

Most Commonly Used Medications in Long Term Care

A 3-hour CEU NC approved class offered by



Most Commonly Used Medications in Long Term Care

When choosing medications for residents residing in LTC facilities, those that are most safe and effective are ideal.

General

Medication toxic effects and drug-related problems can have profound medical and safety consequences for older adults and those residing in long term care facilities.

Adverse drug events (ADE's) have been linked to preventable problems in elderly patients:

- *Depression

- *Constipation

- *Immobility

- *Confusion

Beer's List

*Widely used consensus criteria for medication use in older adults

*A helpful general guide regarding potentially inappropriate medication use of medications in older adults. It identifies meds with potential risks, that outweigh their potential benefits

*The Beer's List should be used as general guide for assessing the potential inappropriateness of medications

Beer's Criteria

AGS BEERS CRITERIA FOR POTENTIALLY INAPPROPRIATE MEDICATION USE IN OLDER ADULTS

FROM THE AMERICAN GERIATRICS SOCIETY

This clinical tool, based on *The AGS 2012 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults (AGS 2012 Beers Criteria)*, has been developed to assist healthcare providers in improving medication safety in older adults. Our purpose is to inform clinical decision-making concerning the prescribing of medications for older adults in order to improve safety and quality of care.

Originally conceived of in 1991 by the late Mark Beers, MD, a geriatrician, the *Beers Criteria* catalogues medications that cause adverse drug events in older adults due to their pharmacologic properties and the physiologic changes of aging. In 2011, the AGS undertook an update of the criteria, assembling a team of experts and funding the development of the AGS 2012 *Beers Criteria* using an enhanced, evidence-based methodology. Each criterion is rated (quality of evidence and strength of evidence) using the American College of Physicians' Guideline Grading System, which is based on the GRADE scheme developed by Guyatt et al.

The full document together with accompanying resources can be viewed online at www.americangeriatrics.org.

INTENDED USE

The goal of this clinical tool is to improve care of older adults by reducing their exposure to Potentially Inappropriate Medications (PIMs).
 ■ This should be viewed as a guide for identifying medications for which the risks of use in older adults outweigh the benefits.

- These criteria are not meant to be applied in a punitive manner.
- This list is not meant to supersede clinical judgment or an individual patient's values and needs. Prescribing and managing disease conditions should be individualized and involve shared decision-making.
- These criteria also underscore the importance of using a team approach to prescribing and the use of non-pharmacological approaches and of having economic and organizational incentives for this type of model.
- Implicit criteria such as the STOPP/START criteria and Medication Appropriateness Index should be used in a complementary manner with the 2012 AGS *Beers Criteria* to guide clinicians in making decisions about safe medication use in older adults.

The criteria are not applicable in all circumstances (eg, patient's receiving palliative and hospice care). If a clinician is not able to find an alternative and chooses to continue to use a drug on this list in an individual patient, designation of the medication as potentially inappropriate can serve as a reminder for close monitoring so that the potential for an adverse drug effect can be incorporated into the medical record and prevented or detected early.

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Anticholinergics (excludes TCAs) First-generation antihistamines (as single agent or as part of combination products) ■ Brompheniramine ■ Carbinoxamine ■ Chlorpheniramine ■ Clemastine ■ Cyproheptadine ■ Dexbrompheniramine ■ Dexchlorpheniramine ■ Diphenhydramine (oral) ■ Doxylamine ■ Hydroxyzine ■ Promethazine ■ Triprolidine	Avoid. Highly anticholinergic; clearance reduced with advanced age, and tolerance develops when used as hypnotic; increased risk of confusion, dry mouth, constipation, and other anticholinergic effects/toxicity. Use of diphenhydramine in special situations such as acute treatment of severe allergic reaction may be appropriate. QE = High (Hydroxyzine and Promethazine), Moderate (All others); SR = Strong
Antiparkinson agents ■ Benzotropine (oral) ■ Trihexyphenidyl	Avoid. Not recommended for prevention of extrapyramidal symptoms with antipsychotics; more effective agents available for treatment of Parkinson disease. QE = Moderate; SR = Strong

Table 1 (continued from page 1)

