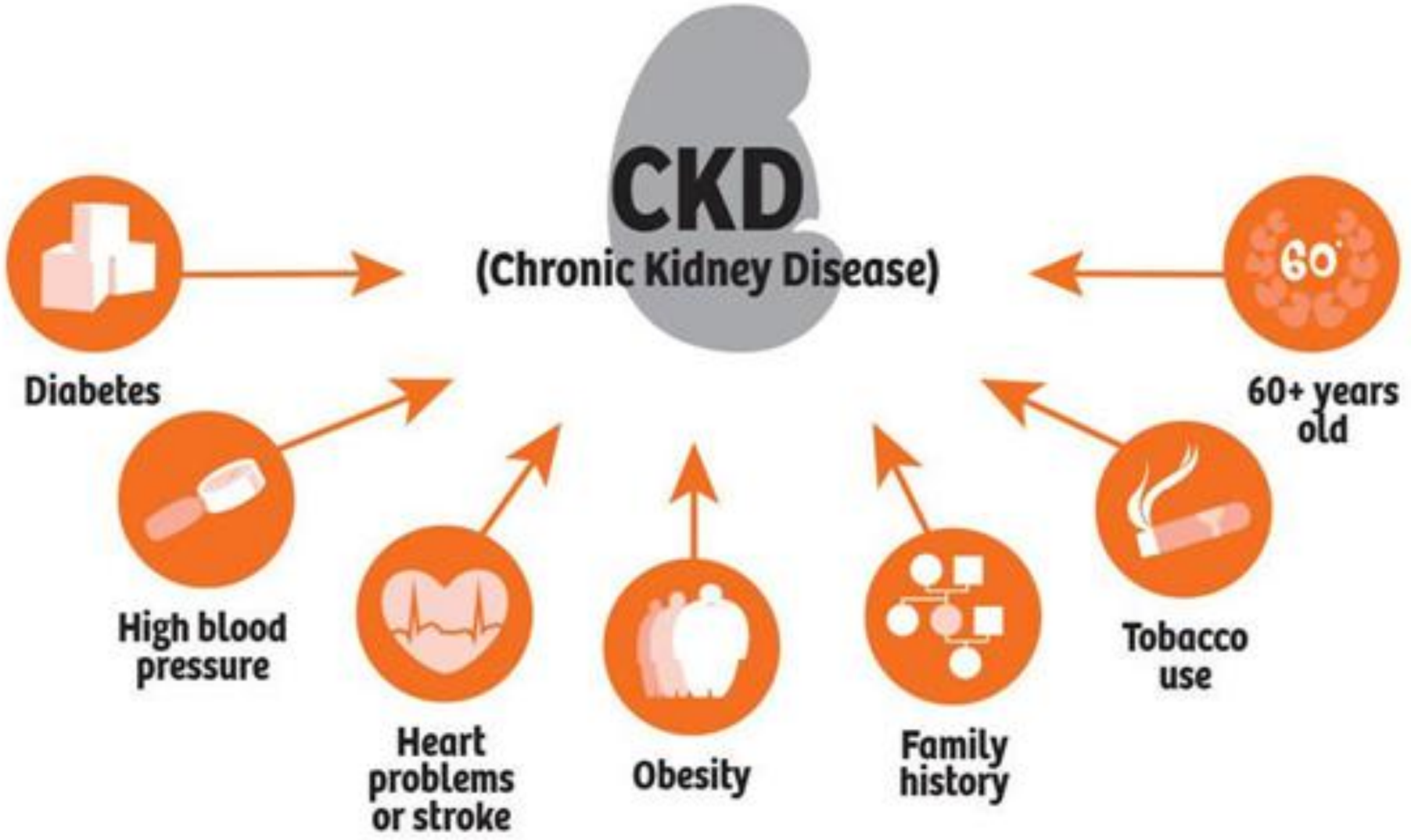
Etiologi


CKD
(Chronic Kidney Disease)
Diabetes
High blood pressure
Heart problems or stroke
Obesity
Family history
Tobacco use
60+ years old
60

Gejala Penyakit Ginjal Kronis

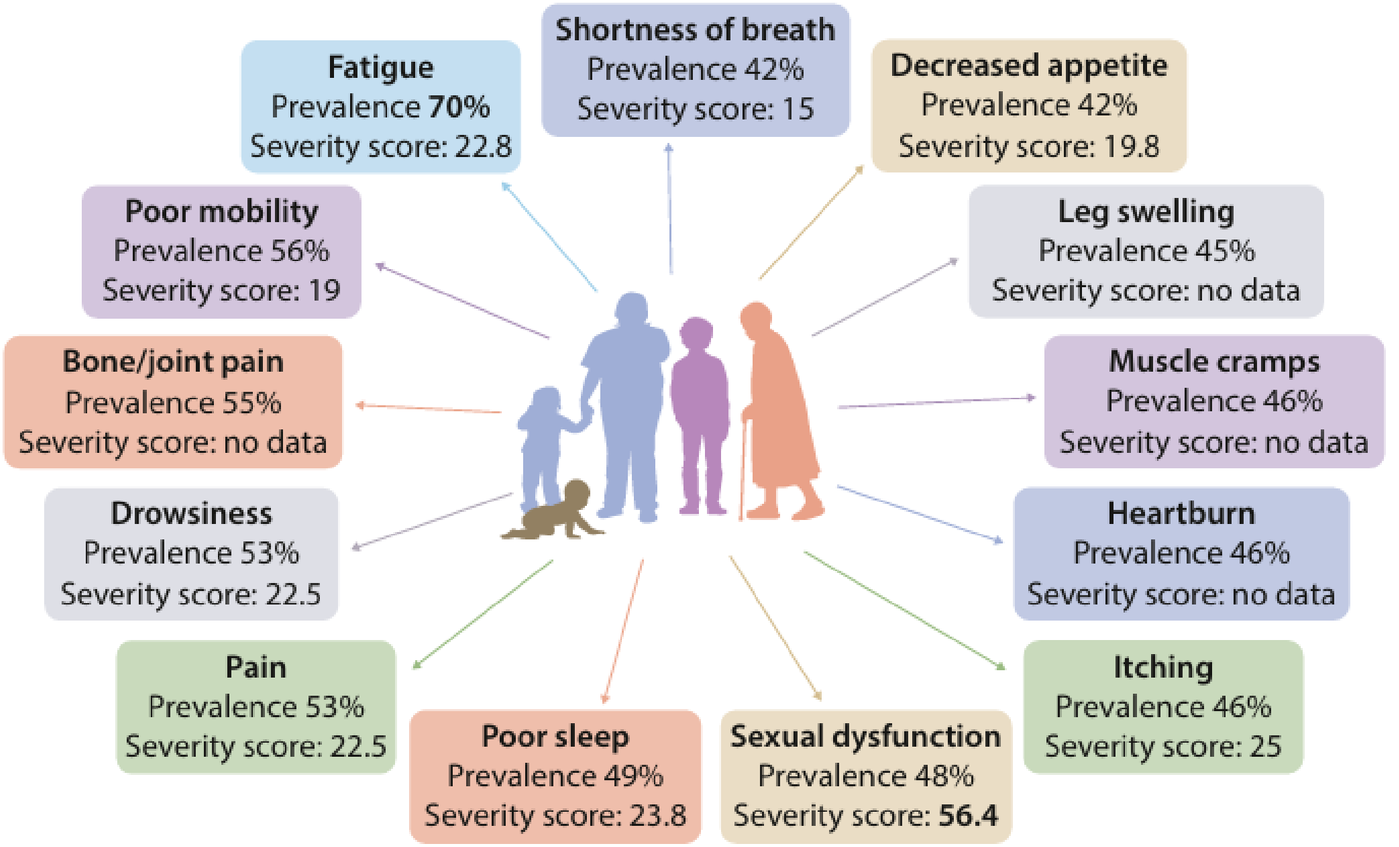


Figure 49 | Common symptoms, prevalence, and severity in people with chronic kidney disease. To aid comparison of symptom severity scores across different outcome measures, all mean severity scores were converted to a 0–100 scale, where a higher score indicates greater severity. Adapted from Fletcher BR, Damery S, Aiyegbusi OL, et al. Symptom burden and health-related quality of life in chronic kidney disease: a global systematic review and meta-analysis. *PLoS Med*. 2022;19:e1003954.[839]

