–This Clinical Resource gives subscribers
additional insight related to the Recommendations published in–

trc pharmacist's letter ™ trc prescriber's letter ™ trc pharmacy technician's letter ™ trc nurse's letter ™

March 2019 ~ Resource #350301

Potentially Harmful Drugs in the Elderly: Beers List

In 1991, Dr. Mark Beers and colleagues published a methods paper describing the development of a consensus list of medicines considered to be inappropriate for long-term care facility residents.[12] The "Beers list" is now in its sixth permutation.[1] It is intended for use by clinicians in outpatient as well as inpatient settings (**but not hospice or palliative care**) to improve the care of patients 65 years of age and older.[1] It includes medications that should generally be avoided in all elderly, used with caution, or used with caution or avoided in certain elderly.[1] There is also a list of potentially harmful drug-drug interactions in seniors, as well as a list of medications that may need to be avoided or have their dosage reduced based on renal function.[1] This information is not comprehensive; medications and interactions were chosen for inclusion based on potential harm in relation to benefit in the elderly, and availability of alternatives with a more favorable risk/benefit ratio.[1] **The criteria no longer address** drugs to avoid in patients with seizures or insomnia because these concerns are not unique to the elderly.[1] Another notable deletion is **H2 blockers** as a concern in dementia; evidence of cognitive impairment is weak, and long-term PPIs pose risks.[1] **Glimepiride** has been added as a drug to avoid. Some drugs have been added with cautions (**dextromethorphan/quinidine, trimethoprim/sulfamethoxazole**), and some have had cautions added (**rivaroxaban, tramadol, SNRIs**). Notable drug interactions added include opioids plus benzodiazepines or gabapentenoids.[1] Use of the Beers list has not been convincingly shown to reduce morbidity, mortality, or cost but is often used by organizations as quality measures. **Use the list to identify red flags that might require intervention or close monitoring, not the final word on medication appropriateness**.[2] Medication use decisions must be individualized.[2] If the decision is made to stop a potentially inappropriate medication, tapering may be needed (e.g., benzodiazepines, corticosteroids, acetylcholinesterase inhibitors, PPIs).[2] The chart below summarizes the 2019 Beers list, potential therapeutic alternatives, and other considerations. Drugs **categories include** Analgesics, Antibiotics, Anticonvulsants, Antidepressants, Antigout, Antihistamines, Antihypertensives, Antiplatelets/Anticoagulants, Antipsychotics, Anxiolytics, Cardiac Drugs, Central Nervous System Agents (misc.), Diabetes Drugs, Gastrointestinal Drugs, Hormones, Hypnotics, Musculoskeletal Agents, NSAIDs, Respiratory Drugs, Urinary Drugs, Vasodilators.

A = avoid in most elderly (**does not apply to palliative care/hospice patients**)
C = use with caution in elderly
H = High-risk meds in the elderly per CMS Quality Measure (CMS156v1). A Medicare Advantage and Part D display measure. Designated CMS high-risk meds based on 2012 Beers list. (Note: CMS high-risk med trimethobenzamide is no longer included on the Beers list.)

--Information in table is from reference 1, unless otherwise specified.--

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Analgesics (also see NSAIDs, below)		
Meperidine (**A**, **H**) (also see Opioids)	Neurotoxicity, delirium, poor efficacy (orally)	Of special concern in patients with **delirium**, or at **high risk of delirium**. Avoid combining with two or more other CNS-active drugs (fall risk). For **alternatives for different types of pain**, see our charts, *Pharmacotherapy of Neuropathic Pain*, *Analgesics for Osteoarthritis*, *Treatment of Acute Low Back Pain*, *Treatment of Chronic Low Back Pain*, *Analgesics for Acute Pain*

More. . .

3120 W. March Lane, Stockton, CA 95219 ~ Phone: 209-472-2240 ~ Fax: 209-472-2249
pharmacist.therapeuticresearch.com ~ prescriber.therapeuticresearch.com ~ pharmacytech.therapeuticresearch.com ~ nursesletter.therapeuticresearch.com

Drug or Drug Class	**Concern(s)**	**Other Considerations (e.g., drug interactions, alternatives)**[b]
Opioids in patient with a history of **falls** or **fractures;** with **gabapentinoids**; or with **benzodiazepine**	Unsteady gait, psychomotor impairment, syncope. With gabapentinoids, increased risk of sedation, respiratory depression, and death. Overdose risk with benzodiazepines.	Acceptable for recent acute severe pain such as fracture or joint replacement. Consider reducing other concomitant medication(s) that can cause falls. Employ fall-prevention strategies. Avoid combining with two or more other CNS-active drugs (fall risk). Avoid with gabapentinoids except when transitioning off opioids. Can use combo with caution for an opioid-sparing effect. Adjust dose for renal function. For **alternatives for different types of pain**, see our charts, *Pharmacotherapy of Neuropathic Pain*, *Analgesics for Osteoarthritis*, *Treatment of Acute Low Back Pain*, *Treatment of Chronic Low Back Pain*, *Analgesics for Acute Pain*.
Tramadol (*Ultram*, etc) (**C**)	SIADH. Check sodium when starting or changing dose. Renal impairment (CrCl <30 mL/min): increased risk of CNS adverse effects.	Renal impairment: avoid extended-release product. Reduce dose of immediate-release product. For **alternatives for different types of pain**, see our charts, *Pharmacotherapy of Neuropathic Pain*, *Analgesics for Osteoarthritis*, *Treatment of Acute Low Back Pain*, *Treatment of Chronic Low Back Pain*, *Analgesics for Acute Pain*.
Antibiotics		
Ciprofloxacin in patient taking **theophylline**, or **warfarin**, or in patients with **CrCl <30 mL/min.**	Risk of theophylline toxicity. Increased bleeding risk with warfarin. CNS effects (seizures, confusion) in renal impairment.	Avoid use of ciprofloxacin with theophylline. If ciprofloxacin and warfarin must be used together, monitor INR. Dose reduction generally required for CrCl<30 mL/min.
Macrolides (excluding azithromycin) with warfarin	Increased bleeding risk	If a macrolide other than azithromycin must be used with warfarin, monitor INR.

