Table 2. 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults					
Organ System/ Therapeutic Category/Drug(s)	**Rationale**	**Recommendation**	**Quality of Evidence**	**Strength of Recommendation**	**References**
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	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.	Avoid	Hydroxyzine and promethazine: high; All others: moderate	Strong	Agostini 2001 Boustani 2007 Guaiana 2010 Han 2001 Rudolph 2008
Antiparkinson agents • Benztropine (oral) • Trihexyphenidyl	Not recommended for prevention of extrapyramidal symptoms with antipsychotics; more effective agents available for treatment of Parkinson disease.	Avoid	Moderate	Strong	Rudolph 2008
Antispasmodics • Belladonna alkaloids • Clidinium-chlordiazepoxide • Dicyclomine • Hyoscyamine • Propantheline • Scopolamine	Highly anticholinergic, uncertain effectiveness.	Avoid except in short-term palliative care to decrease oral secretions.	Moderate	Strong	Lechevallier-Michel 2005 Rudolph 2008
Antithrombotics					
Dipyridamole, oral short-acting* (does not apply to the extended-release combination with aspirin)	May cause orthostatic hypotension; more effective alternatives available; IV form acceptable for use in cardiac stress testing.	Avoid	Moderate	Strong	De Schryver 2010 Dipyridamole Package Insert
Ticlopidine*	Safer, effective alternatives available.	Avoid	Moderate	Strong	Ticlopidine Package Insert
Anti-infective					
Nitrofurantoin	Potential for pulmonary toxicity; safer alternatives	Avoid for long-term suppression;	Moderate	Strong	Felts 1971 Hardak 2010 Holmberg

	available; lack of efficacy in patients with CrCl <60 mL/min due to inadequate drug concentration in the urine.	avoid in patients with CrCl <60 mL/min.			1980
Cardiovascular					
Alpha$_1$ blockers • Doxazosin • Prazosin • Terazosin	High risk of orthostatic hypotension; not recommended as routine treatment for hypertension; alternative agents have superior risk/benefit profile.	Avoid use as an antihypertensive.	Moderate	Strong	ALLHAT 2000 Aronow2011
Alpha blockers, central • Clonidine • Guanabenz* • Guanfacine* • Methyldopa* • Reserpine (>0.1 mg/day)*	High risk of adverse CNS effects; may cause bradycardia and orthostatic hypotension; not recommended as routine treatment for hypertension.	Avoid clonidine as a first-line antihypertensive. Avoid others as listed.	Low	Strong	Aronow 2011 Methyldopa Package Insert Reserpine Package Insert
Antiarrhythmic drugs (Class Ia, Ic, III) • Amiodarone • Dofetilide • Dronedarone • Flecainide • Ibutilide • Procainamide • Propafenone • Quinidine • Sotalol	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.	Avoid antiarrhythmic drugs as first-line treatment of atrial fibrillation.	High	Strong	Roy 2008 Doyle 2009 Fuster 2006 Van Gelder 2002 Wann 2011a Wyse 2002
Disopyramide*	Disopyramide is a potent negative inotrope and therefore may induce heart failure in older adults; strongly anticholinergic; other antiarrhythmic drugs preferred.	Avoid	Low	Strong	Fuster 2006 Disopyramide Package Insert
Dronedarone	Worse outcomes have been reported in patients taking dronedarone who have permanent atrial fibrillation or heart	Avoid in patients with permanent atrial fibrillation	Moderate	Strong	Connolly 2011 FDA Drug Safety 2011 Hohnloser 2009 Korber 2008