Catatan: Gejala pada penyakit ginjal kronis jarang muncul pada PGK stage 1 dan 2, sedangkan gejala pada PGK stage 3 dan 4 seringkali minimal

Komplikasi Penyakit Ginjal Kronis

- Anemia
- Kelainan elektrolit, asidosis termasuk hiperkalemia
- Malnutrisi
- Overload cairan dan hipertensi
- Risiko penyakit kardiovaskular
- Mineral bone disease
- Gangguan psikososial dan penurunan kualitas hidup
- Rehospitalisasi yang tinggi dan risiko kematian

SINGAPORE NATIONAL KIDNEY FOUNDATION. 2024. COMPLICATIONS OF CHRONIC KIDNEY DISEASE: THERAPEUTIC APPROACHES AND WHAT CAN BE DONE TO HALT DISEASE PROGRESSION?

Table 40| Key features of existing CKD care models[32,880-882]

Multidisciplinary care team composition	
• Nephrologist • Endocrinologist, cardiologist, transplant surgeon, psychologist, etc. • Nurse	• Pharmacist • Renal dietitian or accredited nutrition provider • Social worker
Interventions	
• BP management • Diabetic management • Cardiovascular management • Anemia management • Mineral and bone disorder management • Conservative kidney management	• Education on dialysis modality selection • Vascular access planning • Transplantation education and evaluation • Nutritional and dietary counseling • Medication reconciliation • Vaccination program
Outcomes	
• Delay progression of CKD • Improve BP control • Improve CVD outcomes	• Improve rate of optimal medication • Improve patient education

ACEi, angiotensin-converting enzyme inhibitor; ARB, angiotensin II receptor blocker; BP, blood pressure; CKD, chronic kidney disease; CVD, cardiovascular disease.

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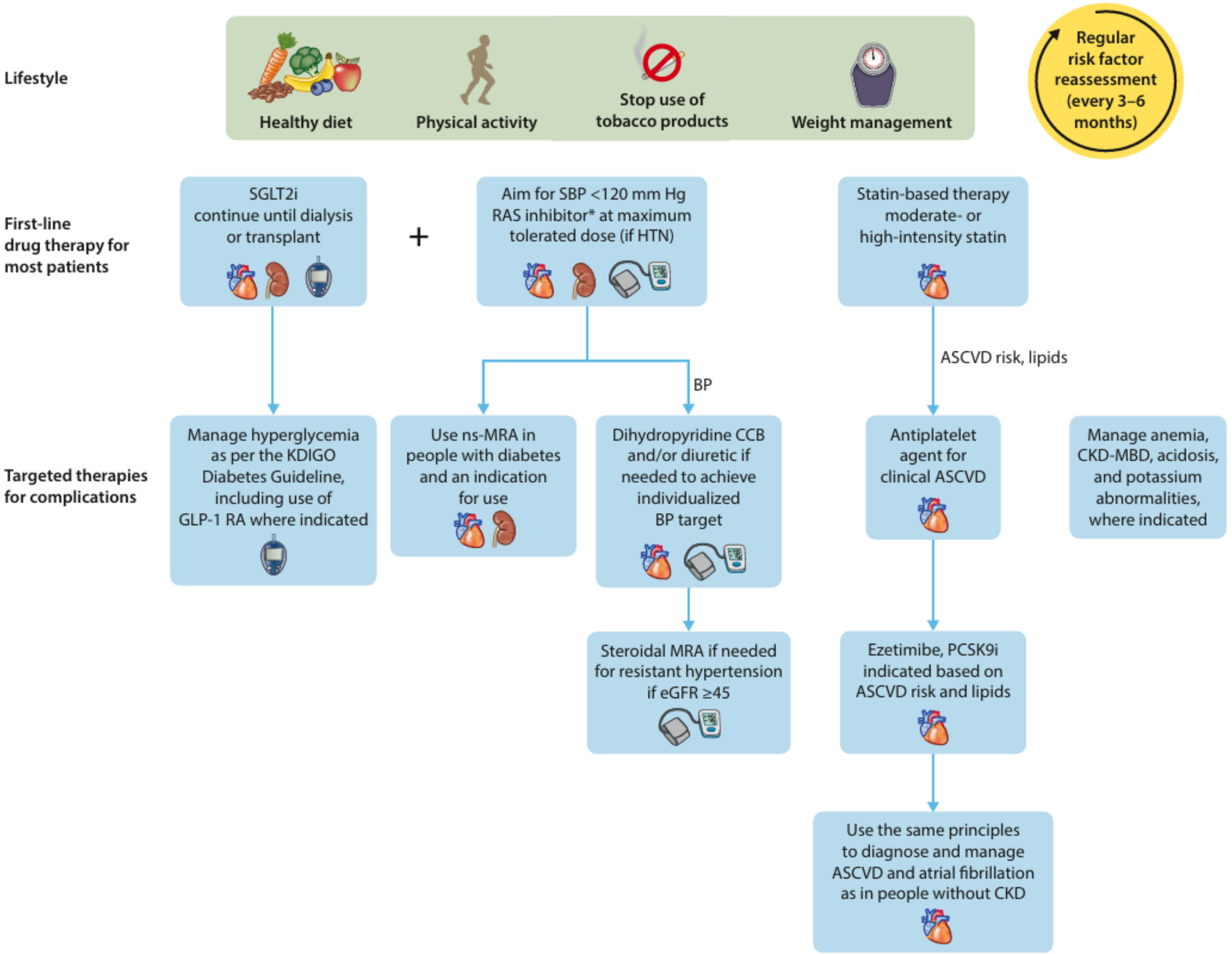
Manajemen Penyakit Ginjal Kronis

- Menunda keparahan PGK dan mencegah terjadinya komplikasi
- Meningkatkan dan optimalkan kualitas hidup pasien
- Pengobatan sedini mungkin penyakit ginjal kronis dapat memperlambat perkembangannya menjadi ESRD/PGK st. 5
- Penanganan penyakit penyebab terjadinya PGK
- Penanganan komplikasi yang terjadi akibat dari PGK

Holistic Approach to Chronic Kidney Disease (CKD) Treatment and Risk Modification