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Nitrofurantoin in patients with **CrCl <30 mL/min** (**A**), or for **chronic use** (**A**, **H**)	Pulmonary toxicity, peripheral neuropathy, hepatotoxicity, especially with chronic use.	Cohort data suggest nitrofurantoin can be effective and have minimal risk in moderate renal impairment.[14]
Trimethoprim/sulfamethoxazole in patients taking **phenytoin** or **warfarin**, or with renal insufficiency (especially with **ACEI** or **ARB**)	Phenytoin toxicity. Bleeding risk with warfarin. Renal insufficiency: hyperkalemia (especially with ACEI or ARB), worsening renal function.	Avoid use of trimethoprim/sulfamethoxazole with phenytoin. If trimethoprim/sulfamethoxazole and warfarin must be used together, monitor INR. Reduce dose for CrCl 15 to 29 mL/min. Avoid if CrCl <15 mL/min. Use with ACEI or ARB with caution in patients with renal insufficiency.[1] Check potassium after four or five days, or hold ACEI or ARB.[18]
Anticonvulsants		
Anticonvulsants in patient with history of **fall** or **fracture**, except for seizure or mood disorder (also see individual agents for additional, agent-specific concerns)	Unsteady gait, psychomotor impairment, syncope.	For new-onset seizures, "newer" agents preferred (e.g., lamotrigine, levetiracetam).[5] Also see our chart, *Comparison of Antiepileptic Drugs*. Consider bone protection (e.g., bisphosphonate).[5] Consider reducing other concomitant medication(s) that can cause falls. Employ fall-prevention strategies. Avoid combining with two or more other CNS-active drugs (fall risk). **Alternatives for neuropathic pain** may include SNRIs, gabapentin, pregabalin, capsaicin, or lidocaine patch (U.S.), depending on etiology and comorbidities. For more help choosing, see our chart, *Pharmacotherapy of Neuropathic Pain*.
Carbamazepine (**C**) (also see Anticonvulsants)	SIADH. Check sodium when starting or changing dose.	For **alternative anticonvulsants**, see our chart, *Comparison of Antiepileptic Drugs*.
Gabapentin in patient with **CrCl <60 mL/min**., or with **opioids** (also see Anticonvulsants) *Continued*…	Increased risk of central nervous system adverse effects in renal impairment. With opioids, increased risk of sedation, respiratory depression,	Reduce dose in renal impairment. For **alternative anticonvulsants**, see our chart, *Comparison of Antiepileptic Drugs*. Avoid with opioids except when transitioning off opioids. Can use combo

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Gabapentin, continued	and death.	with caution for an opioid-sparing effect. Alternatives for **neuropathic pain** may include SNRIs, pregabalin, capsaicin, or lidocaine patch (U.S.), depending on etiology and comorbidities. For more help choosing, see our chart, *Pharmacotherapy of Neuropathic Pain*.
Levetiracetam in patient with **CrCl ≤80 mL/min** (also see Anticonvulsants)	Increased risk of central nervous system adverse effects. Reduce dose.	For **alternative anticonvulsants**, see our chart, *Comparison of Antiepileptic Drugs*.
Oxcarbazepine (**C**) (also see Anticonvulsants)	SIADH. Check sodium when starting or changing dose.	For **alternative anticonvulsants**, see our chart, *Comparison of Antiepileptic Drugs*. Alternatives for **neuropathic pain** may include SNRIs, gabapentin, pregabalin, capsaicin, or lidocaine patch (U.S.), depending on etiology and comorbidities. For more help choosing, see our chart, *Pharmacotherapy of Neuropathic Pain*.
Pregabalin in patient with **CrCl <60 mL/min**., or with **opioids** (also see Anticonvulsants)	Increased risk of central nervous system adverse effects in renal impairment. Reduce dose. With opioids, increased risk of sedation, respiratory depression, and death.	For **alternative anticonvulsants**, see our chart, *Comparison of Antiepileptic Drugs*. Avoid with opioids except when transitioning off opioids. Can use combo with caution for an opioid-sparing effect. Alternatives for **neuropathic pain** may include SNRIs, gabapentin, capsaicin, or lidocaine patch (U.S.), depending on etiology and comorbidities. For more help choosing, see our chart, *Pharmacotherapy of Neuropathic Pain*.
Antidepressants		
Duloxetine in patient with **CrCl <30 mL/min**. (also see SNRI)	Increased risk of nausea or diarrhea. Avoid.	For help choosing an **alternate antidepressant**, see our chart, *Choosing and Switching Antidepressants*. Avoid combining with two or more other CNS-active drugs (fall risk).
Mirtazapine (*Remeron*) (**C**)	SIADH. Check sodium when starting or changing dose.	
Paroxetine (**A**) (also see SSRIs) *Continued…*	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation,	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men).

