

Commonly Used Drugs for Symptoms in Patients with Chronic Kidney Disease

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Drug	Active Metabolite	Reaction	Typical Adult Dose	t1/2	Adult Dose in ESRD	t1/2 in ESRD	Removed by Dialysis?	Comment	Reference
Sertraline (Zoloft®)	No active metabolites	Anxiety, agitation	50-200mg	24 h	50-200mg	42-96h	H: minimal	Minimal changes in kinetics in ESRD. Useful in sudden H hypotension	11, 20, 31, 55, 61, 88, 102
Alprazolam (Xanax®)	α-hydroxy-alprazolam (αHA) (< 15% of alprazolam)	hallucinations	0.25-5mg tid	9 -19 h	0.25-5mg tid	9-19h	H: minimal	Increased Free Fraction in ESRD minimal differences in dialysis-dependant patients	4, 28, 44, 46, 52, 55, 87
Lorazepam (Ativan®)	No active metabolites		1-2mg bid-tid	9-16 h	0.5 -2mg bid	32-70 h	H: no	Manufacturer does not recommend in ESRD.	4, 46, 55, 65, 100
Midazolam (Versed®)	alpha-hydroxymidazolam conjugate (AHM-C)	prolonged sedation	1.25mg IV, titrate to response	1.2 – 12.3h	1.25mg IV, titrate to response	1.2 – 12.3 h AMH-C 50.4-76.8h		? increased effect due to reduced protein binding?	4, 5, 55, 100
Oxazepam (Serax®)	No active metabolites		30-120mg/d	6-25 h	30-120mg/d	25-90 h	H: no		4, 46, 55
Temazepam (Restoril®)	No active metabolites		15-30mg hs	4-10h	15-30mg hs		H: no CAPD: no		4, 46,55
Triazolam (Halcion®)	Alpha-hydroxytriazolam	Hallucinations, Paranoia	0.125-0.5mg	2-4h	0.125-0.5mg	2.3 h	H: no CAPD: no		4, 55, 73
Zaleplon (Sonata®)	No active metabolites		5-20mg at hs	1 h	? 5-10mg?			No dose adjustment necessary per manufacturer for mild to moderate renal impairment. Not studied in ESRD.	80
Zolpidem (Ambien®)	No active metabolites		10mg	2-3 h	reduce dose by 50%	4-6 h		Increased Free fraction	1, 62
Carbamazepi	Carbamazepine 10-11		100mg BID to	12-17 h	100mg BID to	Similar to	H: no	Used for	4, 99

ne (Tegretol®)	epoxide Also: 9 hydroxymethyl-10-carbamoyl acridan.		400mg QID	(with chronic dosing)	400mg QID	normal renal function	CAPD: no	neuropathy pain	
Gabapentin (Neurontin®)			300-600mg TID	5-7	300mg QOD or 200-300mg after each 4 hour hemodialysis	132	H: yes CAPD: partial	Used for neuropathy pain And restless leg syndrome	4, 101
Pergolide (Permax®)	Multi;ple (? Activity)		0.025mg/d up to 3mg tid					55% renal clearance Not studied in renal insufficiency Used for restlessleg syndrome	24, 85

Pentazocine (Talwin®)	Inactive glucuronide metabolite	confusion, hallucinations	50-100mg po q3-4h	1.5-10h	25-50mg po q3-4h		H: no	Partial antagonist should not be used for individuals receiving chronic opioids. 60-70% renal excretion with 5-8% excreted as unchanged drug	4, 82, 102
Propoxyphene (Darvon®, Darvocet®)	Nor-propoxyphene (NP)	Cns + respiratory depression	65mg po tid-qid	12-15h NP: 23-36h	Avoid	12-20 h accumulation of NP	H: negligible CAPD: negligible	Avoid in ESRD	4, 11, 18
Sulindac (Clinoril®)	active sulfide metabolite (SS)	psychosis, aseptic meningitis with delirium, stupor	200mg BID	7.8h SS: 16.4h	200mg BID		H: negligible	Prostaglandin inhibition may result in renal dysfunction, uremic bleeding, and GI bleeding. Nephrotic syndrome, interstitial nephritis, hyperkalemia ? more renal sparing?	11, 34, 55, 69, 102
Ibuprofen (Motrin®, Advil®)	Metabolites - ? activity	aseptic meningitis with lethargy, coma	200-800mg tid	2-3.2h	200-800mg tid	2-3.2h	H: no CAPD: no	Prostaglandin inhibition may result in renal dysfunction, uremic bleeding, and GI bleeding. Nephrotic syndrome, interstitial nephritis, hyperkalemia	4, 34, 55