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Antispasmodics ■ Belladonna alkaloids ■ Clidinium-chloridazepoxide ■ Dicyclomine ■ Hyoscyamine ■ Propantheline ■ Scopolamine	Avoid except in short-term palliative care to decrease oral secretions. Highly anticholinergic, uncertain effectiveness. QE = Moderate; SR = Strong
Antithrombotics Dipyridamole, oral short-acting* (does not apply to the extended-release combination with aspirin) Ticlopidine*	Avoid. May cause orthostatic hypotension; more effective alternatives available; IV form acceptable for use in cardiac stress testing. QE = Moderate; SR = Strong Avoid. Safer effective alternatives available. QE = Moderate; SR = Strong
Anti-infective Nitrofurantoin	Avoid for long-term suppression; avoid in patients with CrCl <60 mL/min. Potential for pulmonary toxicity; safer alternatives available; lack of efficacy in patients with CrCl <60 mL/min due to inadequate drug concentration in the urine. QE = Moderate; SR = Strong
Cardiovascular Alpha ₁ blockers ■ Doxazosin ■ Prazosin ■ Terazosin	Avoid use as an antihypertensive. High risk of orthostatic hypotension; not recommended as routine treatment for hypertension; alternative agents have superior risk/benefit profile. QE = Moderate; SR = Strong
Alpha agonists ■ Clonidine ■ Guanabenz* ■ Guanfacine* ■ Methyldopa* ■ Reserpine (≥0.1 mg/day)*	Avoid clonidine as a first-line antihypertensive. Avoid others as listed. High risk of adverse CNS effects; may cause bradycardia and orthostatic hypotension; not recommended as routine treatment for hypertension. QE = Low; SR = Strong
Antiarrhythmic drugs (Class Ia, Ic, III) ■ Amiodarone ■ Dofetilide ■ Dronedarone ■ Flecainide ■ Ibutilide ■ Procainamide ■ Propafenone ■ Quinidine ■ Sotalol ■ Disopyramide*	Avoid antiarrhythmic drugs as first-line treatment of atrial fibrillation. Data suggest that rate control yields better balance of benefits and harms than rhythm control for most older adults. Amiodarone is associated with multiple toxicities, including thyroid disease, pulmonary disorders, and QT interval prolongation. QE = High; SR = Strong
Dronedarone	Avoid. Disopyramide is a potent negative inotrope and therefore may induce heart failure in older adults; strongly anticholinergic; other antiarrhythmic drugs preferred. QE = Low; SR = Strong
Digoxin >0.125 mg/day	Avoid in patients with permanent atrial fibrillation or heart failure. Worse outcomes have been reported in patients taking dronedarone who have permanent atrial fibrillation or heart failure. In general, rate control is preferred over rhythm control for atrial fibrillation. QE = Moderate; SR = Strong
	Avoid. In heart failure, higher dosages associated with no additional benefit and may increase risk of toxicity; decreased renal clearance may increase risk of toxicity. QE = Moderate; SR = Strong

Beer's Criteria cont'd

Table 1 (continued from page 2)

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Nifedipine, immediate release*	Avoid. Potential for hypotension; risk of precipitating myocardial ischemia. QE = High; SR = Strong
Spirolactone >25 mg/day	Avoid in patients with heart failure or with a CrCl <30 mL/min. In heart failure, the risk of hyperkalemia is higher in older adults if taking >25 mg/day. QE = Moderate; SR = Strong
Central Nervous System	
Tertiary TCAs, alone or in combination: ■ Amitriptyline ■ Clordiazepoxide-amitriptyline ■ Clomipramine ■ Doxepin ≥6 mg/day ■ Imipramine ■ Perphenazine-amitriptyline ■ Trimipramine	Avoid. Highly anticholinergic, sedating, and cause orthostatic hypotension; the safety profile of low-dose doxepin (≤6 mg/day) is comparable to that of placebo. QE = High; SR = Strong
Antipsychotics, first- (conventional) and second- (atypical) generation (see outline for full list)	Avoid use for behavioral problems of dementia unless non-pharmacologic options have failed and patient is threat to self or others. Increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia. QE = Moderate; SR = Strong
Thioridazine Mesoridazine	Avoid. Highly anticholinergic and greater risk of QT-interval prolongation. QE = Moderate; SR = Strong
Barbiturates ■ Amobarbital* ■ Butabarbital* ■ Butalbital ■ Mephobarbital* ■ Pentobarbital* ■ Phenobarbital ■ Secobarbital*	Avoid. High rate of physical dependence; tolerance to sleep benefits; greater risk of overdose at low dosages. QE = High; SR = Strong
Benzodiazepines Short- and intermediate-acting: ■ Alprazolam ■ Estazolam ■ Lorazepam ■ Oxazepam ■ Temazepam ■ Triazolam Long-acting: ■ Chlorazepate ■ Clordiazepoxide ■ Clordiazepoxide-amitriptyline ■ Clidinium-chlordiazepoxide ■ Clonazepam ■ Diazepam ■ Flurazepam ■ Quazepam	Avoid benzodiazepines (any type) for treatment of insomnia, agitation, or delirium. Older adults have increased sensitivity to benzodiazepines and decreased metabolism of long-acting agents. In general, all benzodiazepines increase risk of cognitive impairment, delirium, falls, fractures, and motor vehicle accidents in older adults. May be appropriate for seizure disorders, rapid eye movement sleep disorders, benzodiazepine withdrawal, ethanol withdrawal, severe generalized anxiety disorder, perioperative anesthesia, end-of-life care. QE = High; SR = Strong
Chloral hydrate*	Avoid. Tolerance occurs within 10 days and risk outweighs the benefits in light of overdose with doses only 3 times the recommended dose. QE = Low; SR = Strong
Meprobamate	Avoid. High rate of physical dependence; very sedating. QE = Moderate; SR = Strong

Table 1 (continued from page 3)