	failure. In general, rate control is preferred over rhythm control for atrial fibrillation.	or heart failure			Dronedarone Package Insert – revised Dec2011
Digoxin >0.125 mg/day	In heart failure, higher dosages associated with no additional benefit and may increase risk of toxicity; decreased renal clearance may lead to increased risk of toxic effects.	Avoid	Moderate	Strong	Adams 2002 Ahmed 2007 Rathore 2003
Nifedipine, immediate release*	Potential for hypotension; risk of precipitating myocardial ischemia.	Avoid	High	Strong	Furberg 1995 Nifedipine Package Insert Pahor1995 Psaty1995a Psaty1995b
Spironolactone >25 mg/day	In heart failure, the risk of hyperkalemia is higher in older adults if taking >25 mg/day.	Avoid in patients with heart failure or with a CrCl <30 mL/min.	Moderate	Strong	Juurlink 2004
Central Nervous System					
Tertiary TCAs, alone or in combination: • Amitriptyline • Chlordiazepoxide-amitriptyline • Clomipramine • Doxepin >6 mg/day • Imipramine • Perphenazine-amitriptyline • Trimipramine	Highly anticholinergic, sedating, and cause orthostatic hypotension; the safety profile of low-dose doxepin (≤6 mg/day) is comparable to that of placebo.	Avoid	High	Strong	Coupland 2011 Nelson 2011 Scharf 2008
Antipsychotics, first-(conventional) and second-(atypical) generation (see **Table 8** for full list)	Increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia.	Avoid use for behavioral problems of dementia unless non-pharmacologic options have failed and patient is threat to self or others.	Moderate	Strong	Dore 2009 Maher 2011 Schneider 2005 Schneider 2006a Schneider 2006b Vigen 2011
Thioridazine Mesoridazine	Highly anticholinergic and greater risk of QT-	Avoid	Moderate	Strong	Goldstein 1974 Ray 2001

	interval prolongation.				Stollberger 2005
Barbiturates • Amobarbital* • Butabarbital* • Butalbital • Mephobarbital* • Pentobarbital* • Phenobarbital • Secobarbital*	High rate of physical dependence; tolerance to sleep benefits; greater risk of overdose at low dosages.	Avoid	High	Strong	Cumbo 2010 McLean 2000 Messina 2005
Benzodiazepines *Short- and intermediate-acting:* • Alprazolam • Estazolam • Lorazepam • Oxazepam • Temazepam • Triazolam *Long-acting:* • Chlorazepate • Chlordiazepoxide • Chlordiazepoxide-amitriptyline • Clidinium-chlordiazepoxide • Clonazepam • Diazepam • Flurazepam • Quazepam	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, periprocedural anesthesia, end-of-life care.	Avoid benzodiazepines (any type) for treatment of insomnia, agitation, or delirium.	High	Strong	Allain 2005 Cotroneo 2007 Finkle 2011 Paterniti 2002
Chloral hydrate*	Tolerance occurs within 10 days and risk outweighs the benefits in light of overdose with doses only 3 times the recommended dose.	Avoid	Low	Strong	Bain 2006 Goldstein 1978 Miller 1979
Meprobamate	High rate of physical dependence; very sedating.	Avoid	Moderate	Strong	Keston 1974 Rhalimi 2009
Nonbenzodiazepine hypnotics • Eszopiclone • Zolpidem • Zaleplon	Benzodiazepine-receptor agonists that have adverse events similar to those of benzodiazepines in older adults (e.g.,	Avoid chronic use (>90 days)	Moderate	Strong	Allain 2005 Cotroneo 2007 Finkle 2011 McCrae 2007 Orriols 2011 Rhalimi 2009

	delirium, falls, fractures); minimal improvement in sleep latency and duration.				Wang 2001b Yang 2011
Ergot mesylates* Isoxsuprine*	Lack of efficacy.	Avoid	High	Strong	Isoxsuprine Package Insert
Endocrine					
Androgens • Methyltestosterone* • Testosterone	Potential for cardiac problems and contraindicated in men with prostate cancer.	Avoid unless indicated for moderate to severe hypogonadism.	Moderate	Weak	Basaria 2010 Jones 2011
Desiccated thyroid	Concerns about cardiac effects; safer alternatives available.	Avoid	Low	Strong	Baskin2002 Rees-Jones1977 Rees-Jones1980 Sawin1978 Sawin1989
Estrogens with or without progestins	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.	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.	Oral and patch: high Topical: moderate	Oral and patch: strong Topical: weak	Bath 2005 Cho 2005 Epp 2010 Hendrix 2005 Perrotta 2008 Sare 2008
Growth hormone	Impact on body composition is small and associated with edema, arthralgia, carpal tunnel syndrome, gynecomastia, impaired fasting glucose.	Avoid, except as hormone replacement following pituitary gland removal.	High	Strong	Liu 2007

