

High Risk Medication Therapeutic Alternatives Guide

The Centers for Medicare & Medicaid Services (CMS) endorses several critical patient safety measures. One of these measures, High Risk Medication, includes several therapeutic categories associated with potential clinical concerns when used in the elderly, especially in patients over 65 years old. The list of medications in this measure was derived from the Beers' List and recommendation from the American Geriatrics Society.

Some of the most commonly prescribed high risk medications include zolpidem tartrate, promethazine, hydroxyzine, amitriptyline, glyburide, doxepin, and nitrofurantoin. This guide provides formulary and over-the-counter therapeutic alternatives that may be used in place of a high risk drug. If medically appropriate, please consider prescribing a safer alternative for the patients. We recognize that prescribers are in the best position to determine the right treatment regimen for the patient and we look forward to working with you to ensure optimal outcomes for our patients.

Commonly prescribed high-risk medications	Clinical concerns
zolpidem tartrate and other non-benzodiazepine sedatives (e.g., Ambien[®], Lunesta[®], zaleplon, etc.)	Chronic use in the elderly has been associated with an increased risk of diminished mental alertness, fall risk, sleep walking, and abnormal behavior. ^{1,2,3,4,5}
Antinaus 50[®], Phenergan[®], Promethegan[®], Promacot[®], Prorex[®], Phenadoz[®] (promethazine)	May increase seizure risk when used in patients with epilepsy. Chronic administration may worsen Parkinsonism and increases risks of hypotension and extrapyramidal effects. In addition, promethazine may cause excessive sedation and induces anticholinergic effects in the elderly. ^{6,7}
Elavil[®], Vanatrip[®] (amitriptyline)	Increases risk of causing anticholinergic effects, cognitive impairment, delirium, and sedation in the elderly. Neuroleptic malignant syndrome has also been reported during postmarketing surveillance. ^{1,2,7,8}
Diabeta[®], Micronase[®] (glyburide)	Prolongs hypoglycemia in the elderly. ⁷
Vistaril IM[®], Vistaril[®], Atarax[®], Hyzine[®], Restall[®] or Vistacot[®] (hydroxyzine)	May induce strong anticholinergic effects, cognitive impairment and delirium in the elderly. ⁷ Hydroxyzine may cause confusion and oversedation, ⁹ which increases the patient's fall risk.
Silenor[®], Prudoxin[®], Sinequan[®], or Zonalon[®] (doxepin)	Increases risk of causing anticholinergic effects, cognitive impairment, delirium and oversedation in the elderly. ⁷ Doxepin may put the patient at increased risk of engaging in complex sleep-related behaviors with no memory afterwards (e.g., sleep-driving, preparing and eating food, making phone calls or having sex.) ¹⁰

Furadantin®, Macrochantin® or Macrobid® (nitrofurantoin)	Contraindicated in patients with significant renal impairment (i.e., CrCl of less than 60 milliliters/minute) or with clinically significant elevated serum creatinine due to increased risk of toxicity from impaired excretion. Elderly patients have higher risk of developing acute, subacute or chronic pulmonary reactions. Fatalities have been reported. In addition, hepatotoxicity and irreversible peripheral neuropathy may occur and can be fatal ^{11,12}
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The medications in the list below are included in the Pharmacy Quality Alliance (PQA) list of High Risk Medications to avoid in the elderly based on recommendations from the American Geriatric Society. Please consider prescribing the formulary or over-the-counter (OTC) alternatives if clinically appropriate.

High Risk Medications	Formulary and OTC Alternative(s)
Insomnia medications: Lunesta®, Ambien®, Ambien CR®, Edluar®, Intermezzo®, Zolpimist®, Sonata®, zolpidem tartrate, zaleplon, chloral hydrate, promethazine	Rozerem®, low dose trazodone, melatonin
Antiemetic medications: Antinaus 50®, Phenadoz®, Phenergan®, Promacot®, Promethegan®, Prorex®, Benzacot®, Tigan®, Tebamide®, Arrestin®, Stemetec®, Ticon®, Tribenzagan®, Diclegis®, Unisom®, Aldex AN®, Doxytex®, promethazine, trimethobenzamide, doxylamine succinate	prochlorperazine, ondansetron, granisetron
Antidepressants: Elavil®, Vanatrip®, Anafranil®, Silenor®, Prudoxin®, Sinequan®, Zonalon®, Tofranil®, Surmontil®, amitriptyline, clomipramine, doxepin, imipramine, trimipramine	nortriptyline, desipramine, trazodone
Diabetes medications: Diabinese®, Diabeta®, Micronase®, glyburide, chlorpropamide	glimepiride, glipizide
Allergy medications: brompheniramine, carbinoxamine, chlorpheniramine, clemastine, cyproheptadine, dexchlorpheniramine, diphenhydramine, hydroxyzine, triprolidine, doxylamine, promethazine	cetirizine, fexofenadine, loratadine, desloratadine, levocetirizine
Urinary tract infection medication: Furadantin®, Macrobid®, Macrochantin®, nitrofurantoin	sulfamethoxazole/trimethoprim, ciprofloxacin, levofloxacin, ofloxacin, amoxicillin-clavulanate, cefdinir, cefaclor, cefpodoxime, cephalexin, ceftriaxone