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Nonbenzodiazepine hypnotics ■ Eszopiclone ■ Zolpidem ■ Zaleplon	Avoid chronic use (>90 days) Benzodiazepine-receptor agonists that have adverse events similar to those of benzodiazepines in older adults (e.g., delirium, falls, fractures); minimal improvement in sleep latency and duration. QE = Moderate; SR = Strong
Ergot mesylates* Isosuxiprine*	Avoid. Lack of efficacy. QE = High; SR = Strong
Endocrine	
Androgens ■ Methyltestosterone* ■ Testosterone	Avoid unless indicated for moderate to severe hypogonadism. Potential for cardiac problems and contraindicated in men with prostate cancer. QE = Moderate; SR = Weak
Desiccated thyroid	Avoid. Concerns about cardiac effects; safer alternatives available. QE = Low; SR = Strong
Estrogens with or without progestins	Avoid oral and topical patch. Topical vaginal cream: Acceptable to use low-dose intravaginal estrogen for the management of dyspareunia, lower urinary tract infections, and other vaginal symptoms. Evidence of carcinogenic potential (breast and endometrium); lack of cardioprotective effect and cognitive protection in older women. Evidence that vaginal estrogens for treatment of vaginal dryness is safe and effective in women with breast cancer; especially at dosages of estradiol ≤25 mcg twice weekly. QE = High (Oral and Patch), Moderate (Topical); SR = Strong (Oral and Patch), Weak (Topical)
Growth hormone	Avoid, except as hormone replacement following pituitary gland removal. Effect on body composition is small and associated with edema, arthralgia, carpal tunnel syndrome, gynecomastia, impaired fasting glucose. QE = High; SR = Strong
Insulin, sliding scale	Avoid. Higher risk of hypoglycemia without improvement in hyperglycemia management, regardless of care setting. QE = Moderate; SR = Strong
Megestrol	Avoid. Minimal effect on weight; increases risk of thrombotic events and possibly death in older adults. QE = Moderate; SR = Strong
Sulfonylureas, long-duration ■ Chlorpropamide ■ Glyburide	Avoid. Chlorpropamide: prolonged half-life in older adults; can cause prolonged hypoglycemia; causes SIADH Glyburide: higher risk of severe prolonged hypoglycemia in older adults. QE = High; SR = Strong
Gastrointestinal	
Metoclopramide	Avoid, unless for gastroparesis. Can cause extrapyramidal effects including tardive dyskinesia; risk may be further increased in frail older adults. QE = Moderate; SR = Strong
Mineral oil, given orally	Avoid. Potential for aspiration and adverse effects; safer alternatives available. QE = Moderate; SR = Strong
Trimethobenzamide	Avoid. One of the least effective antiemetic drugs; can cause extrapyramidal adverse effects. QE = Moderate; SR = Strong

Beer's Criteria Cont'd

Table 1 (continued from page 4)

Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Pain Medications Meperidine	Avoid. Not an effective oral analgesic in dosages commonly used; may cause neurotoxicity; safer alternatives available. QE = High; SR = Strong
Non-COX-selective NSAIDs, oral ■ Aspirin >325 mg/day ■ Diclofenac ■ Diflunisal ■ Etodolac ■ Fenoprofen ■ Ibuprofen ■ Ketoprofen ■ Meclizolamine ■ Mefenamic acid ■ Meloxicam ■ Nabumetone ■ Naproxen ■ Oxaprozin ■ Piroxicam ■ Sulfindac ■ Tolmetin	Avoid chronic use unless other alternatives are not effective and patient can take gastro-protective agent (proton-pump inhibitor or misoprostol). Increases risk of GI bleeding/peptic ulcer disease in high-risk groups, including those ≥75 years old or taking oral or parenteral corticosteroids, anticoagulants, or antiplatelet agents. Use of proton pump inhibitor or misoprostol reduces but does not eliminate risk. Upper GI ulcers, gross bleeding, or perforation caused by NSAIDs occur in approximately 1% of patients treated for 3–6 months, and in about 2%–4% of patients treated for 1 year. These trends continue with longer duration of use. QE = Moderate; SR = Strong
Indomethacin Ketorolac, includes parenteral	Avoid. Increases risk of GI bleeding/peptic ulcer disease in high-risk groups (See Non-COX selective NSAIDs) Of all the NSAIDs, indomethacin has most adverse effects. QE = Moderate (indomethacin), High (Ketorolac); SR = Strong
Pentazocine*	Avoid. Opioid analgesic that causes CNS adverse effects, including confusion and hallucinations, more commonly than other narcotic drugs; is also a mixed agonist and antagonist; safer alternatives available. QE = Low; SR = Strong
Skeletal muscle relaxants ■ Carisoprodol ■ Chlorzoxazone ■ Cyclobenzaprine ■ Metaxalone ■ Methocarbamol ■ Orphenadrine	Avoid. Most muscle relaxants poorly tolerated by older adults, because of anticholinergic adverse effects, sedation, increased risk of fractures; effectiveness at dosages tolerated by older adults is questionable. QE = Moderate; SR = Strong

*Infrequently used drugs. Table 1 Abbreviations: ACEI, angiotensin converting-enzyme inhibitors; ARB, angiotensin receptor blockers; CNS, central nervous system; COX, cyclooxygenase; CrCl, creatinine clearance; GI, gastrointestinal; NSAIDs, nonsteroidal anti-inflammatory drugs; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

Disease or Syndrome	Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Cardiovascular		
Heart failure	NSAIDs and COX-2 inhibitors Non-dihydropyridine CCBs (avoid only for systolic heart failure) ■ Diltiazem ■ Verapamil Pioglitazone, rosiglitazone Cilostazol Dronedarone	Avoid. Potential to promote fluid retention and/or exacerbate heart failure. QE = Moderate (NSAIDs, CCBs, Dronedarone), High (Thiazolidinediones (glitazones)), Low (Cilostazol); SR = Strong

Table 2 (continued from page 5)

