

MEDICATION (includes combinations)¹⁻²	PRESCRIBING CONCERN¹⁻³	ALTERNATIVES³⁻⁵
Anticholinergics (excludes TCAs)		
First-generation antihistamines Brompheniramine, carbinoxamine, chlorpheniramine, clemastine, cyproheptadine, diphenhydramine, dexbrompheniramine, dexchlorpheniramine, doxylamine, hydroxyzine, promethazine, triprolidine	Anticholinergic properties, including CNS depression, confusion, delirium, urinary retention, blurred vision, dry mouth, dry eyes, and constipation.	Allergies: loratadine, cetirizine, fexofenadine Sleep: trazodone, melatonin
Antiparkinson agents Benzotropine (oral), trihexyphenidyl	Anticholinergic properties, more effective agents available for treatment of Parkinson disease	Carbidopa/levodopa, ropinirole
Antithrombotics		
Antithrombotics Ticlopidine, dipyridamole, oral short-acting (does not apply to the extended-release combination with aspirin)	Increased risk of agranulocytosis, liver dysfunction with ticlopidine Dipyridmole, short-acting may cause orthostatic hypotension; more effective alternatives available	Aspirin, clopidogrel
Anti-infectives		
Urinary Antibiotics Nitrofurantoin (macrocrystal and macrocrystal/monohydrate) chronic use	Should not be used for UTI prophylaxis (risk of pulmonary and neurological toxicity, nephrotoxicity)	UTI prophylaxis: TMP-SMX, trimethoprim, ciprofloxacin, cephalexin Short-term use for acute UTI is acceptable if CrCL is > 60 mL/min.
Cardiovascular		
Alpha blockers, central Guanabenz, guanfacine, methyldopa, reserpine (>0.1 mg/day)	High risk of adverse CNS effects; may cause bradycardia and orthostatic hypotension	ACEI/ARBs, beta-blockers, calcium channel blockers, diuretics
Calcium channel blockers Nifedipine, short-acting	Hypotension, constipation, reflex tachycardia	Long acting nifedipine or another calcium channel blocker
Cardiovascular, other Disopyramide, digoxin > 0.125 mg/day	Disopyramide is a potent negative inotrope and therefore may induce heart failure in older adults; strongly anticholinergic Higher doses of digoxin in heart failure are associated with no additional benefit and may increase risk of toxicity. Renal impairment may increase risk of toxicity. Goal serum digoxin level 0.5-0.8 ng/mL.	Heart failure : optimize ACEI, beta-blocker, aldosterone antagonist before using digoxin. Atrial fibrillation : metoprolol tartrate, diltiazem CD
Central Nervous System		
Antianxiety Meprobamate Long-acting benzodiazepines (chlordiazepoxide, diazepam, flurazepam)	Possible dependence and sedation for meprobamate. Long half life (up to several days) in elderly patients; prolonged sedation and risk of falls/fractures	Anxiety: escitalopram, citalopram, sertraline, buspirone Sleep: trazodone, melatonin Restless legs syndrome: pramipexole, ropinirole, levodopa, gabapentin If benzodiazepines are required, use shorter acting agents at low doses.
Antipsychotics (typical) Mesoridazine, thioridazine	Sedation, seizures, extrapyramidal effects, hypotension, constipation, prolongs QT	Atypicals (increased risk of stroke and mortality when used to treat behavioral problems in elderly patients with dementia)
Barbiturates (except phenobarbital when used for seizures) Butabarbital, secobarbital, pentobarbital, mephobarbital, amobarbital	Highly addictive (risk for withdrawal reactions), long half lives cause more sedation, CNS depression, risk of falls/fractures, confusion, ataxia.	Sleep: trazodone, melatonin Anxiety: citalopram, sertraline, buspirone

Nonbenzodiazepine Hypnotics Eszopiclone, zolpidem, zaleplon	Increased risk of delirium, falls, fractures. Minimal improvement in sleep latency and duration	Melatonin, trazodone
Tertiary Tricyclic Antidepressants Amitriptyline, clomipramine, doxepin (>6 mg/day), imipramine, trimipramine	Highly anticholinergic, sedative, orthostatic hypotension	Depression: citalopram, sertraline, mirtazapine Sleep: trazodone, melatonin Peripheral neuropathy: gabapentin, venlafaxine, duloxetine, desipramine, nortriptyline, topical lidocaine, capsaicin Migraine prophylaxis: beta-blocker, venlafaxine, topiramate, nortriptyline
Vasodilators Short-acting dipyridamole, ergot mesyloid, isoxsuprine	Limited efficacy, orthostatic hypotension, dementia	Stroke prevention: low-dose aspirin
Endocrine		
Estrogens Conjugated estrogens, estradiol, esterified estrogens, estropipate	Increased risk of stroke, VTE, breast cancer with long term use, not cardioprotective	Vasomotor symptoms: gabapentin, low-dose paroxetine (Brisdelle), venlafaxine Bone Density: calcium/Vit D, alendronate
Megestrol	Increases risk of thrombotic events and possibly death in older adults	Vasomotor symptoms: gabapentin, low-dose paroxetine (Brisdelle), venlafaxine
Androgens methyltestosterone	Prostatic hyperplasia, cardiac adverse effects	None, use cautiously and sparingly based on careful assessment of risks and benefits
Sulfonylureas, long-duration Chlorpropamide, glyburide	Prolonged half life could cause prolonged hypoglycemia, chlorpropamide possibly causes SIADH	Glipizide, glimepiride, metformin
Thyroid, desiccated	Cardiac adverse effects (tachyarrhythmia, palpitations)	Levothyroxine
Gastrointestinal		
Antiemetics Trimethobenzamide	Can cause extrapyramidal adverse effects.	Monitor closely and use low doses, ondansetron
Pain Medications		
Narcotics Pentazocine, meperidine	Limited efficacy with narcotic side effects (confusion, constipation) Meperidine can cause seizures in patients with renal impairment	APAP, short-acting NSAID (ibuprofen), topical creams (capsaicin, diclofenac gel), other narcotics (APAP w/ hydrocodone, oxycodone or codeine, morphine)
Non-COX-selective NSAIDs Indomethacin, ketorolac	Increased risk of GI bleeding and peptic ulcer disease	APAP, short-acting NSAID (ibuprofen), topical creams (capsaicin, diclofenac gel)
Skeletal Muscle Relaxants		
Skeletal Muscle Relaxants Metaxalone, methocarbamol, cyclobenzaprine, carisoprodol, chlorzoxazone, orphenadrine	Most are poorly tolerated due to anticholinergic effects, sedation, and weakness.	Monitor side effects, use low doses, consider lifestyle modifications (rest, stretching, heat, physical therapy) Muscle spasms: baclofen, tizanidine

References:

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2. PQA Use of High-Risk Medications in the Elderly (HRM). <http://pqaalliance.org/images/uploads/files/HRM%20Measure%202013website.pdf>. Updated 2013. Accessed 18 October 2013.
3. PL Detail-Document, Potentially Harmful Drugs in the Elderly: Beers List. Pharmacist's Letter/Prescriber's Letter. June 2012.
4. Christian, Jennifer B., Anne vanHaaren, Kathleen A. Cameron, and Kate L. Lapane. "Alternatives for potentially inappropriate medications in the elderly population: treatment algorithms for use in the Fleetwood Phase III study." *The Consultant Pharmacist* 19, no. 11 (2004): 1011-1028.
5. Natural Standard. (2013). Melatonin [Monograph]. Retrieved from <http://www.naturalstandard.com.ezp3.lib.umn.edu/demo/demo-pro-melatonin.asp>.