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Paroxetine, continued	urinary retention), sedation, orthostatic hypotension	Avoid combining drugs with anticholinergic effects (risk of cognitive decline). For help choosing an **alternate antidepressant**, see our chart, *Choosing and Switching Antidepressants*.
SNRI (**C**) (also see Duloxetine)	SIADH. Check sodium when starting or changing dose.	For help choosing an **alternate antidepressant**, see our chart, *Choosing and Switching Antidepressants*.
SNRI in patient with history of **falls** or **fractures** (also see Duloxetine) SSRIs in patient with history of **falls** or **fractures** (also see Paroxetine)	Unsteady gait, psychomotor impairment, syncope.	Consider reducing other concomitant medication(s) that can cause falls. Employ fall-prevention strategies. Avoid combining with two or more other CNS-active drugs (fall risk).
SSRIs (**C**) (also see Paroxetine)	SIADH. Check sodium when starting or changing dose.	For help choosing an **alternate antidepressant**, see our chart, *Choosing and Switching Antidepressants*.
Tricyclic antidepressants: amitriptyline (**A**, **H**), amoxapine (**A**), clomipramine (**A**, **H**), desipramine (**A**), doxepin (>6 mg/day [**A, H**]), imipramine (**A**, **H**), nortriptyline (**A**), protriptyline (**A**), trimipramine (**A**, **H**) *Continued…*	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention). Sedation Orthostatic hypotension, unsteady gait, psychomotor impairment. SIADH. Check sodium when starting or changing dose.	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, history of **falls** or **fractures**, **lower urinary symptoms**, or **BPH** (avoid in men). Tertiary amines (amitriptyline, clomipramine, doxepin, imipramine, trimipramine) of special concern in patients with **syncope** due to risk of orthostatic hypotension. Avoid combining drugs with anticholinergic effects (risk of cognitive decline). Avoid combining with two or more other CNS-active drugs (fall risk). Consider reducing other concomitant medication(s) that can cause falls. Employ fall-prevention strategies.

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Tricyclics, continued		**Alternatives for depression**: SSRI (not paroxetine), SNRI, or bupropion,[5] depending on comorbidities. For help choosing an **alternate antidepressant**, see our chart, *Choosing and Switching Antidepressants*. Alternatives for **neuropathic pain** may include SNRIs, gabapentin, pregabalin, capsaicin, or lidocaine patch (U.S.), depending on concomitant conditions. For more help choosing, see our chart, *Pharmacotherapy of Neuropathic Pain*. **Alternatives for insomnia**: Consider nonpharmacologic interventions.[5] To help explain these to patients, use our patient education handout, *Strategies for a Good Night's Sleep*. Failing this, consider melatonin.[13]
Antigout		
Colchicine in patient with CrCl <30 mL/min.	Increased risk of bone marrow toxicity, GI adverse effects, neuromuscular adverse effects. Use reduced dose. Monitor for adverse effects.	**Alternatives**: corticosteroid.[17]
Probenecid in patient with CrCl <30 mL/min.	Ineffective. Avoid.	**Alternative uricosuric agents** (if xanthine oxidase inhibitor not appropriate): fenofibrate, losartan, sulfinpyrazone (Canada).[17]
Antihistamines		
Anticholinergic antihistamines (A, H): brompheniramine, carbinoxamine, chlorpheniramine, clemastine, cyproheptadine, dexchlorpheniramine, diphenhydramine (oral), doxylamine, hydroxyzine (see CNS section for **meclizine**)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention). Elimination reduced in elderly. Tolerance to hypnotic effect.	Diphenhydramine may be appropriate in acute treatment of severe allergic reactions. Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline). Alternatives: for **allergy**, nasal saline, nasal steroid, 2nd generation antihistamine (e.g., cetirizine, levocetirizine, fexofenadine, loratadine).[16] For **sleep**, consider nonpharmacologic interventions.[5] To help explain these to patients, use our patient education handout, *Strategies for a Good Night's Sleep*. Failing this, consider melatonin.[13]

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Antihypertensives		
Alpha-blockers (doxazosin [*Cardura*], prazosin [*Minipress*], terazosin) (**A**)	Orthostatic hypotension	Of special concern in patients with **syncope**, and **women with urinary incontinence** (especially when combined with a loop diuretic). Alternatives for **hypertension**: thiazide, ACEI, ARB, long-acting CCB.[5] For help choosing, see our chart, *Treatment of Hypertension* (U.S. subscribers) and algorithm, *Stepwise Treatment of Hypertension* (Canadian subscribers).
Amiloride in patient with **CrCl <30 mL/min**.; or with **ACEI**, **ARB**, or **aliskiren**	Renal impairment: increased potassium and decreased sodium. Avoid. Do not routinely combine with ACEI, ARB, or aliskiren in patients with stage 3a or higher kidney disease due to risk of hyperkalemia.	Alternatives for **hypertension**: thiazide, ACEI, ARB, long-acting CCB.[5] For help choosing, see our chart, *Treatment of Hypertension* (U.S. Subscribers) and algorithm, *Stepwise Treatment of Hypertension* (Canadian subscribers).
Clonidine (*Catapres*), as first-line antihypertensive (**A**)	Orthostatic hypotension, bradycardia, CNS adverse effects.	
Guanfacine (**A**, **H**)	Orthostatic hypotension, bradycardia, CNS adverse effects	
Methyldopa (**A**, **H**)		
Diuretics (**C**)	SIADH or hyponatremia. Check sodium when starting or changing dose.	Alternatives for **hypertension**: ACEI, ARB, long-acting CCB.[5] For help choosing, see our chart, *Treatment of Hypertension* (U.S. subscribers) and algorithm, *Stepwise Treatment of Hypertension* (Canadian subscribers).
Nifedipine, short-acting (**A**, **H**)	Hypotension, myocardial ischemia	Alternative dihydropyridine CCBs: amlodipine, felodipine, nifedipine extended-release.[5]
Reserpine >0.1 mg/d (**A**, **H**)	Orthostatic hypotension, bradycardia, CNS adverse effects.	Alternatives for **hypertension**: thiazide, ACEI, ARB, long-acting CCB.[5] For help choosing, see our chart, *Treatment of Hypertension* (U.S. subscribers) and algorithm, *Stepwise Treatment of Hypertension* (Canadian subscribers).