Insulin, sliding scale	Higher risk of hypoglycemia without improvement in hyperglycemia management regardless of care setting.	Avoid	Moderate	Strong	Queale 1997
Megestrol	Minimal effect on weight; increases risk of thrombotic events and possibly death in older adults.	Avoid	Moderate	Strong	Bodenner 2007 Reuben 2005 Simmons 2005 Yeh 2000
Sulfonylureas, long-duration • Chlorpropamide • Glyburide	Chlorpropamide: prolonged half-life in older adults; can cause prolonged hypoglycemia; causes SIADH Glyburide: higher risk of severe prolonged hypoglycemia in older adults.	Avoid	High	Strong	Clarke 1975 Gangji 2007 Shorr 1996
Gastrointestinal					
Metoclopramide	Can cause extrapyramidal effects including tardive dyskinesia; risk may be further increased in frail older adults.	Avoid, unless for gastroparesis.	Moderate	Strong	Bateman 1985 Ganzini 1993 Miller 1989
Mineral oil, given orally	Potential for aspiration and adverse effects; safer alternatives available.	Avoid	Moderate	Strong	Marchiori 2010a Marchiori 2010b Meltzer 2006 Simmons 2007
Trimethobenzamide	One of the least effective antiemetic drugs; can cause extrapyramidal adverse effects.	Avoid	Moderate	Strong	Bardfeld 1966 Moertel 1963
Pain Medications					
Meperidine	Not an effective oral analgesic in dosages commonly used; may cause neurotoxicity; safer alternatives available.	Avoid	High	Strong	Kaiko 1982 Szeto 1977 Meperidine Package Insert

Non–COX-selective NSAIDs, oral • Aspirin >325 mg/day • Diclofenac • Diflunisal • Etodolac • Fenoprofen • Ibuprofen • Ketoprofen • Meclofenamate • Mefenamic acid • Meloxicam • Nabumetone • Naproxen • Oxaprozin • Piroxicam • Sulindac • Tolmetin	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.	Avoid chronic use unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprostol).	All others: moderate	Strong	AGS Pain Guideline 2009 Langman 1994 Lanas 2006 Llorente Melero 2002 Pilotto 2003 Piper 1991
Indomethacin Ketorolac, includes parenteral	Increases risk of GI bleeding/peptic ulcer disease in high-risk groups (See above Non-COX selective NSAIDs) Of all the NSAIDs, indomethacin has most adverse effects.	Avoid	Indomethacin: moderate Ketorolac: high;	Strong	Onder2004
Pentazocine*	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.	Avoid	Low	Strong	AGS Pain Guideline 2009 Pentazocine Package Insert
Skeletal muscle relaxants • Carisoprodol • Chlorzoxazone • Cyclobenzaprine • Metaxalone • Methocarbamol • Orphenadrine	Most muscle relaxants poorly tolerated by older adults, because of anticholinergic adverse effects, sedation, increased risk of fractures; effectiveness at	Avoid	Moderate	Strong	Billups2011 Rudolph 2008

	dosages tolerated by older adults is questionable.				

*Infrequently used drugs
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; TCAs, tricyclic antidepressants

The primary target audience is the practicing clinician. The intentions of the criteria include: 1) improving the selection of prescription drugs by clinicians and patients; 2) evaluating patterns of drug use within populations; 3) educating clinicians and patients on proper drug usage; and 4) evaluating health-outcome, quality of care, cost, and utilization data.

