

## Acute Kidney Injury - Potentially Problematic Drugs and Actions to Take in Primary Care

	Effects on renal/fluid/electrolyte physiology	Change in the side effect profile when renal function is reduced	Direct action on the kidneys	Action in presence of AKI
NSAIDs / COX II inhibitors	Altered haemodynamics within the kidney leading to underperfusion and reduced glomerular filtration		Acute interstitial nephritis (rare)	Avoid
Opioid analgesics		Accumulation of active metabolites in AKI (especially morphine, pethidine and codeine) – increased incidence of CNS side effects & respiratory depression		Avoid long acting preparations. Reduce dose and frequency Use opiates with minimal renal excretion e.g. fentanyl, oxycodone, hydromorphone, tramadol
Aciclovir		Drug accumulates in reduced renal function leading to mental confusion, seizures	Crystal nephropathy Acute interstitial nephritis (rare)	Reduce dose Encourage patient to drink plenty Beware if patient is at risk of dehydration
Co-trimoxazole (see also trimethoprim)	Hyperkalaemia (see Trimethoprim)		Crystal nephropathy Acute interstitial nephritis (rare)	Reduce dose Encourage patient to drink plenty Beware if patient is at risk of dehydration
Trimethoprim	Increased risk of hyperkalaemia (especially in combination with spironolactone or ACEI/ARB) Interferes with tubular secretion of creatinine leading to a rise in serum creatinine without a true change in GFR	Accumulation increases risk of hyperkalaemia (particularly with high doses), nausea and vomiting	Acute interstitial nephritis (rare)	Avoid or reduce dose (particularly if patient is already taking an ACEI, ARB or spironolactone)
Phenytoin		Risk of phenytoin toxicity if patient has low serum albumin levels	Acute interstitial nephritis (rare)	Monitor levels Correct phenytoin levels for uraemia and low serum albumin or measure salivary phenytoin (if assay available)
Pregabalin & Gabapentin		Accumulation leading to increase in CNS side effects		Reduce dose
Antihypertensives (including Ca-channel blockers, $\alpha$ -blockers, $\beta$ -blockers, etc)	Hypotension may exacerbate renal hypo-perfusion	Risk of bradycardia increased with Beta Blockers	Many may have rare specific effects upon the kidneys resulting in AKI	Consider withholding / reduce dose depending on clinical signs

## Acute Kidney Injury - Potentially Problematic Drugs and Actions to Take in Primary Care

	Effects on renal/fluid/electrolyte physiology	Change in the side effect profile when renal function is reduced	Direct action on the kidneys	Action in presence of AKI
ACEI / ARBs / Aliskiren	Hypotension Hyperkalaemia			In some situations, e.g. heart failure continuing them might actually be helpful Consider alternative antihypertensive agents
Thiazide & Loop Diuretics	Volume depletion	Loop diuretics (furosemide & bumetanide) preferred as thiazides less effective if GFR < 25ml/min. However thiazides can potentiate the effects of loop diuretics	Acute interstitial nephritis (rare)	Monitor and adjust dose as necessary
Hypoglycaemic Drugs		Accumulation in AKI may increase risk of hypoglycaemia		Avoid long acting preparations. Monitor blood glucose levels & reduce dose if necessary
Metformin		Risk of lactic acidosis increased Accumulation leading to hypoglycaemia		Avoid if GFR < 30 ml/min Seek nephrologist advice if undergoing contrast procedure or at risk of AKI
Colchicine		Diarrhoea / vomiting causing hypovolaemia		Low doses e.g. 500mcg bd or tds are effective or consider steroids. Do not use NSAIDs for gout
Digoxin	Hyperkalaemia	May accumulate in AKI leading to bradycardia, visual disturbances, mental confusion		Reduce dose Monitor drug level
Lipid-lowering agents e.g. fibrates, statins		Increased risk of rhabdomyolysis		Stop if AKI due to rhabdomyolysis. Otherwise, continue therapy but monitor. Stop if patient develops unexplained / persistent muscle pain
Lithium	Can cause nephrogenic diabetes insipidus Very rarely it is associated with neuroleptic malignant syndrome.	Accumulation increases risk of side effects Kidney impairment exacerbated in hypovolaemia and in combination with ACE inhibitors / ARB / NSAIDs		Avoid where possible Monitor lithium levels Encourage patient to drink plenty. Monitor electrolytes

This table has been produced as a quick reference – fuller information about Medicines Optimisation in Patients with AKI is on the Think Kidneys website here

For more information on AKI and for resources on its prevention, detection, treatment and management created specifically for primary care visit

<https://www.thinkkidneys.nhs.uk/aki/resources/primary-care>