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Farmakoterapi PGK

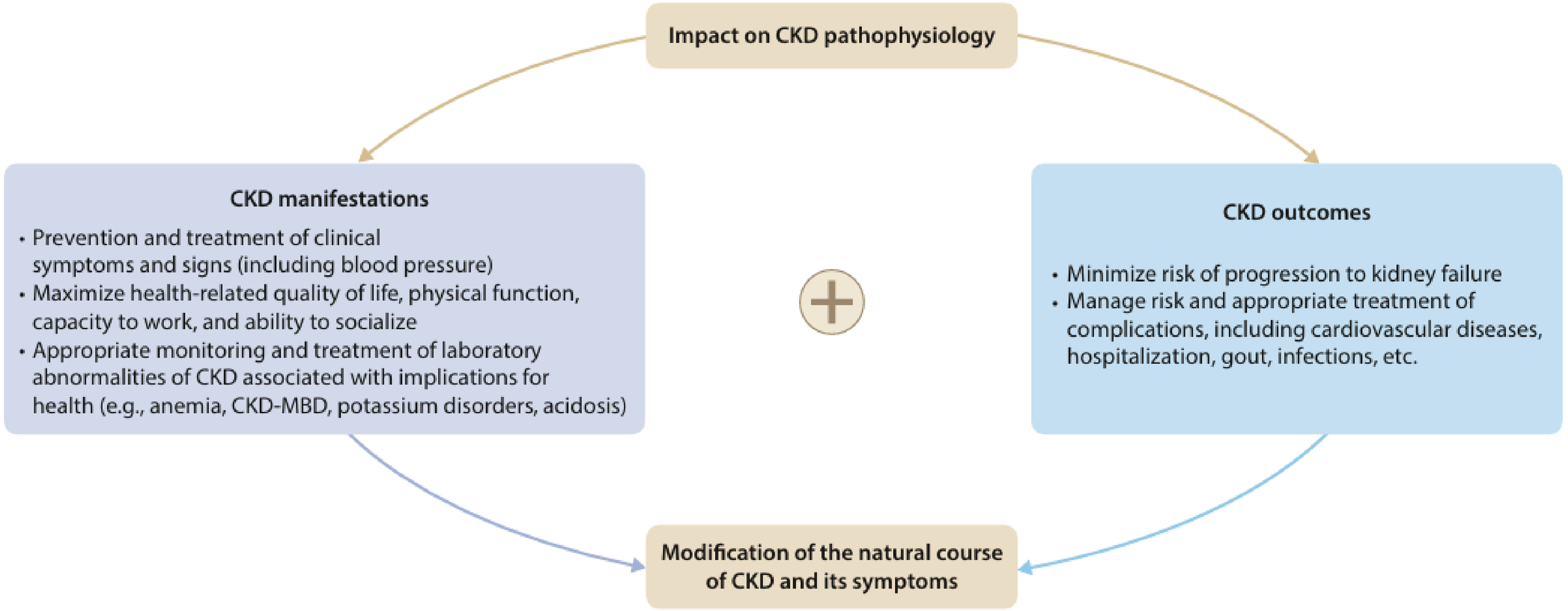

Figure 17 | Chronic kidney disease (CKD) treatment and risk modification. CKD-MBD, chronic kidney disease-mineral and bone disorders.

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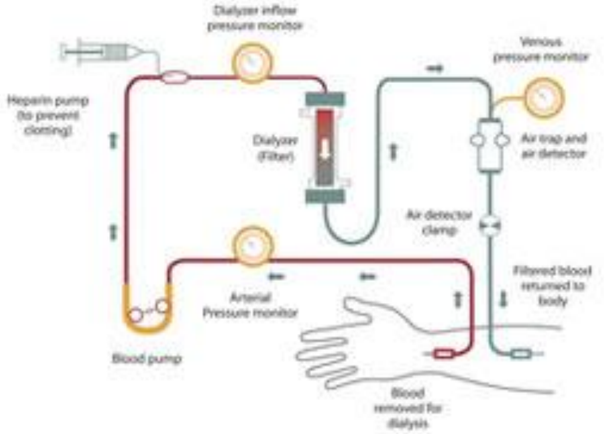
Implikasi Klinis Pada Penyakit Ginjal Kronis St. V

- Terapi pengganti ginjal yang sesuai (hemodialisis, peritoneal dialisis, dan cangkok ginjal)
- Terapi medikamentosa (Hipertensi, ESA+besi, diuretik, fosfat binder, statin + antiplatelet, vitamin D aktif)
- Nutrisi yang sesuai (protein dibutuhkan untuk massa otot dan sel darah merah)
- Asupan cairan

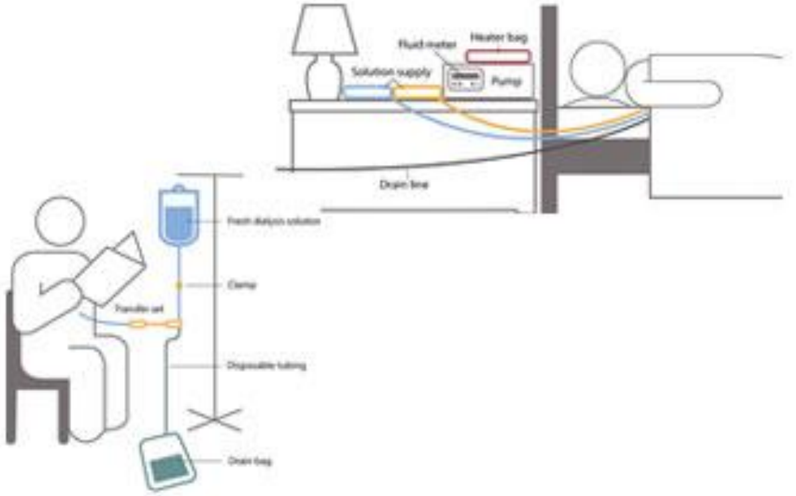
Renal Replacement Treatment Options

Hemodialysis (HD)



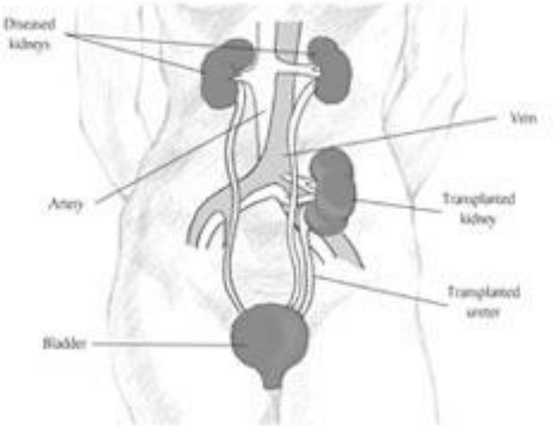
Dialysis facility OR In-home

Peritoneal dialysis (PD)



Continuous OR Automated

Kidney transplant



Deceased donor
OR Live donor

Harapan Hidup Pasien PGK dengan Terapi Pengganti Ginjal

Table 2. Survival of incident patient in RRT.