Disease or Syndrome	Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Syncope	Acetylcholinesterase inhibitors (AChEIs) Peripheral alpha blockers ■ Doxazosin ■ Prazosin ■ Terazosin Tertiary TCAs Chlorpromazine, thioridazine, and olanzapine	Avoid. Increases risk of orthostatic hypotension or bradycardia. QE = High (Alpha blockers), Moderate (AChEIs, TCAs and antipsychotics); SR = Strong (AChEIs and TCAs), Weak (Alpha blockers and antipsychotics)
Central Nervous System		
Chronic seizures or epilepsy	Bupropion Chlorpromazine Clozapine Flupropine Olanzapine Thioridazine Thiothixene Tramadol	Avoid. Lowers seizure threshold; may be acceptable in patients with well-controlled seizures in whom alternative agents have not been effective. QE = Moderate; SR = Strong
Delirium	All TCAs Anticholinergics (see online for full list) Benzodiazepines Chlorpromazine Corticosteroids H ₁ -receptor antagonist Meperidine Sedative hypnotics Thioridazine	Avoid. Avoid in older adults with or at high risk of delirium because of inducing or worsening delirium in older adults; if discontinuing drugs used chronically, taper to avoid withdrawal symptoms. QE = Moderate; SR = Strong
Dementia & cognitive impairment	Anticholinergics (see online for full list) Benzodiazepines H ₁ -receptor antagonists Zolpidem Antipsychotics, chronic and as-needed use	Avoid. Avoid due to adverse CNS effects. Avoid antipsychotics for behavioral problems of dementia unless non-pharmacologic options have failed and patient is a threat to themselves or others. Antipsychotics are associated with an increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia. QE = High; SR = Strong
History of falls or fractures	Anticonvulsants Antipsychotics Benzodiazepines Nonbenzodiazepine hypnotics ■ Eszopiclone ■ Zaleplon ■ Zolpidem TCAs/SSRIs	Avoid unless safer alternatives are not available; avoid anticonvulsants except for seizure. Ability to produce ataxia, impaired psychomotor function, syncope, and additional falls; shorter-acting benzodiazepines are not safer than long-acting ones. QE = High; SR = Strong
Insomnia	Oral decongestants ■ Pseudoephedrine ■ Phenylephrine ■ Stimulants ■ Amphetamine ■ Methylphenidate ■ Pemoline ■ Theobromine ■ Theophylline ■ Caffeine	Avoid. CNS stimulant effects. QE = Moderate; SR = Strong
Parkinson's disease	All antipsychotics (see online publication for full list, except for quetiapine and clozapine) Antiemetics ■ Metoclopramide ■ Prochlorperazine ■ Promethazine	Avoid. Dopamine receptor antagonists with potential to worsen parkinsonian symptoms. Quetiapine and clozapine appear to be less likely to precipitate worsening of Parkinson disease. QE = Moderate; SR = Strong

Beer's Criteria Cont'd

Table 2 (continued from page 6)

Disease or Syndrome	Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Gastrointestinal		
Chronic constipation	<p>Oral antimuscarinics for urinary incontinence</p> <ul style="list-style-type: none"> ■ Darifenacin ■ Fesoterodine ■ Oxybutynin (oral) ■ Solifenacin ■ Tolterodine ■ Trospium <p>Nondihydropyridine CCB</p> <ul style="list-style-type: none"> ■ Diltiazem ■ Verapamil <p>First-generation antihistamines as single agent or part of combination products</p> <ul style="list-style-type: none"> ■ Brompheniramine (various) ■ Carbinoxamine ■ Chlorpheniramine ■ Clemastine (various) ■ Cyproheptadine ■ Dexbrompheniramine ■ Deschlorpheniramine (various) ■ Diphenhydramine ■ Doxylamine ■ Hydroxyzine ■ Promethazine ■ Triprolidine <p>Anticholinergics/antispasmodics (see online for full list of drugs with strong anticholinergic properties)</p> <ul style="list-style-type: none"> ■ Antipsychotics ■ Belladonna alkaloids ■ Clidinium-chlordiazepoxide ■ Dicyclomine ■ Hyoscyamine ■ Propantheline ■ Scopolamine ■ Tertiary TCAs (amitriptyline, clomipramine, doxepin, imipramine, and trimipramine) 	<p>Avoid unless no other alternatives.</p> <p>Can worsen constipation; agents for urinary incontinence; antimuscarinics overall differ in incidence of constipation; response variable; consider alternative agent if constipation develops.</p> <p><i>QE = High (For Urinary Incontinence), Moderate/Low (All Others); SR = Strong</i></p>
History of gastric or duodenal ulcers	<p>Aspirin (>325 mg/day)</p> <p>Non-COX-2 selective NSAIDs</p>	<p>Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprostol).</p> <p>May exacerbate existing ulcers or cause new/additional ulcers.</p> <p><i>QE = Moderate; SR = Strong</i></p>
Kidney/Urinary Tract		
Chronic kidney disease stages IV and V	<p>NSAIDs</p> <p>Triamterene (alone or in combination)</p>	<p>Avoid.</p> <p>May increase risk of kidney injury.</p> <p>May increase risk of acute kidney injury.</p> <p><i>QE = Moderate (NSAIDs), Low (Triamterene); SR = Strong (NSAIDs), Weak (Triamterene)</i></p>
Urinary incontinence (all types) in women	Estrogen oral and transdermal (excludes intravaginal estrogen)	<p>Avoid in women.</p> <p>Aggravation of incontinence.</p> <p><i>QE = High; SR = Strong</i></p>