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Triamterene in patient with **CrCl <30 mL/min**.; or with **ACEI**, **ARB**, or **aliskiren**	Renal impairment: increased potassium and decreased sodium. Avoid. Do not routinely combine with ACEI, ARB, or aliskiren in patients with stage 3a or higher kidney disease due to risk of hyperkalemia.	Alternatives for **hypertension**: thiazide, ACEI, ARB, long-acting CCB.[5] For help choosing, see our chart, *Treatment of Hypertension* (U.S. subscribers) and algorithm, *Stepwise Treatment of Hypertension* (Canadian subscribers).
Antiplatelet Agents and Anticoagulants		
Apixaban (*Eliquis*) in patient with CrCl <25 mL/min.	Lack of evidence of efficacy and safety. Avoid.	Consider warfarin.[6]
Aspirin for primary CV or colorectal cancer prevention (**C**), or at doses >325 mg/d (**A**)	Bleeding risk seems to outweigh benefit for primary prevention in the elderly. Doses >325 mg/day may cause or worsen ulcers. Dose-related increase in renal injury and hypertension.	For primary prevention, use caution in patients ≥70 years of age. Generally indicated for patients with cardiovascular disease. See our chart, *Aspirin for Primary CV Prevention and More*, for information to help estimate risk/benefit in patients without CV disease. Avoid chronic use of doses >325 mg/d unless alternatives are not effective and patient can take gastroprotective agent.
Dabigatran (*Pradaxa*) in patients ≥**75 years of age** (**C**), and in patients with **CrCl <30 mL/min**	Higher GI bleeding risk in patients ≥75 years of age. Use caution for A Fib or VTE treatment. Lack of efficacy/safety evidence in CrCl <30 mL/min. Avoid.	Consider warfarin.[6,15] For patients ≥75 years of age (assuming suitable renal function), may also consider appropriately-dosed apixaban or edoxaban, depending on indication.[3,4,6,15] See our chart, *Comparison of Oral Anticoagulants*, for indications and dosing.
Dipyridamole, oral short-acting (**A**, **H**)	More effective options available, orthostatic hypotension	Alternatives for secondary stroke prevention: See our chart, *Antiplatelets for Recurrent Ischemic Stroke*.

More. . .

Drug or Drug Class	**Concern(s)**	**Other Considerations (e.g., drug interactions, alternatives)**[b]
Edoxaban (*Savaysa*, U.S.; *Lixiana*, Canada) in patients with **CrCl <15 mL/min., or >95 mL/min.**	**Renal impairment**: Lack of efficacy/safety evidence in CrCl <30 mL/min. Reduce dose if CrCl 15 to 50 mL/min. Avoid if CrCl <15 mL/min. **CrCl >95 mL/min.**: potential for reduced efficacy in A Fib.[4] Avoid.[1]	Consider warfarin.[6] For A Fib and CrCl >95 mL/min., consider apixaban, dabigatran (if <75 years of age), rivaroxaban (caution in elderly), or warfarin.[6,15] See our chart, *Comparison of Oral Anticoagulants*, for dosing.
Enoxaparin in patients with **CrCl <30 mL/min.**	Bleeding risk. Reduce dose.	For alternatives, see our chart, *LMWH Dosing in Special Populations*.
Fondaparinux in patients with **CrCl <30 mL/min.**	Bleeding risk. Avoid.	For alternatives, see our chart, *LMWH Dosing in Special Populations*.
Prasugrel (*Effient*) in patients ≥75 years of age (**C**)	Bleeding risk	Benefit may offset bleeding risk in patients with high cardiac risk (e.g., diabetes, history of heart attack) when used for acute coronary syndrome to be managed with percutaneous intervention.
Rivaroxaban (*Xarelto*) in patients **≥75 years of age (C)**, and in patients with **CrCl <50 mL/min.**	Higher GI bleeding risk in patients ≥75 years of age. Use caution for A Fib or VTE treatment. Lack of efficacy/safety evidence in CrCl< 30 mL/min. **A Fib**: reduce dose if CrCl 15 to 50 mL/min. Avoid if CrCl <15 mL/min. **VTE treatment/prevention**: avoid if CrCl<30 mL/min.	Consider warfarin.[6] Assuming suitable renal function, may also consider appropriately-dosed apixaban or edoxaban, depending on indication.[3,4,6,15] See our chart, *Comparison of Oral Anticoagulants*, for indications and dosing.

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Antipsychotics		
Antipsychotics (**A**) (any; also see individual agents for additional, agent-specific concerns)	Risk of stroke, cognitive decline, and death in dementia patients May cause or worsen delirium Unsteady gait, psychomotor impairment, syncope may lead to falls. Dopamine-receptor blockade may worsen Parkinson's disease. SIADH. Check sodium when starting or changing dose.	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, history of **falls** or **fractures**, or **Parkinson's disease** (except clozapine, quetiapine, or pimavanserin) (also see individual agents) Nonanticholinergic agent acceptable for bipolar disorder, schizophrenia, antiemetic during chemo, or dementia- or delirium-related behavioral problems if nondrug therapy has failed or can't be used, and the patient may harm self or others.[1,5] Use lowest dose for shortest time possible. Avoid combining with two or more other CNS-active drugs (fall risk). Consider reducing other concomitant medication(s) that can cause falls. Employ fall-prevention strategies.
Chlorpromazine in patient with **syncope**, **BPH** (also see Antipsychotics)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention). Risk of orthostatic hypotension.	Avoid in men. Avoid combining drugs with anticholinergic effects (risk of cognitive decline).
Clozapine in patient with **BPH** (also see Antipsychotics)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention).	Avoid in men. Avoid combining drugs with anticholinergic effects (risk of cognitive decline).
Loxapine in patient with **BPH** (also see Antipsychotics)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention).	Avoid in men. Avoid combining drugs with anticholinergic effects (risk of cognitive decline).