Survival	%	CI95%
1 year	88.7	(88.1; 89.3)
3 years	72.6	(71.8; 73.4)
5 years	59.4	(58.4; 60.4)
10 years	37.4	(36.0; 38.8)

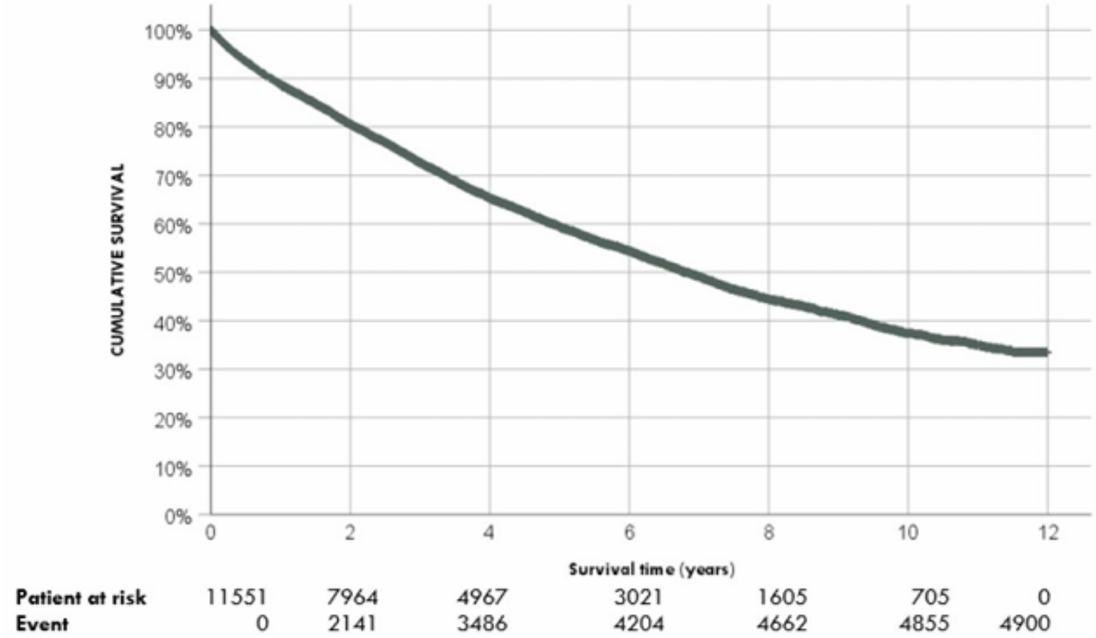
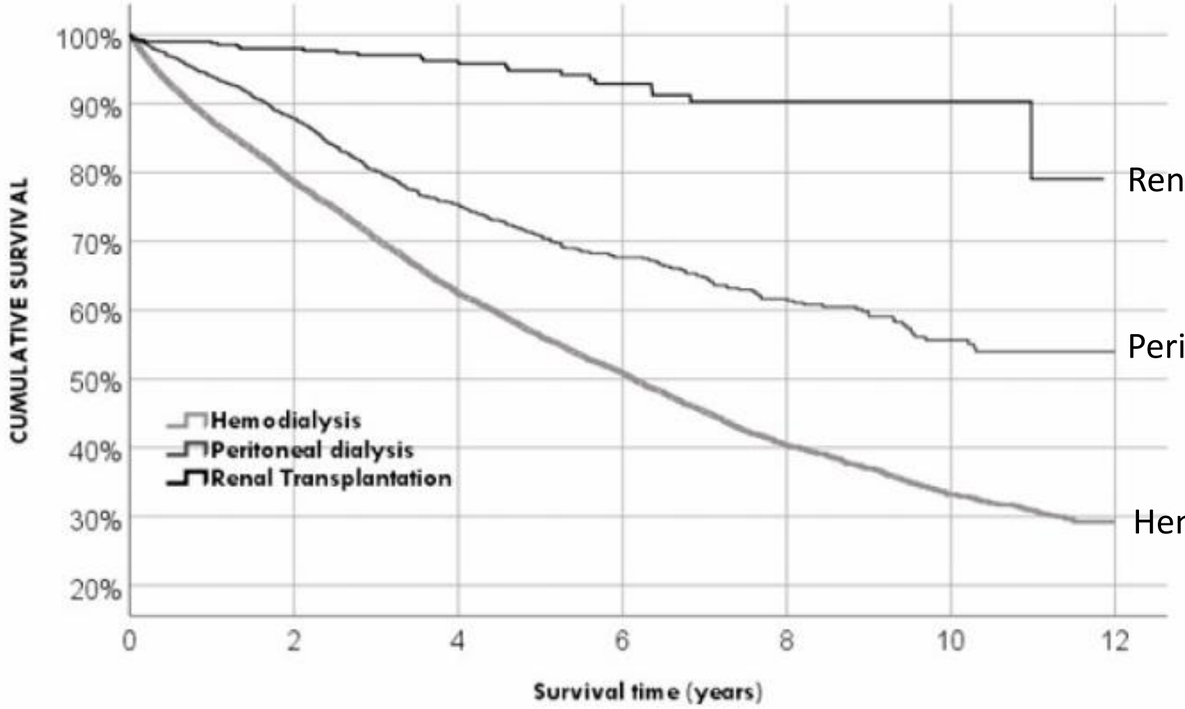


Figure 1. Global survival of renal replacement therapy.

The median survival time after the start of RRT was **6.8 years(6.6;7.0)**

Muñoz-Terol JM, Rocha JL, Castro-de la Nuez P, Egea-Guerrero JJ, Gil-Sacaluga L, García-Cabrera E, Vilches-Arenas A. Prognosis Factors of Patients Undergoing Renal Replacement Therapy. *J Pers Med*. 2023 Mar 30;13(4):605. doi: 10.3390/jpm13040605. PMID: 37108991; PMCID: PMC10141530.

Perbandingan Terapi Pengganti Ginjal pada PGK



Renal Transplant

Peritoneal dialysis

Hemodialysis

HD	Patient at risk	9613	6461	3988	2431	1297	567	0
	Event	0	1955	3145	3791	4214	4391	4432
PD	Patient at risk	1525	1171	761	460	242	110	0
	Event	0	178	327	394	426	442	445
RT	Patient at risk	413	332	217	130	65	27	0
	Event	0	8	14	19	22	22	23

Figure 2. Univariate survival analysis comparing the modality of renal replacement therapy at the start.

Muñoz-Terol JM, Rocha JL, Castro-de la Nuez P, Egea-Guerrero JJ, Gil-Sacaluga L, García-Cabrera E, Vilches-Arenas A. Prognosis Factors of Patients Undergoing Renal Replacement Therapy. *J Pers Med*. 2023 Mar 30;13(4):605. doi: 10.3390/jpm13040605. PMID: 37108991; PMCID: PMC10141530.