High Risk Medications	Formulary and OTC Alternative(s)
Anticoagulation medications: Ticlid® (ticlopidine), Persantine® (dipyridamole)	clopidogrel, prasugrel, ticagrelor
Parkinsons disease medications: Cogentin® (benztropine), Artane®, Trihexane®, Tritane® trihexyphenidyl	carbidopa/levodopa, ropinirole, pramipexole, entacapone
Urinary analgesic: Urelief Plus®, (phenazopyridine-butabarbital-hyoscyamine)	phenazopyridine (Azo®, Uristat®, Pyridium®)
Hypertension medications: Intuniv® (guanfacine), Aldomet® (methyldopa), Resa®, Serpalan® (reserpine), Procardia®, Procardia XL®, Afeditab CR®, Nifediac CC®, Nifedical XL®, nifedipine	thiazides such as hydrochlorothiazide; generic ACE inhibitors such as lisinopril, ramipril; generic ARBs such as losartan; beta-blockers such as atenolol, metoprolol; a calcium channel blocker such as amlodipine
Cardiovascular medication: Digitek®, Digox®, Lanoxicaps®, Lanoxin®, digoxin	Consider lowering dose to 0.125 mg daily or lower
Antipsychotic medications: Mellaril®, thioridazine	aripiprazole, olanzapine, lurasidone, asenapine, haloperidol, iloperidone, paliperidone, quetiapine, risperidone, ziprasidone
Barbituates: Butisol®, Seconal®, Nembutal®, phenobarbital, butabarbital, secobarbital, pentobarbital	Seizures: divalproex, levetiracetam, lamotrigine, carbamazepine Difficulty sleeping: Rozerem, low dose trazodone, melatonin
Anxiety medications: Mb-Tab®, Miltown®, Trancot®, meprobamate	buspirone; SSRI such as fluoxetine, or paroxetine; SNRI such as venlafaxine or Cymbalta®
Dementia medications: Hydergine®, Vasodilan®, ergoloid mesylates, isoxsuprine	galantamine, rivastigmine, donepezil
Hormones: Products containing estrogens with or without progesterone	For hot flashes: SSRI such as fluoxetine; venlafaxine; gabapentin For bone density: bisphosphonates such as alendronate; raloxifene; calcium; vitamin D For vaginal symptoms or recurrent urinary infections: Estrace® topical cream or Premarin® topical cream
Pain medications: Demerol®, Meperitab®, Talwin®, meperidine, pentazocine, butalbital/acetaminophen/ caffeine (with or without codeine), butalbital/aspirin/ caffeine (with or without codeine)	Mild to moderate pain: codeine/acetaminophen, celecoxib, topical non-steroidal anti-inflammatory (NSAID) such as Voltaren® gel, tramadol Moderate to moderately severe pain: hydrocodone/acetaminophen, oxycodone/acetaminophen.

High Risk Medications	Formulary and OTC Alternative(s)
NSAIDs for pain: Indocin®, Indocin SR®, Tivorbex®, Acular®, Acular LS®, Acular PF®, Toradol®, Acuvail®, Sprix®, indomethacin, ketorolac	Mild to moderate pain: codeine/acetaminophen, celecoxib, topical non-steroidal anti-inflammatory (NSAID) such as Voltaren® gel, tramadol
Skeletal muscle relaxants: Soma®, Vanadom®, Lorzone®, Flexeril®, Amrix®, Fexmid®, Robaxin®, Norflex®, Orfro®, Orphenate®, Mio-Rel®, Antiflex®, carisoprodol, chlorzoxazone, cyclobenzaprine, methocarbamol, orphenadrine	baclofen, tizanidine

Reference:

- 1 Pharmacy Quality Alliance. Use of High-Risk Medications in the Elderly (HRM). www.pqaalliance.org. Last accessed January 15, 2014.
- 2 National Committee for Quality Assurance. HEDIS 2014. www.ncqa.org. Last accessed January 15, 2014.
- 3 Product Information: Ambien CR® oral extended release tablets, zolpidem tartrate oral extended release tablets. *Sanofi-Aventis U.S. LLC*. Bridgewater, NJ, 2013.
- 4 Product Information: Ambien® oral tablets, zolpidem tartrate oral tablets. *Sanofi-Aventis U.S. LLC*. Bridgewater, NJ, 2013.
- 5 U.S. Food and Drug Administration. Risk of next-morning impairment after use of insomnia drugs; FDA requires lower recommended doses for certain drugs containing zolpidem. *Drug Safety Communications*. January & May 2013.
- 6 PL Detail-Document, STARTing and STOPPING Medications in the Elderly. *Pharmacist's Letter/Prescriber's Letter*. September 2011.
- 7 American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. *J Am Geriatr Soc*. 2012. 60(4):616-631.
- 8 Product Information: amitriptyline hcl oral tablets. Vintage Pharmaceuticals, LLC, Huntsville, AL, 2006.
- 9 Product Information: hydroxyzine pamoate oral capsules. Watson Laboratories, Inc, Corona, CA, 2003.
- 10 Product Information: SILENOR(R) oral tablets, doxepin oral tablets. Somaxon Pharmaceuticals, Inc., San Diego, CA, 2010.
- 11 Nicolle LE. Urinary tract infections in the elderly. *Clin Geriatr Med*. 2009;25:423-36.
- 12 Gupta K, Hooton TM, Naber KG, et al. International clinical practice guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis in women: a 2010 update by the Infectious Diseases Society of America and the European Society for Microbiology and Infectious Diseases. *Clin Infect Dis*. 2011;52:e103-120.



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