



Pruritus

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Adapted with permission from the BC Renal Agency's Pharmacy & Formulary Symptom Management Resources - Pruritus, developed by the agency's Pharmacy & Formulary Committee, and the Kidney Supportive Care Research Group (KSCRG), University of Alberta / Northern Alberta Renal Program. To review original source materials, see www.bcrenalagency.ca and www.ualberta.ca/~kscrg.

Disclaimer: This document is designed to provide healthcare providers with information that can be used to help treat pruritus in hemodialysis patients. It is not intended to be a substitute for the advice of a qualified health professional, nor is it intended to provide a comprehensive list of drug options. As treatment options and standards are constantly evolving, we do not guarantee that the information in this document is current. Any person consulting this document is expected to use independent clinical judgment, or seek out the advice of a qualified health professional before applying any information contained herein.

Pruritus Treatment Algorithm for Hemodialysis Patients

Assessment

- Generalized vs. localized,
- Duration,
- Paroxysmal vs. continuous,
- Exacerbating and relieving factors,
- Inflamed/primary skin lesions or no inflamed/primary lesions – if inflamed/primary lesions consider referral to dermatologist

Consider Etiology

CKD Related:

- Dialysis adequacy
- Dialyzer reaction
- Uncontrolled hypercalcemia, hyperphosphatemia, or hyperparathyroidism

CKD Unrelated:

- Xerosis (dry skin)
- Infestations (e.g., scabies, lice, etc.)
- Infections (e.g., athlete's foot)
- Allergy
- Drug hypersensitivity
- Contact dermatitis (e.g., adhesive)
- Neoplasm/Lymphoma (uncommon)
- Liver disease
- Hypothyroidism

Consider and Adjust PRN

- Improving mineral-bone disease parameters (e.g. serum phosphate, serum calcium or hyperparathyroidism) through diet/dietitian or medically
- Common exposures associated with pruritus
 - Try saline flush or other heparin-free dialysate
 - Change dialysis tubing and/or dialyzer
 - Change antiseptic preparation and/or dressing
- Ensure HD adequacy
- Check LFTs/TSH/Ferritin/Mg

Non-Pharmacologic Measures

- Use gentle soaps or cleaners (e.g., Dove Sensitive Skin Beauty Bar, CeraVe or Cetaphil)
- Apply soap only to axillae and groin/perineum (unless areas such as arms or legs are visibly dirty)
- Avoid bathing for more than 15 minutes per day and bathing with hot water – use only lukewarm water
- Eliminate wool or irritating clothing; choose cotton for bed linens and clothing
- For dry skin, apply moisturizing cream (NOT lotion) BID and after bathing (e.g., CeraVe, Cetaphil moisturizing cream, Lipikar Baume AP+ cream, Aveeno cream, Glaxal base cream, Cliniderm soothing cream, Aquaphor ointment, Vaseline ointment, Vaseline Intensive Care Problem Skin Therapy, or Uremol cream)
- Maintain a humid home, especially in the winter
- Keep finger nails trimmed and avoid scratching the area as much as possible

Refer to the Ontario Renal Network Itchy Skin Patient Self-Management Guide for more information.

Pharmacologic Options - Localized Itchiness

(Not recommended for large open areas)

- Capsaicin 0.025% cream – apply sparingly BID-QID (may take 2-4 weeks for onset of action)
- Menthol 0.25%/camphor 0.25% +/- 2.5% hydrocortisone in Glaxal Base

INADEQUATE CONTROL →

Pharmacologic Options - Generalized Itchiness

- Gabapentin* 100 mg PO ONCE DAILY take post HD on HD days (titrate by 100 mg weekly up to a maximum 300 mg PO ONCE DAILY as tolerated, usually HS)
- Pregabalin* (second line) 25 mg ONCE DAILY, take post HD on HD days, with increments weekly to max 75mg ONCE DAILY, usually HS

INADEQUATE CONTROL ↓

- Oral antihistamine (can consider adding to above if above drugs are partially effective). NOTE: Sedating side effects may limit daytime use.
 - Diphenhydramine 25 mg PO BID-TID PRN, titrate by 25 mg weekly to maximum of 25 mg PO QID as tolerated, OR
 - Hydroxyzine 10 mg PO TID PRN; titrate by 10-25 mg weekly to a maximum of 25 mg PO QID as tolerated
- If no contraindication, doxepin* 10mg PO QHS; titrate by 10-25 mg weekly to a maximum of 50 mg PO QHS as tolerated
- Dermatology consult for differential diagnosis particularly if pruritus secondary to a persistent rash. Consider UVB light.