Table 2 (continued from page 7)

Disease or Syndrome	Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Lower urinary tract symptoms, benign prostatic hyperplasia	Inhaled anticholinergic agents	<p>Avoid in men.</p> <p>May decrease urinary flow and cause urinary retention.</p> <p><i>QE = Moderate; SR = Strong (Inhaled agents), Weak (All others)</i></p>
Stress or mixed urinary incontinence	<p>Alpha-blockers</p> <ul style="list-style-type: none"> ■ Doxazosin ■ Prazosin ■ Terazosin 	<p>Avoid in women.</p> <p>Aggravation of incontinence.</p> <p><i>QE = Moderate; SR = Strong</i></p>

Table 2 Abbreviations: CCBs, calcium channel blockers; AChEIs, acetylcholinesterase inhibitors; CNS, central nervous system; COX, cyclooxygenase; NSAIDs, nonsteroidal anti-inflammatory drugs; SR, Strength of Recommendation; SSRIs, selective serotonin reuptake inhibitors; TCAs, tricyclic antidepressants; QE, Quality of Evidence

Table 3: 2012 AGS Beers Criteria for Potentially Inappropriate Medications to Be Used with Caution in Older Adults

Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Aspirin for primary prevention of cardiac events	<p>Use with caution in adults ≥80 years old.</p> <p>Lack of evidence of benefit versus risk in individuals ≥80 years old.</p> <p><i>QE = Low; SR = Weak</i></p>
Dabigatran	<p>Use with caution in adults ≥75 years old or if CrCl <30 mL/min.</p> <p>Increased risk of bleeding compared with warfarin in adults ≥75 years old; lack of evidence for efficacy and safety in patients with CrCl <30 mL/min</p> <p><i>QE = Moderate; SR = Weak</i></p>
Prasugrel	<p>Use with caution in adults ≥75 years old.</p> <p>Greater risk of bleeding in older adults; risk may be offset by benefit in highest-risk older patients (eg, those with prior myocardial infarction or diabetes).</p> <p><i>QE = Moderate; SR = Weak</i></p>
Antipsychotics Carbamazepine Cisplatin Mirzapine SSRIs TCAs Vincristine	<p>Use with caution.</p> <p>May exacerbate or cause SIADH or hyponatremia; need to monitor sodium level closely when starting or changing dosages in older adults due to increased risk.</p> <p><i>QE = Moderate; SR = Strong</i></p>
Vasodilators	<p>Use with caution.</p> <p>May exacerbate episodes of syncope in individuals with history of syncope.</p> <p><i>QE = Moderate; SR = Weak</i></p>

Table 3 Abbreviations: CrCl, creatinine clearance; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SSRIs, selective serotonin reuptake inhibitors; SNRIs, serotonin-norepinephrine reuptake inhibitors; SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

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 Leading change. Improving care for older adults.

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Antidepressants

Zoloft (Sertraline)

Paxil (Paroxetine)

Pamelor (Nortriptyline)

Celexa (Citalopram)

Sinequan (Doxepin)

Remeron (Mirtazapine)

Pristiq (Desvenlafaxine)

Luvox (Fluvoxamine)

Serzone(Nefazadone)

Wellbutrin (Bupropion)

Effexor (Venlafaxine)

Prozac (Fluoxetine)

Elavil (Amitriptyline)

Viibryd

Antidepressants - Common Uses

- *Depression
- *Insomnia
- *Smoking Cessation
- *Panic Disorder
- *Drug Withdrawal
- *Neuropathic pain
- *Migraine Prophylaxis
- *Obsessive-Compulsive Disorder

Antidepressants - Common Side Effects

*sedation

*anticholinergic

*orthostatic hypotension

*cardiac

*headache

*dizziness

*nervousness

*anxiety

*nausea

*vomiting

*constipation

*diarrhea

*confusion

*insomnia

*impaired cognitive fct

*photosensitivity

Antidepressants - General Notes

DO NOT STOP THESE MEDS ABRUPTLY!

(a gradual taper is recommended)

Normal Antidepressant effects usually takes 2 weeks to show maximum effects

SSRI's (Select Serotonin Reuptake Inhibitors)

- Less anticholinergic

- Zoloft, Paxil, Prozac, Celexa

Nortriptyline - Blood levels need to be monitored

Trazodone - Sometimes used as a sleep aid

Wellbutrin (Bupropion) - Same ingredient in Zyban for smoking cessation

Antianxiety Medications

Ativan (Lorazepam)

Restoril (Temazepam)

Dalmane (Flurazepam)

Valium (Diazepam)

Xanax (Alprazolam)

Halcion (Triazolam)

Buspar (Buspirone)

Serax (Oxazepam)

Klonopin (Clonazepam)

Antianxiety - Common Uses

- *Anxiety

- *Insomnia

- *Panic attacks

- *Seizures

- *In combination to treat depression

Antianxiety - Common Side Effects

*sedation

*nausea

*vomiting

*diarrhea

*constipation

*dizziness

*urinary incontinence

*addiction

*decreased respiratory rate

Antianxiety - General Notes

Diazepam:

- *long acting

- *"hang-over" effects

Lorazepam/Alprazolam

- *short acting

- *anxiety "drug of choice" for elderly (less sedation)

