Medications to avoid in the elderly

Description	Medications to avoid¹	Adverse side effects/concerns	Formulary alternatives ^{2, 3}
Alpha agonists, central	guanfacine reserpine (doses greater than 0.1 mg/day)	High risk of central nervous system (CNS) effects; may cause bradycardia and orthostatic hypotension; not recommended for routine treatment of hypertension	amlodipine*, atenolol*, enalapril*, felodipine***, lisinopril*, losartan**, nifedipine long-acting (nifedipine ER)***
Analgesics	indomethacin ketorolac	Potential for gastrointestinal bleeding, renal failure, high blood pressure and heart failure	acetaminophen (not in combination product) ^Δ , trisalicylate (Trilisate), topicals (capsaicin) ^Δ
Anti-anxiety	aspirin-meprobamate meprobamate	Addictive and sedating anxiolytic	Anxiety: buspirone**, duloxetine***, escitalopram**, fluvoxamine**, sertraline*, venlafaxine* Insomnia: See the nonbenzodiazepine hypnotic section for
			insomnia alternatives.
Antidepressants, tricyclic	 amitriptyline clomipramine doxepin (doses greater than 6 mg/day) imipramine trimipramine trimipramine 	Highly anticholinergic effects; may cause orthostatic hypotension	Depression: Selective serotonin reuptake inhibitors (SSRIs) ^S – escitalopram**, fluvoxamine**, sertraline*; serotonin and norepinephrin reuptake inhibitors (SNRIs) – duloxetine***, venlafaxine*
			Insomnia: See the nonbenzodiazepine hypnotic section for insomnia alternatives. Neuropathic pain: gabapentin*
Antiemetics	trimethobenzamide	Extrapyramidal adverse effects	ondansetron***, prochlorperazine*
Antihistamines (includes single entity or as part of a combination product)	 brompheniramine carbinoxamine chlorpheniramine clemastine doxylamine doxylamine hydroxyzine hydroxyzine hydroxyzine pamoate promethazine 	Highly anticholinergic effects, sedation, weakness, blood pressure changes, dry mouth, urinary retention; clearance reduced in advanced age (Tolerance develops when used as hypnotic.)	Pruritus/urticaria: cetirizine syrup**, fexofenadine⁴, levocetirizine** [£] , loratadine⁴ Nausea/vomiting: ondansetron***, prochlorperazine*
			Allergic rhinitis: azelastine***, cetirizine syrup**, fexofenadine^, fluticasone**, levocetirizine**f, loratadine^ Insomnia: See the nonbenzodiazepine hypnotic section for
			insomnia alternatives. Over-the-counter option: melatonin, if appropriate; regarded as safe in recommended doses (up to 15 mg daily) for up to two years
Anti-infectives (when cumulative days' supply greater than 90 days)	nitrofurantoin nitrofurantoin macrocrystals	Potential for pulmonary toxicity, hepatotoxicity and peripheral neuropathy; nitrofurantoin causes renal impairment; avoid in persons with a CrCl less than 60 mL/min due to inadequate drug concentration in the urine	Dependent on the infection: cephalexin*, ciprofloxacin*, sulfamethoxazole/trimethoprim*
Anti-Parkinson agents	benzatropine (oral) trihexyphenidyl	Not recommended for prevention of extrapyramidal symptoms with antipsychotics	amantadine*, pramipexole (Mirapex)**, ropinirole (Requip)**
Antipsychotics	thioridazine	Highly anticholinergic; central nervous system and extrapyramidal effects; greater risk of QT interval prolongation; associated with tremors, slurred speech, bradykinesia, dystonia, muscle rigidity and akathisia	olanzapine (Zyprexa)***, quetiapine (Seroquel)** [£] , risperidone (Risperdal)** [£] Note: All antipsychotics have been associated with increased mortality when used to treat psychosis related to dementia.
Anti-thrombotics	dipyridamole (oral short-acting only) ticlopidine	Dipyridamole may cause orthostatic hypotension; more effective alternatives are available	cilostazol**, clopidogrel**, low-dose aspirin [∆]
Barbiturates	 amobarbital butabarbital butalbital mephobarbital pentobarbital phenobarbital secobarbital 	High rate of physical dependence; patients develop tolerance, which reduces sleep benefits; risk of overdose at low dosage due to tolerance and patient choice to over-medicate to achieve therapeutic effect	Anxiety: SSRIs ⁵ (escitalopram**, fluvoxamine**, sertraline*); SNRIs (duloxetine***, venlafaxine*); buspirone** Insomnia: See nonbenzodiazepine hypnotic section for insomnia alternatives.
Belladonna alkaloids (includes single entity or as part of a combination product)	 atropine/hyoscyamine/ phenobarbital/scopolamine belladonna/phenobarbital butabarbital/hyoscyamine/phenazopyridine 	Anticholinergic effects	Constipation: linaclotide (Linzess)***, lubiprostone (Amitiza)***, polyethyleneglycol oral ^a , psyllium ^a , stool softener ^a Diarrhea: aluminum hydroxide ^a , loperamide**
Calcium channel blockers	nifedipine – short-acting only	Potential for hypotension; risk of causing myocardial ischemia	Use long-acting formulation to avoid adverse effects: felodipine***, nifedipine long-acting (nifedipine ER)***
Cardiovascular	digoxin (doses greater than 0.125 mg/day) disopyramide	Digoxin: in heart failure, higher doses have increased risk of toxicity; decreased renal clearance Disopyramide: potent negative inotrope that may induce heart failure in older adults; anticholinergic effects	Heart failure: Angiotensin-converting enzyme inhibitors (ACEI) (enalapril, lisinopril, quinapril)* or angiotensin receptor blockers (ARB) (losartan)* and/or a beta blocker (metoprolol succinate XL**, bisoprolol**, carvedilol*) instead of digoxin, aldosterone antagonist (spironolactone**) and digoxin 0.125 mg. Optimize ACEI/ARB, beta blocker and/or aldosterone antagonist prior to digoxin use. Digoxin doesn't decrease morbidity/mortality.
Endocrine	• megestrol	Increases risk of thrombotic event and possibly death in older adults	Consider nutritional support and treatment of potential cause (e.g., depression, certain medications); consider dronabinol*** for anorexia associated with weight loss in patients with AIDS or for nausea and vomiting in chemotherapy patients who failed to respond adequately to conventional treatments.
Narcotics	 acetaminophen-pentazocine belladonna-opium meperidine meperidine-promethazine naloxone-pentazocine pentazocine 	Meperidine: May not be effective at commonly prescribed doses; side effects include confusion, falls, fractures, dependency and withdrawal Pentazocine: Produces central nervous system adverse effects, including confusion and hallucinations and is a mixed agonist and antagonist; safer alternatives are available	acetaminophen (not in combination product) ^Δ , fentanyl transdermal patch ⁺ , hydrocodone [*] , morphine ^{***} , oxycodone ^{***} , tramadol ^{**}