* covered by ODB

Antipruritics

Oral

Diphenhydramine (Benadryl®)			
Mechanism of Action	Shown to exert a significant antihistamine effect		
Pharmacokinetics	<ul style="list-style-type: none"> Extensive hepatic metabolism to multiple metabolites Adult half-life: 20 hours; elderly: 29 hours 		
Adverse Effects	Transient drowsiness, headache, somnolence, xerostomia and blurred vision. Use with caution in the elderly. May cause excessive sedation.		
Dosing Guidelines (Normal Renal Function)	<ul style="list-style-type: none"> 25 mg PO BID-TID, may increase by 25 mg weekly as tolerated to 25 mg PO QID Start at minimum dose and titrate up as required 		
Renal Dosing Guidelines GFR (mL/min)	>50 (mL/min)	10 to 50 (mL/min)	<10 (mL/min)
	100%	100%	100%
Supplemental Dose After	IHD	PD	
	None	None	
Drug Coverage	No – not covered by ODB; available over the counter		
Estimated Cost (30-day supply) without dispensing fee (Prices as of October 2018)	25 mg PO BID – \$22.99 (60 tab bottle)		

Doxepin (Sinequan®)			
Mechanism of Action	Shown to exert a significant antihistamine effect		
Pharmacokinetics	Extensive hepatic metabolism to an active metabolite, desmethyldoxepin. Renal excretion 0.5%. Only 7.6% of Doxepin and 13.9% of desmethyldoxepin is extracted by hemodialysis, none via peritoneal dialysis.		
Adverse Effects	<ul style="list-style-type: none"> Sedation, dizziness, weight gain, bloating, constipation, xerostomia, blurred vision, urinary retention In elderly: increased risk of confusion and over sedation 		
Dosing Guidelines (Normal Renal Function)	<ul style="list-style-type: none"> 10 mg PO HS, may increase by 10-25 mg weekly as tolerated to a maximum of 50 mg PO HS Start at minimum dose and titrate up as required 		
Renal Dosing Guidelines GFR (mL/min)	>50 (mL/min)	10 to 50 (mL/min)	<10 (mL/min)
	100%	100%	100%
Supplemental Dose After	IHD	PD	
	None	None	
Drug Coverage	Yes – covered by ODB		
Estimated Cost (30-day supply) without dispensing fee (Prices as of October 2018)	10 mg PO QHS – \$7.19		

Gabapentin (Neurontin®)			
Mechanism of Action	Not fully understood but thought to modulate various receptor sites (e.g., mu-receptors) and alter dopamine, serotonin, and norepinephrine release		
Pharmacokinetics	<ul style="list-style-type: none"> • Normal half-life: 5-6.5 hours • Saturable oral bioavailability (900 mg-60% 1200 mg-47%; 2400 mg-34%) • Limited hepatic metabolism, 70-80% excreted unchanged in the urine 		
Adverse Effects	Sedation, confusion, incoordination, peripheral edema		
Dosing Guidelines (Normal Renal Function)	<ul style="list-style-type: none"> • Start with 100 mg PO daily, then 100 mg TID, titrate gradually to effect and as tolerated to a max of 3600 mg per day (in 4 divided doses) • Start at minimum dose and titrate up as required 		
Renal Dosing Guidelines GFR (mL/min)	>50 (mL/min)	10 to 50 (mL/min)	<10 (mL/min)
	400 mg PO TID	300 mg PO Q12 to 24 hours	Usual max of 300 mg per day
Supplemental Dose After	IHD		PD
	Yes for HD patients – 100 mg after dialysis *consider additional dose post dialysis if usual dose given pre-dialysis		No evidence available
Drug Coverage	Yes – covered by ODB		
Estimated Cost (30-day supply) without dispensing fee (Prices as of October 2018)	100 mg PO QHS – \$1.25		