Clinical Kidney Journal

Polypharmacy and medication use in patients with CKD with and without kidney replacement therapy compared to matched controls

The aim of the study was to examine polypharmacy prevalence in CKD patients

Methods

Dutch health data: Vektis
Case: control study – 1:2, matched by age, sex and socioeconomic status (SES)

- CKD G4/G5 without dialysis
- CKD on dialysis
- Kidney transplant
- Control: without CKD

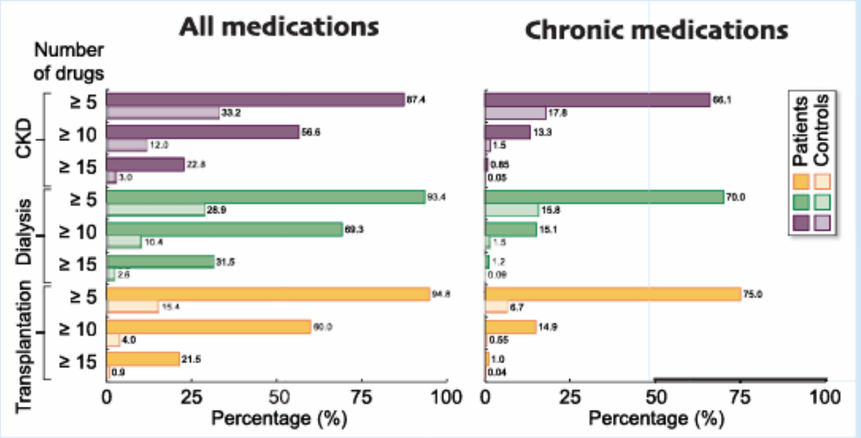
Polypharmacy (**PP**): ≥ 5 drugs

Excessive PP (**EPP**): ≥ 10 drugs

Hyperpolypharmacy (**HPP**): ≥ 15 drugs

Results

27 573 patients
- **14 905** patients with **CKD G4/G5**, mean age 75.6 years
- **3 872** patients on **dialysis**, mean age 70.8 years
- **8 796** **transplant** patients, mean age 56.5 years



Median number of dispensed meds:
CKD G4/G5 = 10; control = 1
Dialysis = 12; control = 1
Transplant = 1; control = 0

Median number of dispensed meds:
CKD G4/G5 = 6; control = 0
Dialysis = 6; control = 0
Transplant = 6; control = 0

PP, **EPP**, **HPP** higher in patients than in controls (ratio 2.6 to 23.9)

Risk factors:
- Age (CKD, transplant)
- Lower SES
- Diabetes
- ER visit
- Vascular disease
- Hospitalization

Common chronic drugs:
- Proton pump inhibitors
- Statins

Conclusion: CKD stage G4/G5, dialysis and kidney transplant patients had high medication burden, far beyond that of the general population. A critical approach to medication prescription could be a first steps towards a more appropriate medication use.

van Oosten MJM, et al
Clinical Kidney Journal (2021)
@CKJsocial

van Oosten MJM, Logtenberg SJJ, Hemmelder MH, Leegte MJH, Bilo HJG, Jager KJ, Stel VS. Polypharmacy and medication use in patients with chronic kidney disease with and without kidney replacement therapy compared to matched controls. *Clin Kidney J*. 2021 Jul 6;14(12):2497-2523. doi: 10.1093/ckj/sfab120. PMID: 34950462; PMCID: PMC8690067.

Table 5. Percentage of most commonly dispensed medication classes of CKD Stage G4/G5 without KRT patients, dialysis patients and kidney transplant patients and matched controls: medication classes defined for chronic medication use

	Chronic medication use					
	CKD		Dialysis		Kidney transplantation	
Medication classes	Patients, % ($n = 14\,905$)	Matched controls, % ($n = 29\,810$)	Patients, % ($n = 3872$)	Matched controls, % ($n = 7744$)	Patients, % ($n = 8796$)	Matched controls, % ($n = 17\,592$)
Cardiovascular drugs						
ACE inhibitors	23.6	11.1	11.4	10.4	24.6	5.3
ARB	27.9	9.8	13.2	7.9	17.6	4.8
Beta-blockers	29.1	9.1	25.1	7.9	29.6	3.7
Calcium channel blockers	39.8	9.3	29.7	8.5	43.4	4.2
Diuretics	43.1	10.1	44.3	8.6	19.1	3.8
Statins	52.8	19.3	39.5	18.3	50.8	10.2
PPIs	51.9	19.4	65.5	16.8	54.0	8.2
Vitamin D analogues	50.6	12.5	43.4	9.9	48.5	4.7
Antithrombotic agents	45.2	19.2	50.3	17.2	29.6	7.6
Platelet aggregation inhibitors	38.8	15.3	44.6	13.9	23.9	6.2
Vitamin K antagonist	5.6	2.1	6.3	1.8	4.3	0.67
Heparin	0.27	0.14	0.44	0.10	0.47	0.06
DOAC/NOAC	1.1	1.9	0.03	1.6	1.4	0.76
Antidiabetics	25.8	6.6	19.6	6.4	21.3	3.5
Insulin	15.8	2.1	14.8	2.1	11.2	1.0
Metformin	2.2	4.7	0.03	4.8	9.2	2.6
Sulphonylurea derivative	10.3	2.9	4.5	2.5	7.1	1.5

ACE: angiotensin-converting enzyme; ARB: angiotensin II receptor blocker; DOAC/NOAC: direct oral anticoagulant/novel oral anticoagulant.

van Oosten MJM, Logtenberg SJJ, Hemmelder MH, Leegte MJH, Bilo HJG, Jager KJ, Stel VS. Polypharmacy and medication use in patients with chronic kidney disease with and without kidney replacement therapy compared to matched controls. *Clin Kidney J*. 2021 Jul 6;14(12):2497-2523. doi: 10.1093/ckj/sfab120. PMID: 34950462; PMCID: PMC8690067.

Adverse Drug Reactions in Patient with CKD

Laville S, Gras-Champel V, Hamroun A et al. **Kidney Function Decline and Serious Adverse Drug Reactions in Patients With CKD.** *American Journal of Kidney Diseases*, 2023; 83, 601-614.e1

Table 2. Description of Adverse Drug Reactions According to Their Seriousness

	All (N = 1,672)	Adverse Drug Reaction	
		Nonserious (n = 1,184)	Serious (n = 488)
Kidney and urinary disorders	310 (18.5%)	140 (11.8%)	170 (34.8%)
Acute kidney injury[a]	224	64	160
Creatinine serum increased[a]	66	65	1
Aggravated chronic kidney failure[a]	11	4	7
Gastrointestinal disorders	253 (15.1%)	225 (19.0%)	28 (5.7%)
Diarrhea[a]	105	93	12
Gastrointestinal disorder (not specified)[a]	43	42	1
Nausea[a]	29	27	2
Hemorrhages and bleeding	213 (12.7%)	43 (3.6%)	170 (34.8%)
Epistaxis[a]	26	6	20
Hematuria[a]	19	3	16
Rectal bleeding[a]	15	4	11
Musculoskeletal and connective tissue disorders	137 (8.2%)	134 (11.3%)	3 (0.6%)
Muscle spasms[a]	81	81	0
Myalgia[a]	35	35	0
Arthralgia[a]	7	7	0
General disorders and administration site conditions	137 (8.2%)	134 (11.3%)	3 (0.6%)
Peripheral edema[a]	70	70	0
Drug intolerance (not specified)[a]	20	20	0
Fatigue[a]	16	16	0
Metabolism and nutrition disorders	118 (7.1%)	95 (8.0%)	23 (4.7%)
Injury, poisoning and procedural complications	85 (5.1%)	79 (6.7%)	6 (1.2%)
Skin and subcutaneous tissue disorders	78 (4.7%)	61 (5.2%)	17 (3.5%)
Vascular disorders	73 (4.4%)	70 (5.9%)	3 (0.6%)
Nervous system disorders	63 (3.8%)	55 (4.6%)	8 (1.6%)
Respiratory, thoracic and mediastinal disorders	40 (2.4%)	37 (3.1%)	3 (0.6%)
Blood and lymphatic system disorders	32 (1.9%)	13 (1.1%)	19 (3.9%)
Cardiac disorders	26 (1.6%)	16 (1.4%)	10 (2.0%)
Psychiatric disorders	25 (1.5%)	16 (1.4%)	9 (1.8%)
Ear and labyrinth disorders	18 (1.1%)	18 (1.5%)	0 (0%)
Endocrine disorders	17 (1.0%)	12 (1.0%)	5 (1.0%)
Infections and infestations	11 (0.7%)	8 (0.7%)	3 (0.6%)
Immune system disorders	10 (0.6%)	7 (0.6%)	3 (0.6%)
Hepatobiliary disorders	9 (0.5%)	6 (0.5%)	3 (0.6%)
Reproductive system and breast disorders	7 (0.4%)	6 (0.5%)	1 (0.2%)
Investigations	6 (0.4%)	6 (0.5%)	0 (0%)
Eye disorders	4 (0.2%)	3 (0.3%)	1 (0.2%)