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Olanzapine in patient with **syncope**, or **BPH** (also see Antipsychotics)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention). Risk of orthostatic hypotension.	Avoid in men. Avoid combining drugs with anticholinergic effects (risk of cognitive decline).
Perphenazine in patient with **BPH** (also see Antipsychotics)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention).	Avoid in men. Avoid combining drugs with anticholinergic effects (risk of cognitive decline).
Thioridazine (**H**) in patient with **syncope**, or **BPH** (also see Antipsychotics)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention). Risk of orthostatic hypotension.	Avoid in men. Avoid combining drugs with anticholinergic effects (risk of cognitive decline).
Trifluoperazine in patient with **BPH** (also see Antipsychotics)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention).	Avoid in men. Avoid combining drugs with anticholinergic effects (risk of cognitive decline).
Anxiolytics		
Benzodiazepines (**A**) *Continued…*	Increased sensitivity and impaired metabolism (long-acting agents) increases risk of cognitive impairment, unsteady gait, psychomotor impairment, accidents, and delirium.	May be acceptable for seizures, REM sleep disorders, benzodiazepine or alcohol withdrawal, severe generalized anxiety disorder, and periprocedural use. Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, or history of **falls** or **fractures**. Avoid combining with two or more other CNS-active drugs (fall risk). Avoid with opioids. Consider reducing other concomitant medication(s) that can cause falls.

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Benzodiazepines, continued		Employ fall-prevention strategies. Alternatives for **anxiety**: buspirone, SSRI (not paroxetine), or SNRI, depending on comorbidities.[1,5] For **sleep**, consider nonpharmacologic interventions.[5] To help explain these to patients, use our patient education handout, *Strategies for a Good Night's Sleep*. Failing this, consider melatonin.[13]
Meprobamate (**A**, **H**)	Sedation, dependence	Alternatives for **anxiety**: buspirone, SSRI (not paroxetine), or SNRI, depending on comorbidities[5]
Cardiac Drugs		
Amiodarone as first-line for atrial fibrillation (unless patient has heart failure or significant left ventricular hypertrophy, and rhythm control is desired) (**A**)	More toxic than other treatments for atrial fibrillation.	For help choosing an alternative antiarrhythmic for A Fib, see our chart, *Antiarrhythmics for Atrial Fib*. Amiodarone increases warfarin bleeding risk. If warfarin and amiodarone must be used together, monitor INR.
Calcium channel blockers, nondihydropyridine (diltiazem, verapamil) in heart failure with reduced ejection fraction	May worsen heart failure. Avoid.	For help choosing an **alternate antihypertensive**, see our chart, *Treatment of Hypertension* (U.S. subscribers) and algorithm, *Stepwise Treatment of Hypertension* (Canadian subscribers).
Cilostazol (U.S.) in heart failure	Increased mortality. Avoid.	For help choosing an **alternative**, see our chart, *Comparison of Oral Antiplatelets*.
Digoxin first-line for A Fib or heart failure (**A**), or in doses >0.125 mg/day. (**A**, **H**)	A Fib: Safer and more effective agents for rate control. HF*r*EF: unclear risk/benefit. Strong evidence supports alternatives for reducing mortality and hospitalization. Higher doses and renal insufficiency pose increased risk of toxicity.	For help choosing an **alternate for A Fib**, see our chart, *A Fib Guidelines: Focus on Pharmacotherapy* (U.S. guidelines). For help choosing an **alternate for heart failure**, see our chart, *Heart Failure Treatment at a Glance*.

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Disopyramide (**A, H**)	Negative inotrope; may cause heart failure. Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention).	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline). For help choosing an alternative antiarrhythmic for A Fib, see our chart, *Antiarrhythmics for Atrial Fib.*
Dronedarone (**A**)	Worse outcomes in permanent A Fib or severe or recently decompensated heart failure. May increase mortality in HF*r*EF.	Avoid in permanent A Fib or symptomatic or recently decompensated heart failure. May use with caution in asymptomatic heart failure (i.e., **excellent** control of signs and symptoms, with or without medications). For help choosing an alternative antiarrhythmic for A Fib, see our chart, *Antiarrhythmics for Atrial Fib.*
Spironolactone CrCl <30 mL/min.	Hyperkalemia. Avoid.	For help choosing an **alternate antihypertensive**, see our chart, *Treatment of Hypertension* (U.S. subscribers) and algorithm, *Stepwise Treatment of Hypertension* (Canadian subscribers). For help choosing an **alternate for heart failure**, see our chart, *Heart Failure Treatment at a Glance*.
Central Nervous System Agents, misc.		
Acetylcholinesterase inhibitors (e.g., donepezil, etc), in patient with syncope	Bradycardia	Alternative: memantine[7]
Dextromethorphan/quinidine (e.g., *Nuedexta*) for treatment of behavioral symptoms of dementia.	Limited efficacy. Fall risk. Significant drug interactions.	Use acceptable for pseudobulbar affect. For alternatives, see our chart, *Pharmacotherapy of Dementia Behaviors* and *Pharmacotherapy of Dementia Behaviors Algorithm*.