Hydroxyzine (Atarax®)			
Mechanism of Action	Shown to exert a significant antihistamine effect		
Pharmacokinetics	<ul style="list-style-type: none"> • Extensive hepatic metabolism to an active metabolite, cetirizine • Normal half-life of hydroxyzine: 20 hours; cetirizine: 25 hours • Increases with age • May accumulate in CKD 		
Adverse Effects	Transient drowsiness, headache, somnolence, xerostomia and blurred vision. Use with caution in the elderly. May cause excessive sedation in CKD.		
Dosing Guidelines (Normal Renal Function)	<ul style="list-style-type: none"> • 10 mg PO TID-QID PRN; may increase as tolerated to 25 mg PO QID • Start at minimum dose and titrate up as required 		
Renal Dosing Guidelines GFR (mL/min)	>50 (mL/min)	10 to 50 (mL/min)	<10 (mL/min)
	100%	50%	50%
Supplemental Dose After	IHD		PD
	None		None
Drug Coverage	No – not covered by ODB		
Estimated Cost (30-day supply) without dispensing fee (Prices as of October 2018)	10 mg PO BID – \$7.75 (60 tab supply)		

Pregabalin (Lyrica®)			
Mechanism of Action	Selective, high affinity for voltage gated calcium channels in the brain and dorsal horn of the spinal cord; Reduces influx of calcium, thus inhibiting the release of excitatory neurotransmitters such as glutamate, noradrenaline, substance P and calcitonin gene related peptide.		
Pharmacokinetics	<ul style="list-style-type: none"> • Oral bioavailability: 90% • Limited hepatic metabolism, 90% excreted unchanged in the urine • Normal half-life: 5-6.5 hours 		
Adverse Effects	Sedation, confusion, incoordination, peripheral edema		
Dosing Guidelines (Normal Renal Function)	<ul style="list-style-type: none"> • Start with 25 mg PO HS, titrate to effect and as tolerated to a max of 300 mg PO BID • Start at minimum dose and titrate up as required 		
Renal Dosing Guidelines GFR (mL/min)	>50 (mL/min)	10 to 50 (mL/min)	<10 (mL/min)
	100%	<ul style="list-style-type: none"> • CrCl 30-60 ml/min: Maximum 300mg/day, dosed BID or TID • CrCl 15-30 ml/ min: Maximum 150mg /day, dosed BID or once daily 	25-75 mg/day, dosed once daily
Supplemental Dose After	IHD		PD
	50% Pregabalin removed by HD. Ideally, give post HD. If dosing before HD, consider supplemental dose post HD.		No data
Drug Coverage	Yes – covered by ODB		
Estimated Cost (30-day supply) without dispensing fee <small>(Prices as of October 2018)</small>	25 mg PO QHS – \$27.17		

Topical

Capsaicin 0.025% Cream (Zostrix®)			
Mechanism of Action	Depletes substance P from peripheral sensory C-type neurons, which after repeated application, is presumed to reduce transmission of impulses to CNS		
Pharmacokinetics	Onset of action occurs after 14 to 28 days with peak effect after 4 to 6 weeks		
Adverse Effects	<ul style="list-style-type: none"> Local burning, stinging or erythema 44 to 81% (most prominent in the first week and diminishes with continued use) Coughing 5 to 12% due to inhalation of dried capsaicin residue (can be prevented by washing the treated skin 30 to 40 minutes after application) 		
Dosing Guidelines (Normal Renal Function)	<ul style="list-style-type: none"> Apply sparingly to affected area(s) TID to QID; do not use on broken or irritated skin Hands should be washed immediately after application unless hands and fingers are being treated Should not be applied near the eyes 		
Renal Dosing Guidelines GFR (mL/min)	>50 (mL/min)	10 to 50 (mL/min)	<10 (mL/min)
	N/A	N/A	N/A
Supplemental Dose After	IHD	PD	
	N/A	N/A	
Drug Coverage	No – not covered by ODB; available over the counter		
Estimated Cost (30-day supply) without dispensing fee (Prices as of October 2018)	0.025% cream: 60 g – \$14.14		

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