[a]Three most frequently reported disorders: 1,184 nonserious adverse drug reactions were reported in 773 patients, and 488 serious adverse drug reactions were reported in 360 patients.

Adverse Drug Reactions in Patient with CKD

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Table 3. Drug Classes and Active Compounds Responsible for Adverse Drug Reactions According to the Latter's Seriousness

			Adverse Drug Reaction	
		Total (N = 1,672)	Nonserious (n = 1,184)	Serious (N = 488)
B01	Antithrombotic agents	302 (18.1%)	125 (10.6%)	177 (36.3%)
	Fluindione[a]	128	36	92
	Warfarin[a]	54	19	35
	Heparin[a]	38	10	28
C09	Agents acting on the renin-angiotensin system	238 (14.2%)	161 (13.6%)	77 (15.8%)
	Ramipril[a]	44	25	19
	Irbesartan[a]	36	20	16
	Candesartan[a]	27	15	12
C03	Diuretics	155 (9.3%)	92 (7.8%)	63 (12.9%)
	Furosemide[a]	95	33	62
	Hydrochlorothiazide[a]	20	14	6
	Spironolactone[a]	18	13	5
C10	Lipid-modifying agents	105 (6.3%)	104 (8.8%)	1 (0.2%)
	Atorvastatin[a]	35	25	10
	Rosuvastatin[a]	24	16	8
	Pravastatin[a]	11	7	4
C08	Calcium channel blockers	96 (5.7%)	94 (7.9%)	2 (0.4%)
	Amlodipine[a]	54	25	29
	Lercanidipine[a]	22	13	9
	Manidipine[a]	10	8	2
J01	Antibacterials for systemic use	78 (4.7%)	51 (4.3%)	27 (5.5%)
	Amoxicillin and β-lactamase inhibitor[a]	15	6	9
	Amoxicillin[a]	12	5	7
	Sulfamethoxazole and trimethoprim[a]	11	8	3
A10	Drugs used in diabetes	68 (4.1%)	57 (4.8%)	11 (2.3%)
	Metformin[a]	21	20	1
	Insulin[a]	11	6	5
	Repaglinide[a]	8	3	5
N02	Analgesics	57 (3.4%)	42 (3.5%)	15 (3.1%)
M04	Antigout preparations	56 (3.3%)	45 (3.8%)	11 (2.3%)
L01	Antineoplastic agents	54 (3.2%)	40 (3.4%)	14 (2.9%)
L04	Immunosuppressants	40 (2.4%)	29 (2.4%)	11 (2.3%)
V08	Contrast media	40 (2.4%)	22 (1.9%)	18 (3.7%)
C07	β-Blocking agents	39 (2.3%)	31 (2.6%)	8 (1.6%)
B03	Antianemic preparation	33 (2.0%)	32 (2.7%)	1 (0.2%)
C02	Antihypertensives	32 (1.9%)	31 (2.6%)	1 (0.2%)
V03	Drugs for treatment of hyperkalemia and hyperphosphatemia	30 (1.8%)	29 (2.4%)	1 (0.2%)
C01	Cardiac therapy	27 (1.6%)	21 (1.8%)	6 (1.2%)
H03	Thyroid therapy	22 (1.3%)	18 (1.5%)	4 (0.8%)
H02	Corticosteroids for systemic use	19 (1.1%)	17 (1.4%)	2 (0.4%)
N03	Antiepileptics	17 (1.0%)	13 (1.1%)	4 (0.8%)
	Other therapeutic classes		130 (11.0%)	34 (7.0%)

[a]Three most frequently reported active ingredients.

Apa Yang Dapat Dilakukan Apoteker pada Pasien PGK

- Mengupayakan menghambat progresivitas:
  - Waspada obat yang bersifat nefrotoksik (pada umumnya, obat yang nefrotoksik memiliki alternatif yang lain)
  - Optimalisasi farmakoterapi faktor risiko PGK (DM, Hipertensi, berhenti merokok, kepatuhan pengobatan dll)
- Pengaturan dosis pada gangguan ginjal
  - Obat yang diekskresikan melalui ginjal perlu penyesuaian dosis
- Menunjang pelaksanaan terapi pengganti ginjal pada pasien PGK
- Farmakoterapi komplikasi penyakit ginjal kronis (Hipertensi, anemia, Vitamin D3 aktif, antiplatelet/statin, dll)
- Edukasi modifikasi gaya hidup dan nutrisi yang sesuai

Penggunaan Obat Pada Pasien Gangguan Ginjal

GANGGUAN FUNGSI GINJAL-UREMIA

- GFR turun
- Sekresi aktif turun
- Akumulasi cairan, produk nitrogen, FFA dalam tubuh
- Gangguan kesetimbangan elektrolit