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Dimenhydrinate (**A**)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention), sedation. Elimination reduced in elderly.	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline). For age-related vestibular dysfunction, consider referral for vestibular rehabilitation.[8]
Lithium in patient taking ACEI or loop diuretic	Risk of lithium toxicity.	Avoid combination, but if used, monitor lithium levels. For alternatives for **bipolar disorder**, see our chart, *Pharmacotherapy of Bipolar Disorder in Adults*.
Meclizine (**A**)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention), sedation. Elimination reduced in elderly.	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline). For age-related vestibular dysfunction, consider referral for vestibular rehabilitation.[8]
Diabetes Drugs		
Chlorpropamide (**A**, **H**)	Long duration of action, severe, prolonged hypoglycemia; SIADH.	Alternative **sulfonylurea**: glipizide, gliclazide (Canada).[5] Consider using cautious dosing. For other alternatives, see our chart, *Drugs for Type 2 Diabetes* (U.S. subscribers) or *Stepwise Treatment of Type 2 Diabetes* (Canadian subscribers).
Glimepiride (**A**)	Severe, prolonged hypoglycemia.	
Glyburide (glibenclamide) (**A**, **H**)	Severe, prolonged hypoglycemia.	

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Insulin, sliding scale (i.e., sole use of as-needed short- or rapid-acting insulin with no basal insulin) (**A**)	Hypoglycemia; poor efficacy.	See our algorithm, *Initiation and Adjustment of Insulin Regimens for Type 2 Diabetes* (U.S. subscribers; Canadian subscribers), for help dosing and titrating insulin.
Pioglitazone in heart failure Rosiglitazone in heart failure	Fluid retention may worsen heart failure.	Avoid in symptomatic heart failure. May use with caution in asymptomatic heart failure (i.e., **excellent** control of signs and symptoms, with or without medications). For alternatives, see our chart, *Drugs for Type 2 Diabetes* (U.S. subscribers) or *Stepwise Treatment of Type 2 Diabetes* (Canadian subscribers).
Gastrointestinal Drugs		
Antispasmodics: belladonna alkaloids, clidinium (in *Librax*), dicyclomine (*Bentyl* [U.S.], *Protylol* [Canada]), hyoscyamine (*Levsin* [U.S.]), propantheline (U.S.), scopolamine (**A**)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention). Unclear efficacy.	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline). For alternatives for irritable bowel, see our chart, *Treatments for Irritable Bowel Syndrome*.
H2-blocker in patient with **delirium** or **high risk of delirium**, taking **theophylline** (cimetidine), or CrCl <50 mL/min.	Has central nervous system effects that can cause or worsen delirium. Cimetidine increases theophylline levels. Renal impairment: increased risk of mental status changes.	Avoid cimetidine in patient taking theophylline. Reduce dose if CrCl <50 mL/min. Alternative: proton pump inhibitor (see Proton Pump Inhibitor listing for caveats).[5]
Metoclopramide, except for gastroparesis (**A**)	Extrapyramidal side effects, tardive dyskinesia.	Duration of use for gastroparesis should generally not exceed 12 weeks. Of special concern in patients with **Parkinson's disease**, due to dopamine receptor blockade. Alternatives for **nausea/vomiting**: serotonin antagonists (e.g., ondansetron, etc).[10]

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Mineral oil, oral (**A**)	Aspiration	For alternatives, see our algorithm, *Treatment of Constipation in Adults*.
Prochlorperazine in patient with **dementia**, **cognitive impairment**, **Parkinson's disease**, **delirium** or **high risk of delirium**, **lower urinary tract symptoms**, or **BPH**	Anticholinergic action may cause confusion, cognitive impairment, delirium, or urinary retention. Dopamine-receptor blockade may worsen Parkinson's disease.	Avoid in men. Avoid combining drugs with anticholinergic effects (risk of cognitive decline). **Alternatives for nausea/vomiting**: serotonin antagonists (e.g., ondansetron, etc).[10]
Promethazine in patient with **dementia**, **cognitive impairment**, **Parkinson's disease**, **delirium** or **high risk of delirium**, **lower urinary tract symptoms**, or **BPH** (**H**)	Anticholinergic action may cause confusion, cognitive impairment, delirium, or urinary retention. Dopamine-receptor blockade may worsen Parkinson's disease.	Avoid in men. Avoid combining drugs with anticholinergic effects (risk of cognitive decline). **Alternatives for nausea/vomiting**: serotonin antagonists (e.g., ondansetron, etc).[10]
Proton pump inhibitors, scheduled use for >8 weeks (**A**)	Risk of *C. difficile* pseudomembranous colitis, bone loss, fractures.	Scheduled use for >8 weeks acceptable for patients with high ulcer risk (e.g., taking corticosteroids or chronic NSAID), erosive esophagitis, hypersecretory disorder, Barrett's esophagus, confirmed need for maintenance (e.g., failed "drug holiday;" H2-blocker failure).
Hormones		
Corticosteroids (oral, parenteral) in patient with **delirium** or **high risk of delirium**	May cause or worsen delirium	If needed (e.g., COPD exacerbation), use lowest effective dose for shortest time necessary. Avoid combining with NSAIDs (GI ulcer/bleed risk). Use combo only with gastroprotection. Alternatives depend on indication. See our toolbox, *Corticosteroids: Selection, Tapering, and More*.
Estrogen (oral, transdermal), with or without progestin (**A**, **H**)	Breast cancer, endometrial cancer, not cardioprotective; lacks cognitive protection. Not effective for incontinence.	Alternatives: low-dose vaginal estrogens acceptable for vaginal symptoms and prevention of lower urinary tract infections.[1] For vasomotor symptoms, SSRI (not paroxetine), SNRI, gabapentin, depending on comorbidities.[5] For help choosing, see our commentary, *Nonhormonal Therapy for Hot Flashes*.

More. . .