Table 3. 2012 AGS Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug-Disease or Drug-Syndrome Interactions That May Exacerbate the Disease or Syndrome

Disease or Syndrome	Drug(s)	Rationale	Recommendation	Quality of Evidence	Strength of Recommendation	References
Cardiovascular						
Heart failure	NSAIDs and COX-2 inhibitors Nondihydropyridine CCBs (avoid only for systolic heart failure) • Diltiazem • Verapamil Pioglitazone, rosiglitazone Cilostazol Dronedarone	Potential to promote fluid retention and/or exacerbate heart failure.	Avoid	NSAIDs: moderate; CCBs: moderate; Thiazolidinediones (glitazones): high; Cilostazol: low; Dronedarone: moderate	Strong	Cilostazol Package Insert Connolly 2011 Dronedarone Package Insert – revised Dec2011 Heerdink 1998 Goldstein 1991 Jessup 2009 Korber 2009 Loke 2011 Pioglitazone Package Insert Rosiglitazone Package Insert
Syncope	Acetylcholinesterase inhibitors (AChEIs) Peripheral alpha blockers • Doxazosin • Prazosin • Terazosin Tertiary TCAs Chlorpromazine, thioridazine, and olanzapine	Increases risk of orthostatic hypotension or bradycardia.	Avoid	AChEIs and alpha blockers: high TCAs and antipsychotics: Moderate	AChEIs and TCAs: strong Alpha blockers and antipsychotics: weak	Bordier 2005 Davidson1989 French 2006 Gaggioli1997 Gill 2009 Kim 2011 Litvinenko 2008 Nickel 2008 Schneider 2006a Schneider 2006b Wild 2010
Central Nervous System						
Chronic seizures or epilepsy	Bupropion Chlorpromazine Clozapine	Lowers seizure threshold; may be acceptable in	Avoid	Moderate	Strong	Pisani 2002

	Maprotiline Olanzapine Thioridazine Thiothixene Tramadol	patients with well-controlled seizures in whom alternative agents have not been effective.				
Delirium	All TCAs Anticholinergics (see **Table 9** for full list) Benzodiazepines Chlorpromazine Corticosteroids H_2-receptor antagonist Meperidine Sedative hypnotics Thioridazine	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.	Avoid	Moderate	Strong	Clegg 2011 Gaudreau 2005 Laurila 2008 Marcantonio 1994 Moore 1999 Morrison 2003 Ozbolt 2008 Panharipande 2006 Rudolph 2008 Stockl 2010
Dementia and cognitive impairment	Anticholinergics (see **Table 9** for full list) Benzodiazepines H_2-receptor antagonists Zolpidem Antipsychotics, chronic and as-needed use	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 increased risk of cerebrovascular accident (stroke) and mortality in persons with dementia.	Avoid	High	Strong	Boustani 2007 Hanlon2004 Finkle 2011 Frey 2011 Paterniti 2002 Rasmussen 1999 Rudolph 2008 Schneider 2005 Schneider 2006a Schneider 2006b Seitz 2011 Vigen 2011 Wright 2009
History of falls or fractures	Anticonvulsants Antipsychotics Benzodiazepines Nonbenzodiazepine hypnotics • Eszopiclone • Zaleplon • Zolpidem	Ability to produce ataxia, impaired psychomotor function, syncope, and additional falls; shorter-acting benzodiazepines	Avoid unless safer alternatives are not available; avoid anticonvulsants except	High	Strong	Allain 2005 Berdot 2009 Deandrea 2010 Ensrud 2003 Hartikainen 2007 Jalbert 2010 Liperoti 2007

