

Common Drugs That Require Dose Adjustment Based Of Crcl

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Class	Drug	When renal function matters	Typical renal adjustment / practical rule	Main pitfall
Anti-DIABETIC	Metformin	eGFR <60	≥45: usually continue usual dose. 30–44 : reduce dose, commonly ≤1 g/day. <30 : stop / do not initiate	Lactic acidosis risk rises with AKI, hypoxia, dehydration or severe illness. KDIGO recommends increased renal monitoring once eGFR <60.
	Empagliflozin / dapagliflozin	Low eGFR	Dose usually not progressively reduced; initiation/continuation threshold depends on indication and individual agent	Glucose-lowering efficacy diminishes at low eGFR, but cardiorenal benefit persists. Temporarily withhold during major acute illness or surgery
	Insulin	Advanced CKD	No fixed formula; requirements often fall as GFR declines	Reduced renal insulin clearance → hypoglycaemia
	Sulfonylureas	CKD	Agent dependent; avoid long-acting renally cleared drugs such as glibenclamide	Prolonged hypoglycaemia
ANTICOAGULANTS	Dabigatran	CrCl <50	Dose/choice depends on indication, age and CrCl; contraindicated if CrCl <30 mL/min in NZ	~80% renal elimination → accumulation and bleeding. Use Cockcroft–Gault , not laboratory eGFR.
	Rivaroxaban	CrCl <50	AF: renal dose reduction is generally required below CrCl 50; may be used cautiously at 15–29; avoid <15	Dose varies by indication. Calculate renal function using Cockcroft–Gault.
	Apixaban	Renal impairment plus age/weight/creatinine criteria	AF dose reduction is not based on eGFR alone; use product-specific criteria	Common error is reducing purely because eGFR is low
	Enoxaparin	CrCl <30	Usually reduce therapeutic dosing frequency/dose	Accumulation → bleeding; anti-Xa monitoring sometimes appropriate
ANTIBIOTICS / ANTIVIRALS	Gentamicin / aminoglycosides	Any significant impairment	Extend interval and/or reduce dose guided by drug levels	Nephrotoxicity and ototoxicity; therapeutic drug monitoring essential
	Amoxicillin	Usually eGFR/CrCl <30	Extend dosing interval in significant impairment	High doses can accumulate; neurotoxicity/seizures possible in severe CKD
	Amoxicillin–clavulanate	CrCl <30	Reduce dose/extend interval; avoid some high-dose formulations in severe impairment	Both renal accumulation and formulation-specific dosing

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	Cephalexin / cefazolin / most cephalosporins	Moderate–severe impairment	Reduce dose or extend interval	Cephalosporin neurotoxicity can occur with accumulation
	Ciprofloxacin	CrCl <50	Reduce dose and/or extend interval	CNS effects, tendinopathy and QT effects may become more problematic
	Trimethoprim / co-trimoxazole	eGFR/CrCl <30	Usually reduce dose; avoid or specialist advice in severe impairment	Hyperkalaemia , creatinine rise from inhibited tubular secretion, marrow toxicity
	Nitrofurantoin	Low eGFR	Generally avoid when renal function is substantially reduced; short-course use may be permissible at intermediate function according to local guidance	Reduced urinary efficacy plus increased systemic toxicity
	Fluconazole	CrCl ≤50	Maintenance dose often reduced by ~50%; loading dose usually unchanged	Accumulates considerably in CKD
	Aciclovir / valaciclovir	Moderate–severe impairment	Reduce dose and/or lengthen interval	Neurotoxicity and crystal nephropathy if not adjusted
	Oseltamivir	CrCl <60	Stepwise dose reduction	Treatment and prophylaxis doses differ
GABA	Gabapentin	eGFR/CrCl <60	Progressive reduction in total daily dose and/or frequency	Marked accumulation → sedation, ataxia, myoclonus and confusion
	Pregabalin	CrCl <60	Stepwise reduction according to CrCl	Sedation, falls and neurotoxicity
	Levetiracetam	eGFR/CrCl <80	Progressive dose reduction	Often overlooked because drug has few hepatic interactions
	Lithium	Any CKD	Dose guided by serum level; generally lower requirements as GFR falls	Narrow therapeutic index; AKI, NSAIDs, ACEi/ARB and diuretics can precipitate toxicity
Cardiac	Digoxin	eGFR/CrCl <60, especially <30	Lower maintenance dose; often 62.5–125 µg/day in older CKD patients	Long half-life; toxicity worsened by hypokalaemia and drug interactions
	Atenolol	CrCl <35–50	Reduce dose/extend interval	Bradycardia and hypotension from accumulation
	Sotalol	CrCl <60	Dose interval/restriction according to CrCl	Accumulation → QT prolongation/torsades
	Spironolactone / eplerenone	eGFR <45 particularly <30	Lower starting dose or avoid depending on eGFR/K ⁺	Hyperkalaemia. Often requires substantially closer K ⁺ /creatinine monitoring

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	ACE inhibitors / ARBs	CKD does not usually require a lower dose solely because eGFR is low	Titrate to indication/tolerance; reassess creatinine and K ⁺ after initiation or dose increase	An initial creatinine increase can be haemodynamic rather than toxicity; hyperkalaemia is the key limitation
Opioids	Morphine	eGFR <30	Reduce/avoid; choose alternative opioid where practical	Active metabolites accumulate → prolonged sedation and respiratory depression
	Codeine	eGFR <30	Reduce or avoid in severe CKD	Active metabolite accumulation; unpredictable toxicity
	Tramadol	CrCl <30	Reduce dose and extend interval; avoid ER preparations in severe impairment	Neurotoxicity, seizures and serotonin toxicity
	Oxycodone	Moderate–severe CKD	Lower dose and cautious titration	Parent drug/metabolite accumulation possible
Gout	Allopurinol	Reduced eGFR	Reduce starting dose , e.g. 50–100 mg/day depending on renal function, then titrate to urate target	Do not automatically reduce an established effective dose merely because eGFR declines. Lower starting dose reduces hypersensitivity risk.
	Colchicine	eGFR <30	Reduce dose/frequency; avoid repeated courses close together	Neuromyopathy and marrow toxicity; major interaction with macrolides
	Methotrexate	eGFR <60	Reduce at moderate impairment; generally avoid in severe impairment	Potentially fatal marrow suppression and mucositis from accumulation
	Bisphosphonates	Usually eGFR/CrCl <30–35	Many oral/IV preparations are not recommended below agent-specific thresholds	IV preparations can worsen renal injury
	H2 blockers e.g. famotidine	eGFR <50	Reduce dose or extend interval	CNS effects/confusion, particularly in older people
	Baclofen	eGFR <60, especially <30	Major dose reduction; often best avoided in advanced CKD	Severe encephalopathy and respiratory depression can occur even at apparently modest doses

A useful way to remember the highest-yield groups is **A–A–G–D–M: antibiotics/antivirals, anticoagulants, gabapentinoids, diabetic medicines, and miscellaneous narrow-therapeutic-index drugs** such as digoxin, lithium and methotrexate. BPAC similarly highlights antibiotics/antifungals, aciclovir, LMWH, digoxin, sotalol, atenolol, opioids, gabapentin, lithium, metformin, sulfonylureas, allopurinol and colchicine as commonly encountered medicines requiring particular attention in renal impairment.