Drug or Drug Class	**Concern(s)**	**Other Considerations (e.g., drug interactions, alternatives)**[b]
Growth hormone, except for growth hormone deficiency (**A**)	Edema, arthralgia, carpal tunnel syndrome, gynecomastia, insulin resistance; little effect on muscle mass.	For treatment of anorexia or cachexia, provide social support and feeding assistance, and set expectations.[9]
Megestrol (**A**, **H**)	Thrombosis, death; minimal effect on weight.	For treatment of anorexia or cachexia, provide social support and feeding assistance, and set expectations.[9]
Testosterone, methyltestosterone (U.S.), except for confirmed symptomatic hypogonadism (**A**)	Prostate cancer, cardiac events.	See our commentary, *The Use of Testosterone and the Aging Male*, for more information about the risks and appropriate use of testosterone.
Thyroid, desiccated (**A**, **H**)	Cardiac adverse effects.	Alternative: levothyroxine.
Hypnotics		
Antihistamines (see listing above)		
Barbiturates (any) (**A**, **H**)	Dependence, tolerance, risk of overdose (narrow therapeutic window).	Alternatives for **seizures**: see our chart, *Comparison of Antiepileptic Drugs.* For **sleep,** consider nonpharmacologic interventions.[5] To help explain these to patients, use our patient education handout, *Strategies for a Good Night's Sleep*. Failing this, consider melatonin.[13]
Benzodiazepines (see listing under Anxiolytics)		
Nonbenzodiazepine, benzodiazepine receptor agonists ("Z drugs;" eszopiclone, zopiclone[a] [Canada], zolpidem, zaleplon [U.S.]) (**A**, **H**)	Same concerns as for benzodiazepines. Unfavorable risk/benefit ratio for insomnia.	Of special concern in patient with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, or history of **falls** or **fractures**. Avoid combining with two or more other CNS-active drugs (fall risk). Consider reducing other concomitant medication(s) that can cause falls. Employ fall-prevention strategies. Consider nonpharmacologic interventions.[5] To help explain these to patients, use our patient education handout, *Strategies for a Good Night's Sleep*. Failing this, consider melatonin.[13]

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Musculoskeletal Agents		
Benztropine (**A**, **H**) (oral; U.S.)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention). Not recommended to prevent/treat antipsychotic-associated extrapyramidal effects; not very effective for Parkinson's disease.	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline). Alternative for **Parkinson's disease**: levodopa/carbidopa.[5]
Muscle relaxants (**A**, **H**): carisoprodol (U.S.; *Soma*), chlorzoxazone, cyclobenzaprine, metaxalone (U.S.; *Skelaxin*), methocarbamol (e.g., *Robaxin*), orphenadrine	Anticholinergic effects (cyclobenzaprine, orphenadrine; e.g., confusion, dry mouth, constipation, urinary retention), sedation, fracture Questionable efficacy at doses tolerated in elderly.	Cyclobenzaprine and orphenadrine of particular concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline). Alternatives: acetaminophen, nonacetylated salicylate, NSAID (ibuprofen or naproxen if no heart or renal failure, with gastroprotection if used for >7 days).[5]
Trihexyphenidyl (**A**, **H**)	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation, urinary retention). Not recommended to prevent/treat antipsychotic-associated extrapyramidal effects; not very effective for Parkinson's disease.	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline). Alternative for **Parkinson's disease**: levodopa/carbidopa.[5]

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
NSAIDs		
Aspirin >325 mg/day, chronic use (**A**), or use in patient with ulcer history.	Ulcer/GI bleed/perforation risk.	Of special concern in patient with **ulcer history**. GI risk factors: age >75 years, systemic corticosteroids, anticoagulants, antiplatelets. Protect with proton pump inhibitor or misoprostol if chronic use (>7 days) or use in patient with ulcer history unavoidable.[1,5] Avoid combining with oral or parenteral corticosteroids, or warfarin.
NSAIDs, chronic use (**A**), use in patient with ulcer history, indomethacin (any use) (**A**, **H**), ketorolac (any use) (**A**, **H**).	Ulcer/GI bleed/perforation risk (particularly ketorolac or indomethacin), central nervous system effects (indomethacin), kidney injury; increased blood pressure; worsening heart failure.	Of special concern in patients with **heart failure**, **ulcer history**, or **CrCl <30 mL/min**. GI risk factors: age >75 years, systemic corticosteroids, anticoagulants, antiplatelets. Protect with proton pump inhibitor or misoprostol if chronic use (>7 days) or use in patient with ulcer history unavoidable.[1,5] Avoid combining with oral or parenteral corticosteroids, or warfarin. Avoid in symptomatic heart failure. May use with caution in asymptomatic heart failure (i.e., **excellent** control of signs and symptoms, with or without medications). Alternatives: acetaminophen, nonacetylated salicylate, capsaicin, lidocaine patch (U.S.), topical NSAID, SNRI[5] (depending on etiology and comorbidities)
COX-2 inhibitors in **heart failure** or **CrCl <30 mL/min.**	Worsening heart failure. Worsening renal function in chronic kidney disease (CrCl <30 mL/min).	Avoid in symptomatic heart failure. May use with caution in asymptomatic heart failure (i.e., **excellent** control of signs and symptoms, with or without medications). Alternatives: acetaminophen, SNRI (not duloxetine), topical capsaicin, lidocaine patch (U.S.)[5] (depending on etiology and comorbidities).