	TCAs/SSRIs	are not safer than long-acting ones.	for seizure			Mets 2010 Sterke 2008 Turner 2011 van der Hooft 2008 Vestergaard 2008 Wagner 2004 Wang 2001a Wang 2001b Zint 2010
Insomnia	Oral decongestants • Pseudoephedrine • Phenylephrine Stimulants • Amphetamine • Methylphenidate • Pemoline Theobromines • Theophylline • Caffeine	CNS stimulant effects	Avoid	Moderate	Strong	Foral 2011
Parkinson disease	All antipsychotics (see **Table 8** for full list, except for quetiapine and clozapine) Antiemetics • Metoclopramide • Prochlorperazine • Promethazine	Dopamine receptor antagonists with potential to worsen parkinsonian symptoms. Quetiapine and clozapine appear to be less likely to precipitate worsening of Parkinson disease.	Avoid	Moderate	Strong	Bateman 1985 Dore 2009 Ganzini 1993 Morgan 2005 Thanvi 2009
Gastrointestinal						
Chronic constipation	Oral antimuscarinics for urinary incontinence • Darifenacin • Fesoterodine • Oxybutynin (oral) • Solifenacin • Tolterodine • Trospium Nondihydropyridine CCB • Diltiazem • Verapamil First-generation	Ability to worsen constipation; agents for urinary incontinence: antimuscarinics overall differ in incidence of constipation; response variable; consider alternative agent if constipation develops.	Avoid unless no other alternatives	For urinary incontinence: high All others: Moderate/ low	Weak	Glass 2008 Meek 2011

	antihistamines as single agent or part of combination products • Brompheniramine (various) • Carbinoxamine • Chlorpheniramine • Clemastine (various) • Cyproheptadine • Dexbrompheniramine • Dexchlorpheniramine (various) • Diphenhydramine • Doxylamine • Hydroxyzine • Promethazine • Triprolidine Anticholinergics/antispasmodics (see **Table 9** for full list of drugs with strong anticholinergic properties) • Antipsychotics • Belladonna alkaloids • Clidinium-chlordiazepoxide • Dicyclomine • Hyoscyamine • Propantheline • Scopolamine • Tertiary TCAs (amitriptyline, clomipramine, doxepin, imipramine, and trimipramine)					
History of gastric or duodenal ulcers	Aspirin (>325 mg/day) Non–COX-2 selective NSAIDs	May exacerbate existing ulcers or cause new/additional ulcers.	Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or	Moderate	Strong	Gabriel 1991 Laine 2010

			misoprostol).			
Kidney/Urinary Tract						
Chronic kidney disease stages IV and V	NSAIDs Triamterene (alone or in combination)	May increase risk of kidney injury. May increase risk of acute kidney injury.	Avoid Avoid	NSAIDs: moderate Triamterene: low	NSAIDs: strong Triamterene: weak	Farge 1986 Favre 1982 Gooch 2007 Griffin 2000 Lafrance 2009 Murray 1995 Perazella 1999 Schneider 2006 Sica 1989 Winkelmayer 2008
Urinary incontinence (all types) in women	Estrogen oral and transdermal (excludes intravaginal estrogen)	Aggravation of incontinence.	Avoid in women	High	Strong	Dew 2003 Epp 2010 Grodstein 2004 Hartmann 2009 Hendrix 2005 Perrotta 2008 Ruby 2010
Lower urinary tract symptoms, benign prostatic hyperplasia	Inhaled anticholinergic agents Strongly anticholinergic drugs, except antimuscarinics for urinary incontinence (see Table 9 for complete list).	May decrease urinary flow and cause urinary retention.	Avoid in men	Moderate	Inhaled agents: strong All others: weak	Afonso 2011 Athanasopoulos 2003 Barkin 2004 Blake-James 2006 Chapple 2005 Griebling 2009 Kaplan 2006 Kraus 2010 Malone-Lee 2001 Martin Merino 2009 Spigset 1999 Uher 2009 Verhamme 2008 Wuerstle 2011
Stress or mixed urinary incontinence	Alpha-blockers • Doxazosin • Prazosin • Terazosin	Aggravation of incontinence.	Avoid in women	Moderate	Strong	Marshall 1996 Ruby 2010
Abbreviations: CCBs, calcium channel blockers; AChEIs, acetylcholinesterase inhibitors; CNS, central nervous system; COX, cyclooxygenase; NSAIDs, nonsteroidal anti-inflammatory drugs; SSRIs, selective serotonin reuptake inhibitors; TCAs, tricyclic antidepressants						
The primary target audience is the practicing clinician. The intentions of the criteria include: 1) improving the selection of prescription drugs by clinicians and patients; 2) evaluating patterns of drug use within populations; 3) educating clinicians and patients on proper drug usage; and 4) evaluating health-outcome, quality of care, cost, and utilization data.						