Temazepam

- *very sedative

- *used as a sleep aid

Anti-Psychotics

Haldol (Haloperidol)

Zyprexa (Olanzapine)

Navane (Thiothixene)

Stelazine (Trifluoperazine)

Risperdal (Risperidone)

Thorazine (Chlorpromazine)

Saphris

Clozaril (Clozapine)

Seroquel (Quetiapine)

Prolixin (Fluphenazine)

Lithium

Abilify

Mellaril (Thioridazine)

Geodon (Ziprasidone)

Anti-Psychotic Common Uses

*Psychotropic Disorders

*Schizophrenia

*Hallucinations

*Neuroleptic

*Antiemetic

*Hiccups

*Mania

*Mood Disorders

*Dementia

*Agitation

Anti-Psychotic Common Side Effects

- *sedation
- *extrapyramidal side effects (EPS)
- *anticholinergic
- *tardive dyskinesia
- *orthostatic hypotension
- *cardiac
- *nausea
- *vomiting
- *visual changes
- *confusion

Anti-Psychotic General Notes

*EPS Monitoring

- AIMS (Abnormal Involuntary Movement Scale)
- DISCUS (Dykinesia Identification Scale)

*Anti-Psychotics should not be used “as needed” (PRN)

- Only provides sedating/chemical restraint effects
- Normal anti-psychotic effects takes 2-4 weeks of treatment

Anticonvulsants/Seizure Meds

Dilantin (Phenytoin)

Lyrica

Tegretol (Carbamazepine)

Trileptal

Topamax (Topiramate)

Depakote (Valproic Acid)

Phenobarbital

Primidone

Lamictal (Lamotrigine)

Neurontin (Gabapentin)

Anticonvulsant/Seizure Meds - Common Uses

- *Seizure Disorders
- *Behavioral Disorders (Depakote)
- *Hypnotic/Sedative
- *Neuralgia/Diabetic Neuropathy
- *Alcohol withdrawal

Anticonvulsant/Seizure Meds - Common Side Effects

*nausea

*vomiting

*constipation

*diarrhea

*confusion

*sedation

*toxicity

Anticonvulsant/Seizure Med - General Notes

*Blood levels need to be monitored with the following:

- Dilantin

- Tegretol

- Depakote

- Phenobarbital

- Primidone

*Depakote found to be effective in mood disorders

Gastrointestinals

Zantac (Ranitidine)

Tagamet (Cimetidine)

Antacids (Tums)

Senna

Senna-S

Dulcolax (Bisacodyl)

Axid (Nizatidine)

Prilosec (Omeprazole)

Reglan (Metoclopramide)

Colace (Docusate)

Gleevec

Pepcid (Famotidine)

Prevacid (Lansoprazole)

Protonix (Pantoprazole)

Fleets (Enema)

Ex-Lax

Carafate (Sucralfate)

Aciphex

Nexium (Esomeprazole)

Milk of Magnesium

Amitiza

Zelnorm

Gastrointestinals - Common Uses

*Peptic/Duodenal Ulcers

*Indigestion/Heartburn

*Sour stomach

*GI Bleed

*Constipation

*Diarrhea

*Stool softener

*Laxative

Gastrointestinals - Common Side Effects

*Nausea

*Vomiting

*Constipation

*Diarrhea

*Extra Pyramidal Side Effects (EPS) - Reglan

Gastrointestinals - General Notes

*Zantac, Axid, Tagamet, Pepcid

- also available in OTC strengths
- use 30 min before meals for best results
- reduce the production of acid

*Prilosec, Prevacid, Protonix, Aciphex, Nexium:

- also available in OTC strengths
- use 30 min before meals for best results
- prevent the production of acid

*Reglan - may cause EPS in the elderly

Gastrointestinals - General Notes

- *Carafate - agent used to “coat” an ulcer to protect it from acid while it heals
- *Fleets, Ex-Lax, Bisacodyl, & MOM:
 - stimulant laxatives
 - should not be used on a regular basis due to dependency
- *Colace, Senna, Senna-S: all encourage to keep elderly regulated

Cholesterol Lowering Agents

Zocor (Simvastatin)

Lipitor (Atorvastatin)

Questran (Cholestyramine)

Tricor (Fenofibrate)

Pravachol (Pravastatin)

Niacin

Advicor (Niacin/Lovastatin)

Mevacor (Lovastatin)

Lopid (Gemfibrozil)

Lescol (Fluvastatin)

Cholesterol Lowering Agents - Common Uses

- *Lower Cholesterol

- *Reduce heart attacks

Cholesterol Lowering Agents - Common Side Effects

*Nausea/vomiting

*Constipation

*Diarrhea

*Elevated Liver enzymes

*Flatulence

*Rash

*Abdominal cramps

*Heartburn

*Blurred vision

*Dizziness

Cholesterol Lowering Agents - General Notes

- *Liver function tests should be monitored with the use of these agents
- *Treatment in the elderly with these agents should be reserved for those who are unable to obtain a desirable cholesterol by diet alone

Urinary Incontinence

Ditropan (Oxybutynin)

Bentyl (Dicyclomine)

Detrol (Tolterodine)

Urispas (Flavoxate)

Urecholine (Bethanechol)