Indomethacin (Indocin®)	Inactive metabolites	visual hallucinations, paranoid delusions	25-50mg tid	4-12h	25-50mg tid	4-12h	H: no CAPD: no	Prostaglandin inhibition may result in renal dysfunction, uremic bleeding, and GI bleeding. Nephrotic syndrome, interstitial nephritis, hyperkalemia	4, 55, 102
Methadone (Dolophine®, Methadose®)	N-Demethyl-Methadone (NDM)		2.5-10mg q6-8h	13-58 h	1.25-5mg q6-8h		H: negligible CAPD: negligible	not significantly different in ESRD; Titrate to effect.	4, 11, 35, 55
Meperidine (Demerol®)	Nor-meperidine (NM)	hallucinations, seizures, stupor	50-100mg IM q3-4h	2-7 h NM: 14-20 h	Avoid	7-32 h NM: 34 h	H: negligible CAPD: negligible	NM accumulation in renal failure significant and increases risk of seizures	4, 11, 18, 35, 55, 102
Morphine (MSIR®, MS Contin®)	Morphine 3 and 6 glucuronides (M3 + M6)		20-25mg po q4h 2-10mg IV	1.7 2.5 h	10-12mg po q4h 1-5mg IV	1.2-4.5 h	H: no	Accumulation of metabolites in ESRD; accumulation of M3 associated with some antagonist properties	4, 18, 55, 100
Oxycodone (OxyContin®, Roxicodone®, in Percocet®, Percodan®, Tylox®)	Metabolites - ? activity	hallucinations	10-30mg po q4h	3.2h				Manufacturer recommends caution	76, 102
Codeine	Codeine 6 Glucoronide, Morphine	hypotension sedation CNS depression	30-60mg q4-6h	2.5-4 h	15-30mg q4-6h	18 h		Hypotension, sedation in ESRD has been reported	4, 18, 55
Naloxone			0.5-5 mg iv	1-1.5		No data	No change	Used in Pruritis	

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Carbidopa/ Levodopa (Sinemet®)	Active metabolites	hallucinations, agitation	25/100 tid	C:2 h L:0.8-1.6h	50% dose reduction	↑Active metabolites	No change	Used for restless leg syndrome	4, 102
Amantadine (Symmetrel®)		hallucinations, agitation	100mg q8-12h	12h	100mg q 7 d	500h	H: Variable reports	Accumulation in renal failure	4, 10, 11, 42, 102
Cimetidine (Tagamet®)	Inactive metabolites	depression, confusion, auditory + visual hallucinations	400mg bid or 400-800mg qhs	1.5-2 h	100-200mg bid or 200-400mg qhs	5 h	H: 10-20% CAPD: negligible	Accumulation in renal failure	4, 11, 42, 55, 102
Diphenhydramine (Benadryl®)	Inactive metabolites	confusion	25mg tid-qid	3.4-9.3h	25mg tid-qid		H: no CAPD: no	Anticholinergic effects including urinary retention	4
Ranitidine (Zantac®)	Inactive metabolites	depression	150-300mg qhs	1.5-3 h	75mg qhs	6-9 h	H: 50-60% CAPD: negligible	Accumulation in renal failure	4, 11, 55, 102
Methylphenidate (Concerta®, Methylin®, Ritalin®)	Active metabolite	hallucinations							102
Metoclopramide Reglan®	Active metabolite	Anxiety, agitation, Tardive Dyskinesia	5-10 mg qid	2.5-4h	5 mg qid	14-15 h	H-none CAPD-no data	Increased extrapyramidal side effects in ESRD	103
Midodrine			5-10 mg q8h	0.5 h	5-10 mg q 8h	No data	H- none	Used for dialysis hypotension	104
Ondansetron			4-32mg iv or po	2.5-5.5 h	No change	2.5-5.5 h	No data	Used with Nausea and Pruritis	105

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