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Respiratory Drugs		
Atropine (**A**)	Anticholinergic effects (i.e., may cause confusion, cognitive impairment, delirium, dry mouth, constipation, or urinary retention).	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline).
Homatropine (**A**)	Anticholinergic effects (i.e., may cause confusion, cognitive impairment, delirium, dry mouth, constipation, or urinary retention).	Of special concern in patients with **dementia**, **cognitive impairment**, **delirium** or **high risk of delirium**, **lower urinary symptoms**, or **BPH** (avoid in men). Avoid combining drugs with anticholinergic effects (risk of cognitive decline).
Urinary Drugs		
Desmopressin	Hyponatremia	Alternatives: address underlying cause of nocturia (e.g., hyperglycemia, heart failure, calcium channel blocker, flozin, etc). Consider 5-alpha reductase inhibitor for BPH.[11]
Urinary antimuscarinics (e.g., darifenacin, fesoterodine, flavoxate, oxybutynin, solifenacin, tolterodine, trospium) in patient with **dementia**, **cognitive impairment**, **delirium**, or **high risk of delirium.**	Anticholinergic effects (e.g., confusion, cognitive impairment, delirium, dry mouth, constipation).	Avoid combining drugs with anticholinergic effects (risk of cognitive decline).

More. . .

Drug or Drug Class	Concern(s)	Other Considerations (e.g., drug interactions, alternatives)[b]
Vasodilators (CNS)		
Ergoloid mesylates (**A**, **H**) Isoxsuprine (**H**) (U.S. only)	Lack of efficacy.	Alternatives: Acetylcholinesterase inhibitors (not in patients with syncope), memantine.[5]

Abbreviations: ACEI = angiotensin-converting enzyme inhibitor; ARB = angiotensin receptor blocker; BPH = benign prostatic hyperplasia; CCB = calcium channel blocker; CrCl = creatinine clearance; CNS = central nervous system; COX-2 = cyclo-oxygenase-2; HF*r*EF = heart failure with reduced ejection fraction; NSAID = nonsteroidal anti-inflammatory drug; SIADH = syndrome of inappropriate antidiuretic hormone secretion; SNRI = selective norepinephrine serotonin reuptake inhibitor; SSRI = selective serotonin reuptake inhibitor.

a. Zopiclone (Canada; *Imovane*, etc) not included in Beers, but prudent to consider same precautions as for eszopiclone.
b. Alternatives may not be appropriate for all patients.

More. . .

Project Leader in preparation of this clinical resource (350301): *Melanie Cupp, Pharm.D., BCPS*

References

1. By the 2019 American Geriatrics Society Beers Criteria Update Expert Panel. American Geriatrics Society 2019 updated AGS Beers criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc* 2019 Jan 29. doi: 10.1111/jgs.15767.
2. Steinman MA, Fick DM. Using wisely: a reminder on the proper use of the American Geriatrics Society Beers Criteria. *J Am Geraitr Soc* 2019 Jan 29. doi: 10.1111/jgs.15766.
3. Product monograph for *Lixiana*. Servier Canada. Laval, QC H7V 4A7. July 2017.
4. Product information for *Savaysa*. Daiichi Sakyo, Inc. Parsippany, NJ 07054. November 2017.
5. Hanlon JT, Semla TP, Schmader KE. Alternative medications for medications in the use of high-risk medications in the elderly and potentially harmful drug-disease interactions in the elderly quality measures. *J Am Geriatr Soc* 2015;63:e8-18.
6. Clinical Resource, *Appropriate Use of Oral Anticoagulants. Pharmacist's Letter/Prescriber's Letter*. March 2018.
7. Clinical Resource*, Pharmacotherapy and Advancing Alzheimer's Disease. Pharmacist's Letter/Prescriber's Letter.* May 2012.
8. Iwasaki S, Yamasoba T. Dizziness and imbalance in the elderly: age-related decline in the vestibular system. *Aging Dis* 2014;6:38-47.
9. Choosing Wisely. American Geriatrics Society releases second Choosing Wisely List: identifies 5 more tests and treatments that older patients and providers should question. February 27, 2014. http://www.choosingwisely.org/american-geriatrics-society-releases-second-choosing-wisely-list-identifies-5-more-tests-and-treatments-that-older-patients-and-providers-should-question/. (Accessed January 30, 2019).
10. Prunty JJ, Prunty LM. An outpatient approach to nausea and vomiting. *US Pharmacist* 2013;38:24-8.
11. Clinical Resource, *Management of Nocturia FAQs. Pharmacist's Letter/Prescriber's Letter*. May 2018.
12. Beers MH, Ouslander JG, Rollingher I, et al. Explicit criteria for determining inappropriate medication use in nursing home residents. UCLA Division of Geriatric Medicine. *Arch Intern Med* 1991;151:1825-32.
13. Clinical Resource, *Melatonin for Insomnia. Pharmacist's Letter/Prescriber's Letter.* July 2016.
14. Singh N, Gandhi S, McArthur E, et al. Kidney function and the use of nitrofurantoin to treat urinary tract infections in older women. *CMAJ* 2015;187:648-56.
15. Clinical Resource, *Comparison of Oral Anticoagulants. Pharmacist's Letter/Prescriber's Letter*. December 2018.
16. Scolaro KL. Chapter 11. Colds and allergy. In: Krinsky DL, Ferreri SP, Hemstreet B, et al., Eds. Handbook of nonprescription drugs: an interactive approach to self-care. 19th ed. Washington, DC: American Pharmacists Association, 2017.
17. *Clinical Resource,* Comparison of Gout Therapies. *Pharmacist's Letter/Prescriber's Letter.* September 2018.
18. *Clinical Resource,* Trimethoprim, hyperkalemia, and meds that increase potassium. Pharmacist's Letter/Prescriber's Letter. January 2015.

Cite this document as follows: **Clinical Resource,** ***Potentially Harmful Drugs in the Elderly: Beers List. Pharmacist's Letter/Prescriber's Letter.*** **March 2019.**

trc pharmacist's letter ™ trc prescriber's letter ™

Evidence and Recommendations You Can Trust…

trc pharmacy technician's letter ™ trc nurse's letter ™

3120 West March Lane, Stockton, CA 95219 ~ TEL (209) 472-2240 ~ FAX (209) 472-2249