Vesicare

Toviaz

Enablex

Oxytrol

Myrbetriq

Sanctura

Urinary Incontinence - Common Uses

*Urge Incontinence

*Stress Incontinence

*Overflow Incontinence

Urinary Incontinence - Common Side Effects

*Nausea/vomiting

*Constipation/diarrhea

*Urinary retention

*Blurred vision

*Rash

*Hot flashes

*Confusion

*Drowsiness

*Dizziness

*Tachycardia

*Hallucinations

Urinary Incontinence - General Notes

*Caution should be used in the elderly because of the increased incidence of side effects like:

- Confusion
- Constipation
- Blurred vision
- Tachycardia

*Monitor episodes of incontinence to assess effectiveness of treatment

Thyroid Medications

Synthroid (Levothyroxine)

Amour Thyroid

Levoxyl

Ctomel

Thyroid Medications - Common Uses

*Hypothyroidism

Thyroid Medications - Common Side Effects

*Nausea/vomiting

*Headache

*Alopecia (hair loss)

*Weight loss

*Abdominal cramps

*Nervousness

*Cardiac dysrhythmias (lower pulse rate)

Thyroid Medications - General Notes

*Recommended to check pulse rate before each dose and do not administer if pulse is <60

*Monitor Thyroid levels on a regular basis

-Increased TSH = Increased Thyroid dose

-Decreased TSH = Decrease Thyroid dose

Diabetes Medications

NPH Insulin

Regular Insulin

70/30 Insulin

Lantus

Levemir

Humalog

Novolog

Januvia

Onglyza

Glumetza

Tradjenta

Glucotrol (XL) (Glipizide)

Amaryl (Glimepiride)

Glyburide (Glipizide)

Glucophage (Metformin)

Precose (Acarbose)

Actos (Pioglitazone)

Byetta

Janumet

Invokana

Actoplus

Victoza

Diabetes Medications - Common Uses

*Insulin Dependent Diabetes (Type I)

*Non-Insulin Dependent Diabetes (Type II)

Diabetes Medications - Common Side Effects

*Nausea/vomiting

*Diarrhea

*Constipation

*Hypoglycemia

*Hyperglycemia

Diabetes Medications - General Notes

*NPH Insulin: Long acting

*Regular Insulin: Short acting (Sliding scale)

*70/30 Insulin: Combo (70% Reg/30% NPH)

*Lantus & Levemir: used once daily

*Precose/Prandin:

- Give with 1st bite of food

- Prevents absorption of sugar in food

*Humalog/Novolog - very short acting (given w 1st bite of food)

*Always monitor for signs and symptoms of hypoglycemia

- Drowsiness, dizziness

Ophthalmic Medications (Eye)

Alphagan (Brimonidine)

Timoptic (Timolol)

Betoptic (Betaxolol)

Diamox (Acetazolamide)

Pilocarpine

Ocupress (Carteolol)

Xalatan (Latanoprost)

Ocuflox (Ofloxacin)

Artificial Tears

Systane Eye drops

Ophthalmic Medications - Common Uses

*Glaucoma

*Ocular Hypertension

*Infections

*Dry Eyes (side effects from other meds)

Ophthalmic Medications - Common Side Effects

*Irritation

*Blurred Vision

*Pigmentation Changes

*Foreign body sensation

Ophthalmic Medications - General Notes

- *Xalatan - expires 30 days after removed from refrigerator (date bottle when open)
- *Separate multiple drops by 5 minutes
- *Use gloves to administer

Analgesics (Pain/Arthritis)

Motrin (Ibuprofen)

Percocet (Oxycodone/APAP)

Demerol (Meperidine)

Naproxen (Naprosyn)

Morphine

Relafen (Nabumetone)

Ultram (Tramadol)

Duragesic (Fentanyl)

Tylenol (Acetaminophen or APAP)

Celebrex

Indocin (Indomethacin)

Aspirin

Norco (Hydrocodone/APAP)

Vicodin (Hydrocodone/APAP)

Voltaren (Diclofenac)

Toradol (Ketorolac)

Mobic (Meloxicam)

Daypro (Oxaprozin)

Clinoril (Sulindac)

Lodine (Etodolac)

Analgesics - Common Uses

*Pain management/treatment

*Arthritis

*Gout

Analgesics - Common Uses

Nausea/vomiting

Diarrhea/constipation

Ulceration

Depression

Confusion

Addiction

Drowsiness

Sedation

Elevated liver enzymes

Analgesics - General Notes

- *Non-steroidal anti-inflammatory drugs (NSAID's)(Motrin, Naproxen, Relafen, etc.) - have an increased incidence for causing GI side effects.
- *Cytotec is used in combo with NSAID's to prevent GI ulcers if NSAID is absolutely necessary
- *Acetaminophen max dose in 24hrs = 3200mg
- *Ibuprofen max dose in 24hrs = 3200mg

Parkinson's Medications

Sinemet (Carbidopa/Levodopa)

Cogentin (Benztropine)

Eldepryl (Selegiline)

Parlodel

Stalevo

Requip (Ropinirole)

Mirapex (Pramipexole)

Neupro

Symmetrel (Amantadine)

Parkinson's Medications - Common Uses

- *Parkinson's Disease
- *Tardive Dyskinesia
- *Drug Induced EPS
- *Restless leg syndrome