Table 4. 2012 AGS Beers Criteria for Potentially Inappropriate Medications to Be Used with Caution in Older Adults					
Drug(s)	**Rationale**	**Recommendation**	**Quality of Evidence**	**Strength of Recommendation**	**References**
Aspirin for primary prevention of cardiac events	Lack of evidence of benefit versus risk in individuals ≥80 years old.	Use with caution in adults ≥80 years old.	Low	Weak	McQuaid 2006 Wolff 2009
Dabigatran	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	Use with caution in adults ≥75 years old or if CrCl <30 mL/min.	Moderate	Weak	Connolly 2009 Diener 2010 Eikelboom 2011 Legrand 2011 Wann 2011b Dabigatran Package Insert
Prasugrel	Increased 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).	Use with caution in adults ≥75 years old.	Moderate	Weak	Hochholzer 2011 Wiviott 2007 Prasugrel Package Insert
Antipsychotics Carbamazepine Carboplatin Cisplatin Mirtazapine SNRIs SSRIs TCAs Vincristine	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.	Use with caution.	Moderate	Strong	Bouman 1998 Coupland 2011 Liamis 2008 Liu 1996
Vasodilators	May exacerbate episodes of syncope in individuals with history of syncope.	Use with caution.	Moderate	Weak	Davidson1989 Gaggioli1997
Abbreviations: CrCl, creatinine clearance; SIADH, syndrome of inappropriate antidiuretic hormone secretion; SSRIs, selective serotonin reuptake inhibitors; SNRIs, serotonin–norepinephrine reuptake inhibitors; TCAs, tricyclic antidepressants					
The primary target audience is the practicing clinician. The intentions of the criteria include: 1) improving the selection of prescription drugs by clinicians and patients; 2) evaluating patterns of drug use within populations; 3) educating clinicians and patients on proper drug usage; and 4) evaluating health-outcome, quality of care, cost, and utilization data.					

Table 8. First- and Second-Generation Antipsychotics	
First-Generation (Conventional) Agents	**Second-Generation (Atypical) Agents**
Chlorpromazine	Aripiprazole
Fluphenazine	Asenapine
Haloperidol	Clozapine
Loxapine	Iloperidone
Molindone	Lurasidone
Perphenazine	Olanzapine
Pimozide	Paliperidone

Promazine	Quetiapine
Thioridazine	Risperidone
Thiothixene	Ziprasidone
Trifluoperazine	
Triflupromazine	

Table 9. Drugs with Strong Anticholinergic Properties		
Antihistamines • Brompheniramine • Carbinoxamine • Chlorpheniramine • Clemastine • Cyproheptadine • Dimenhydrinate • Diphenhydramine • Hydroxyzine • Loratadine • Meclizine	Antiparkinson agents • Benztropine • Trihexyphenidyl	Skeletal Muscle Relaxants • Carisoprodol • Cyclobenzaprine • Orphenadrine • Tizanidine
Antidepressants • Amitriptyline • Amoxapine • Clomipramine • Desipramine • Doxepin • Imipramine • Nortriptyline • Paroxetine • Protriptyline • Trimipramine	Antipsychotics • Chlorpromazine • Clozapine • Fluphenazine • Loxapine • Olanzapine • Perphenazine • Pimozide • Prochlorperazine • Promethazine • Thioridazine • Thiothixene Trifluoperazine	
Antimuscarinics (urinary incontinence) • Darifenacin • Fesoterodine • Flavoxate • Oxybutynin • Solifenacin • Tolterodine • Trospium	Antispasmodics • Atropine products • Belladonna alkaloids • Dicyclomine • Homatropine • Hyoscyamine products • Loperamide • Propantheline Scopolamine	