↓

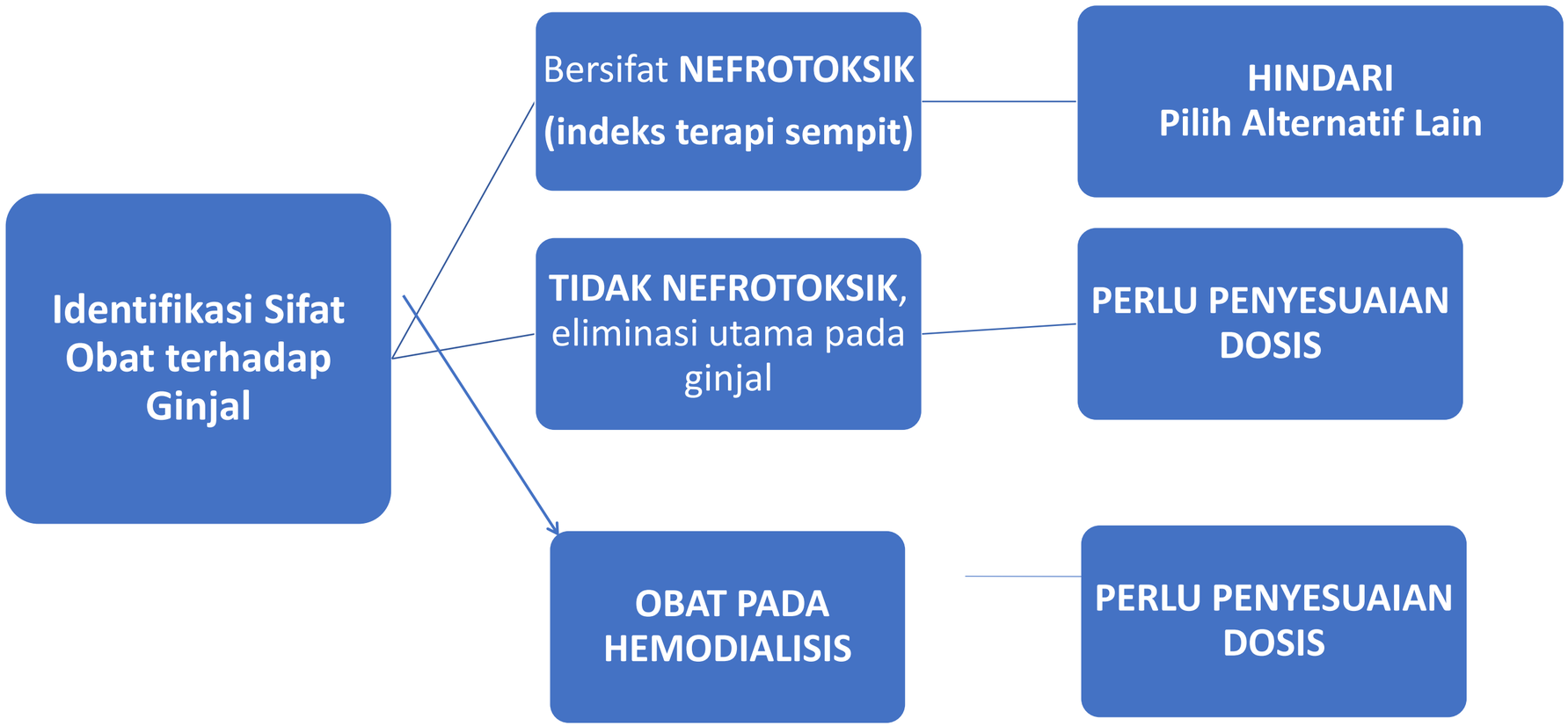
PERUBAHAN FISIOLOGIK-METABOLIK
PERUBAHAN FARKIN-FARDIN

- Bioavailabilitas menurun
- Vol. Distribusi
- Ikatan Obat-Protein
- Eliminasi obat (Biotransformasi, ekskresi renal)
- Sensitivitas-*receptor site*

↓

ELIMINASI OBAT MENURUN

Algoritma Penggunaan Obat pada Pasien Penyakit Ginjal Kronis



HAL YANG HARUS DIPERHATIKAN

	Rekomendasi Klinis	Level Evidence
IDENTIFIKASI SIFAT OBAT	a) Hati2 pengunaan obat OTC, herbal b) Obat dg metabolit toksik→hindari c) Pilih obat dg potensi nefrotoksik << d) Hati2 Obat dg metabolit aktif→efek farmakologi bisa me↑	C
DOSIS	a) Dilakukan penyesuaian berdasar fungsi ginjal pasien (eGFR) b) Dosis awal pasien→merujuk pada data pustaka/guidelines c) Dosis disesuaikan dg melihat respon klinis pasien	C
MONITORING	a) Dilakukan monitor data lab RFT (Serum kreatinin Scr)→untuk monitor efektifitas & toksisitas	C

Level C: konsensus, evidence penyakit, expert opinion, laporan kasus

EDUKASI PASIEN DENGAN PENYAKIT GINJAL KRONIS

- Menghindari makanan tinggi natrium, tinggi kalium, tinggi protein
- Pembatasan asupan cairan, intake cairan dibatasi
- Aktivitas fisik yang cukup
- Minum obat secara teratur dengan self monitoring yang baik (Tekanan darah, Glukosa darah, dll)
- Berkonsultasi sebelum menggunakan obat-obatan lain

Table 21 | Impact of plant-based foods in people with CKD

Study (N); study design	CKD stage or GFR	Intervention (follow-up)	Outcome
CRIC[467] (N = 2403); observational	20–70 ml/min per 1.73 m^2	High DASH vs. low DASH (14 yr)	CKD progression: HR: 0.83; 95% CI: 0.69–0.99 Mortality: HR: 0.75; 95% CI: 0.62–0.90
NHANES[468] (N = 1110); observational	30–59 ml/min per 1.73 m^2	DASH by quintiles (7.8 yr)	Kidney failure relative hazard (RH) compared with quintile 5: quintile 1: RH: 1.7; 95% CI: 1.1–2.7; quintile 2: RH: 2.2; 95% CI: 1.1–4.1
CORDIOPREV[466] (N = 53); RCT	<60 ml/min per 1.73 m^2	Mediterranean diet vs. low-fat diet (5 yr)	Decline in GFR −3.72 ml/min per 1.73 m^2 vs. −5.4 ml/min per 1.73 m^2, $P = 0.03$
CKD QLD[469] (N = 145); observational	CKD G3–G4	High vegetable and nut intake (median 36 mo)	Composite all-cause mortality, kidney failure, or doubling of SCr: HR: 0.61, 95% CI: 0.39–0.94
REGARDS[470] (N = 3972); observational	<60 ml/min per 1.73 m^2	Plant-based diet (6 yr)	All-cause mortality: HR: 0.77; 95% CI: 0.61–0.97
NHANES III[465] (N = 5346); observational	<60 ml/min per 1.73 m^2	Increasing plant-to-protein ratio (8.4 yr)	All-cause mortality for every 33% increase: HR: 0.77, 95% CI: 0.61–0.96
Longitudinal study of aging women[464] (N = 1374); observational	Baseline 65.6 ± 13.1 ml/min per 1.73 m^2	Higher vs. lower intake of plant-based protein (10 yr)	Each 10 g higher intake of plant-based protein reduced a decline in GFR by 0.12 ml/min per 1.73 m^2 per year

CI, confidence interval; CKD, chronic kidney disease; CKD QLD, Chronic Kidney Disease in Queensland; CORDIOPREV, CORonary Diet Intervention with Olive oil and cardiovascular PREVention study; CRIC, Chronic Renal Insufficiency Cohort; DASH, Dietary Approaches to Stop Hypertension; GFR, glomerular filtration rate; HR, hazard ratio; NHANES, National Health and Nutrition Examination Survey; RCT, randomized controlled trial; REGARDS, Reasons for Geographic and Racial Differences in Stroke; SCr, serum creatinine.