Parkinson's Medications - Common Side Effects

*Nausea/vomiting

*Constipation/diarrhea

*Anticholinergic

*Dry mouth

*Sedation

*Dizziness

*Hypotension

*Drowsiness

*Arrhythmias

Parkinson's Medications - General Notes

- *Cogentin is used very often in conjunction with anti-psychotics for EPS treatment/prevention
- *Elderly are very susceptible to anticholinergic side effects caused by these medications
- *Avoid giving Sinemet with meal high in protein (decreases absorption)

Anticoagulants/Antiplatelets

Coumadin (Warfarin)

Xarelto

Aspirin

Ticlid (Ticlodipine)

Lovenox (Enoxaparin)

Heparin

Urokinase

Anticoagulants/Antiplatelets - Common Uses

- *Prevent and treat blood clots

- *Prevent strokes

- *Reduce risk of heart attack

Anticoagulants/Antiplatelets - Common Side Effects

*Nausea/vomiting

*Diarrhea

*Constipation

*Bruising

*Blood in stool

*other bleeding

Anticoagulants/Antiplatelets - General Notes

- *Blood monitoring is vital to effective treatment
(Protime/INR)
- *Heparin/Lovenox - SQ/IV Injectable
- *Coumadin - lots of drug interactions
- *Coumadin - available in many strengths
- *Xarelto - newer agent with less blood work
required

Asthma Medications

Theo-Dur (Theophylline)

Volmax (Albuterol)

Proventil (Albuterol)

Ventolin (Albuterol)

ProAir (Albuterol)

Azmacort (Triamcinolone)

Atrovent (Ipratropium)

Flovent (Fluticasone)

Singulair (Montelukast)

Accolate (Zacirlukast)

Asthma Medications - Common Uses

*Asthma

*Chronic Obstructive Pulmonary Disease
(COPD)

Asthma Medications - Common Side Effects

*Nausea

*Vomiting

*Oral candidiasis (with steroid inhalers)

*Constipation

*Diarrhea

Asthma Medications - General Notes

- *Theophylline levels need to be monitored on a routine basis
- *Albuterol inhaler is used as a rescue agent
- *Proper administration technique for inhalers is vital for effectiveness
- *Separate inhalers by at least 5 minutes
- *Rinse mouth after each use (esp with steroids) - can lead to oral infections (Oral Candidiasis- aka “oral yeast”)

Hypertension/Heart Disease

Diuretics (“fluid medications”)

Lasix (Furosemide)

Hydrodiuril (Hydrochlorothiazide)(HCTZ)

Bumex (Bumetanide)

Zaroxolyn (Metolazone)

Lozol (Indapamide)

Demadex (Torseamide)

Hypertension/Heart Disease

ACE I-Inhibitors

Accupril (Quinapril)

Prinivil (Lisinopril)

Zestril (Lisinopril)

Vasotec (Enalapril)

Capoten (Captopril)

Altace (Ramipril)

Mavik (Trandolapril)

Lotensin (Benazepril)

Univasc (Moexipril)

Monopril (Fosinopril)

Hypertension/Heart Disease

Ace II - Inhibitors

Cozaar (Losartan)

Hyzaar (Losartan/HCTZ)

Avapro (Irbesartan)

Diovan (Valsartan)

Atacand (Candesartan)

Teveten (Eprosartan)

Micardis (Telmisartan)

Benicar (Olmesartan)

Hypertension/Heart Disease

Calcium Channel Blockers

Norvasc (Amlodipine)

Procardia (Nifedipine)

Adalat (Nifedipine)

Cardizem (Diltiazem)

Calan, Verelan (Verapamil)

Plendil (Felodipine)

Sular (Nisoldipine)

Hypertension/Heart Disease

Beta- Blockers

Lopressor/Toprol (Metoprolol)

Normodyne (Labetolol)

Tenormin (Atenolol)

Inderal (Propranolol)

Corgard (Nadolol)

Zebeta (Bisoprolol)

Septral (Acebutolol)

Hypertension/Heart Disease

Alpha-agonist

Catapres (Clonidine)

Tenex (Guanfacine)

Aldomet (Methyldopa)

Hypertension/Heart Disease

Alpha-Antagonist

Hytrin (Terazosin)

Minipress (Prazosin)

Sinequan (Doxepine)

Cardura (Doxazosin)

Hypertension/Heart Disease

Vasodilators

Apresoline (Hydralazine)

Isordil (Isosorbide)

Persantine (Dipyridamole)

Cordarone (Amiodarone)

Minoxidil

Minipress (Prazosin)

Nitroglycerin

Hypertension/Heart Disease

Anti-arrhythmics

Lanoxin (Digoxin)

Norpace (Disopyramide)

Procanbid (Procainamide)

Quinidine

Lidocaine

Hypertension/Heart Disease Common Uses

*Hypertension

*Cardiovascular Disease

*Arrhythmias

Hypertension/Heart Disease Common Side Effects

- *Nausea
- *Vomiting
- *Diarrhea
- *Constipation
- *Hypotension
- *Increased/Decreased Heart rate
- *Cough (Ace Inhibitors)
- *Edema

Hypertension/Heart Disease - General Notes

- *Diuretics should be administered no later than 4pm
- *When giving Digoxin, the pulse should be monitored. If <60 , dose should be held
- *Monitor Digoxin levels
- *Calcium channel blockers can cause edema

Hypertension/Heart Disease - General Notes

*Monitor Blood Pressure routinely

*Monitor Heart Rate routinely

*Beta blockers can hide the signs and symptoms of high and low blood sugar