Description	Medications to avoid¹	Adverse side effects/concerns	Formulary alternatives ^{2, 3}
Nonbarbiturate or nonbenzodiaze-pine hypnotic (when cumulative days' supply is greater than 90 days)	chloral hydrate Lunesta (eszopiclone) Sonata (zaleplon) Ambien (zolpidem)	Chloral hydrate: Tolerance develops within 10 days; risks outweigh benefits: delirium, overdose (narrow therapeutic window) All others: Benzodiazepine-receptor agonists have adverse events similar to those of benzodiazepines in older adults (e.g., delirium, falls, fractures); they produce minimal improvement in sleep latency and duration ¹	Consider only short-term or intermittent use (less than 90 days per year). Discuss sleep hygiene and avoidance of caffeine, alcohol, nicotine and medications that cause insomnia. Evaluate for depression, a common cause of insomnia in the elderly. Secondary insomnia can be treated with trazodone* 50 mg (may cause orthostatic hypotension), or doxepin** (less than 6 mg per day).+ Over-the-counter option: melatonin, if appropriate; regarded as safe in recommended doses (up to 15 mg daily) for up to two years.
Oral estrogens and estradiol transdermal patch	 conjugated estrogen conjugated estrogen- medroxyprogesterone drospirenone-estradiol esterified estrogen- methyltestosterone estropipate estradiol estradiol- levonorgestrel 	Cardio-protective properties are absent; high carcinogenic effects (breast cancer and endometrial cancer)	Hot flashes: nondrug comfort therapy SSRIs ⁵ : escitalopram**, fluvoxamine**, sertraline*; SNRIs: venlafaxine* Vaginal dryness: Premarin vaginal cream*** Bone density: alendronate**, calcium ^Δ , raloxifene***, vitamin D ^Δ ,
Hypoglycemics	chlorpropamide glyburide	Prolonged half-life causing prolonged hypoglycemia; also causes syndrome of inappropriate anti-diuretic hormone secretion (SIADH)	glimepiride*, glipizide*
Skeletal muscle relaxants	 ASA/caffeine/ orphenadrine ASA/carisoprodol/ orphenadrine aspirin-carisoprodol carisoprodol chlorzoxazone cyclobenzaprine metaxalone methocarbamol orphenadrine 	Anticholinergic effects, sedation, weakness and increased risk of fractures Poorly tolerated; effectiveness at doses tolerated by older adults is questionable	baclofen**, tizanidine** Nonpharmacologic treatment for muscle spasms: heat, massage, stretching/exercise
Thyroid	thyroid desiccated	Cardiac concerns	levothyroxine*
Vasodilators	dipyridamole – short-acting only ergot mesyloid isoxsuprine	Orthostatic hypotension	Stroke prevention: clopidogrel**, low-dose aspirin△ Alzheimer's disease/dementia: donepezil**, galantamine⁺, rivastigmine⁺

^{* =} Tier 1; ** = Tier 2; *** = Tier 3; + = Tier 4; Δ = OTC medication, £ = generic is tier 1 for 16342.

Note: Tier information is based on formularies: [16342 (Puerto Rico) – 16364 (6-Tier closed [Medicare Advantage Prescription Drug program].

\$ = Selective serotonin reuptake inhibitors can be considered a clinical alternative for patients older than 65 years old on a high-risk medication (HRM), but should NOT be considered an alternative or used in patients with a history of falls or dementia.

References:

- ¹ The American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American Geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adult. http://www.americangeriatrics.org/files/documents/beers/2012AGSBeersCriteriaCitations.pdf. Accessed Sept. 30, 2015, to Oct. 7, 2015.
- ^{2.} Source: PL Detail-Document, Potentially Harmful Drugs in the Elderly: Beers List. Pharmacist's Letter/Prescriber's Letter. June 2012.
- ^{3.} Starting and Stopping Medications in the Elderly. Pharmacist's Letter/Prescriber's Letter. (2011): 270906.
- ^{4.} The American Geriatrics Society 2015 Beers Criteria Update Expert Panel (2015). American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. Journal of the American Geriatrics Society. DOI: 10.1111/jgs.13702. http://onlinelibrary.wiley.com/doi/10.1111/jgs.13702/full. Accessed Oct. 23, 2015.