Animal proteins

Meat, poultry, fish, seafood, eggs:
28 g (1 oz) = 6–8 g protein
1 egg = 6–8 g protein

Dairy, milk, yogurt, cheese: 250 ml (8 oz) = 8–10 g protein
28 g (1 oz) cheese = 6–8 g protein

Plant proteins

Legumes, dried beans, nuts, seeds:
100 g (0.5 cup) cooked = 7–10 g protein

Whole grains, cereals:
100 g (0.5 cup) cooked = 3–6 g protein

Starchy vegetables, breads:
2–4 g protein

Kualitas Hidup Pada Pasien Penyakit Ginjal Kronis

Dimension	Level	Stage 3 (n = 62)	Stage 4 (n = 63)	Stage 5 (n = 29)	*p*-Value
Mobility	1	38 (61.2)	25 (39.6)	06 (20.6)	0.0003 *
	2	23 (37.0)	37 (58.7)	19 (65.5)	
	3	1 (1.6)	1 (1.6)	4 (13.7)	
Selfcare	1	48 (77.4)	34 (53.9)	9 (31.03)	0.001 *
	2	13 (20.9)	27 (42.2)	3 (10.3)	
	3	1 (1.6)	2 (3.1)	17 (58.6)	
Usual activities	1	24 (39.7)	28 (44.4)	8 (27.5)	0.001 *
	2	37 (59.6)	33 (52.3)	3 (10.3)	
	3	1 (1.6)	2 (3.1)	18 (62.0)	
Pain/Discomfort	1	35 (58.4)	20 (31.7)	6 (20.6)	0.001 *
	2	26 (41.9)	35 (55.5)	6 (20.6)	
	3	1 (1.6)	8 (12.6)	17 (58.6)	
Anxiety/depression	1	41 (66.1)	30 (47.6)	7 (24.1)	0.0005 *
	2	20 (32.2)	29 (46.0)	16 (55.1)	
	3	1 (1.6)	4 (6.34)	6 (20.6)	

$p < 0.01$ and * $p < 0.05$ indicate statistical significance.

Kandasamy, G.; Subramani, T.; Almanasef, M.; Orayj, K.; Shorog, E.; Alshahrani, A.M.; Alanazi, T.S.; Balasubramanian, S. Determinants of Health-Related Quality of Life in Patients with Chronic Kidney Disease: A Cross-Sectional Study. *Healthcare* **2025**, *13*, 1167. https://doi.org/10.3390/healthcare13101167

Implikasi Psikososial

- Penurunan mobilitas, kemampuan merawat diri, kemampuan untuk bekerja dan produktif, adanya nyeri dan sensasi tidak nyaman, serta kecemasan atau depresi
- Faktor non-klinis tersebut dapat menyebabkan penurunan kualitas hidup yang progresif dan menurunkan harapan hidup pasien penyakit ginjal kronis

Kandasamy, G.; Subramani, T.; Almanasef, M.; Orayj, K.; Shorog, E.; Alshahrani, A.M.; Alanazi, T.S.; Balasubramanian, S. Determinants of Health-Related Quality of Life in Patients with Chronic Kidney Disease: A Cross-Sectional Study. *Healthcare* **2025**, *13*, 1167. https://doi.org/10.3390/healthcare13101167

Common Symptom Management

Table 38 | Management strategies for common symptoms in CKD

Symptom	Comment	Management strategies		
		Lifestyle	Pharmacological	Other
Pain	Management should be determined by etiology and severity	Physiotherapy, exercise and massage therapy, and heat for musculoskeletal pain. Consider complementary therapies such as acupuncture.[838,840,849]	Use of an adapted World Health Organization (WHO) Analgesic Ladder that takes into account pharmacokinetic data of analgesics in CKD.[850] Before starting opioids, healthcare providers should assess risk of substance abuse and obtain informed consent after a discussion around goals, expectations, risks, and alternatives. Topical analgesics may be effective but used with caution to avoid adverse events due to systemic absorption. There are no studies on long-term use of any analgesics in people with CKD; therefore, attention should be paid to issues of efficacy and safety.	Referral to a specialist pain clinic or palliative/ supportive care clinic may be beneficial for those at risk of aberrant behaviors, adverse outcomes, or in special circumstances such as end of life.[849]
Sleep disorders	Associated with fatigue, poor HRQoL.[838] May be related to pruritus, pain, anemia, anxiety/depression, and shortness of breath.[840]	Management of basic sleep hygiene, exercise, optimal positioning when sleeping, and removal of dietary or other stimulants[838]	Melatonin[851] and simple sedatives[852,853]	Cognitive behavioral therapy,[854] addressing contributing factors such as anemia, fluid retention, mood disorders, pain, and pruritus
Restless leg syndrome	Associated with impaired sleep and HRQoL	Management of basic sleep hygiene, exercise, optimal positioning when sleeping, and removal of dietary or other stimulants[838]	Cessation of medications that interfere with the dopamine pathway, or trials with levodopa, nonergot dopamine antagonists, or low-dose gabapentinoids[855-857]	Correction of contributing factors such as hyperphosphatemia and iron deficiency/anemia

Common Symptom Management

Table 38 | (Continued) **Management strategies for common symptoms in CKD**

Symptom	Comment	Management strategies		
		Lifestyle	Pharmacological	Other
Depression	May be related to CKD burden and perception, loss of control, and medication effects. Associated with increased morbidity, hospitalization, and mortality, and is integral to the assessment of HRQoL[838]	Exercise[864] and acupuncture[865]	Before commencing pharmacological treatment for depression, healthcare providers should be aware of the potential necessity to adjust dosage, and follow-up with the patient, due to altered pharmacokinetics in CKD.[840] In some circumstances this may need to be done in conjunction with specialist psychiatric services. Options may include: • Serotonin reuptake inhibitors (e.g., citalopram, escitalopram, fluoxetine, paroxetine, and sertraline) • Serotonin-norepinephrine reuptake inhibitors (e.g., venlafaxine, duloxetine, and mirtazapine) • Atypical antidepressants (e.g., bupropion, trazodone, and nefazodone) • Tricyclic antidepressants (e.g., amitriptyline)[866-869]	Cognitive behavioral therapy[870] Social support[869] Address contributing factors (e.g., pain, pruritus and mood disorders)
Poor appetite and anorexia	Associated with depression, malnutrition, poor HRQoL, increased hospitalization, and mortality rates[838]	Increased physical activity may increase appetite[871]	No data to support the use of appetite stimulants in people with CKD not on KRT. Management has not been studied systematically in CKD.[838]	Address contributing factors (pain, heartburn, mood disorders, any dental issues/mouth ulceration, constipation, social and economic factors, and lack of physical activity) Dietary assessment by a dietitian

Common Symptom Management

Table 38 | (Continued) **Management strategies for common symptoms in CKD**

Symptom	Comment	Management strategies		
		Lifestyle	Pharmacological	Other
Uremic pruritus	Associated with decreased HRQoL and contributes to other symptoms, such as poor sleep, fatigue, and depression[838]	Acupunture[858]	Gabapentinoids with continued assessment of symptom experience and titration by a medical provider[859-861] Topical agents (capsicum, rehydrating emollients if concurrent dry skin)[861]	Ultraviolet B therapy[862] Topical cannabis can be considered[863]
Nausea and vomiting	Impact has not been assessed systematically in CKD.[838]		Pharmacological management has not been systematically studied in CKD.[838]	Address contributing factors (pain, heartburn, mood disorders, any dental issues/mouth ulceration, constipation, social and economic factors, and lack of physical activity) Dietary assessment by a dietitian

CKD, chronic kidney disease; HRQoL, health-related quality of life; G3, estimated glomerular filtration rate (eGFR) 30–59 ml/min per 1.73 m^2; G5, eGFR <15 ml/min per 1.73 m^2; KRT, kidney replacement therapy.

Table adapted from Davison SN, Levin A, Moss AH, *et al.* Executive summary of the KDIGO Controversies Conference on Supportive Care in Chronic Kidney Disease: developing a roadmap to improving quality care. *Kidney Int*. 2015;88:447–459.[838]

KDIGO 2024 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease


Thank
You

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