AGS BEERS CRITERIA FOR POTENTIALLY INAPPROPRIATE MEDICATION USE IN OLDER ADULTS

PERSONAL ARREST AND ARREST ARRESTS AND ARRESTS

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 evants 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 (qualty 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 Middications (PIMS).

This should be viewed as a guide for identifying medications for which the risks of use in older adults outweigh the benefits.

This secritoria 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 indox 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 Cyproheptadine Dexbrompheniramine Dexbrompheniramine Diphenipdramine Diphenipdramine Diphenipdramine Hydroxyzine Fromethakine Fromethakine Fromethakine Friprolidine	Avoid. Highly anticholinergic; clearance reduced with advanced age, and tolerance develops when used as hypnotic; increased risk of confusion, dry mouth, constipation, and other antichofinergic 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 Bengztropine (oral) Trihexyphenidyl	Avoid. Not recommended for prevention of extrapyramidal symptoms with antipsychotics; more effective agents available for treatment of Parkinson disease. OF = Maderate SR = Strong

Organ System/	Recommendation, Rationale,
Therapeutic Category/Drug(s)	Quality of Evidence (QE) & Strength of Recommendation (SR)
Antispasmodics - Belladomia alkaloids - Chldintim-chlordiazepoxide - Dicycloralne - Hyosyamine - Propantheline - Scopolamine	Avoid except in short-term palliative care to decrease oral secretion. Highly anticholinergic, uncertain effectiveness. QE = Moderate; SR = Strong
Antithrombotics	
Dipyridamole, oral short-acting* (does not apply to the extended-release combination with asbirin)	Avoid. May cause orthostatic hypotension; more effective alternatives available; IV form acceptable for use in cardiac stress testing. QE = Moderate; SR = Strong
Ticlopidine [#]	Ayold. Safer, effective alternatives available. QE = Moderate; SR = Strong
Anti-infective	
Nitrofurantoin	Avoid for long-term suppression; avoid in patients with CrCI <60 mL/min. Potential for pulmonary toxicity; safer alternatives available; lack of efficacy in patients with CrCI <60 mL/min due to inadequate drug concentration in the uring $QE = Moderate$; $SR = Strong$
Cardiovascular	Andrew Control of the
Alpha, blockers Doxazosin Prazosin Terazosin	Avoid use as an antihypertensive. High risk of orthostatic hypotension; not recommended as routing treatment for hypertension; alternative agents have superior risk/ benofit profile. QE = Moderate; SR = Strong
Alpha agonists © Clonidine " Guanabenz" " Guanfacine" " 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. $OE = Low$; $SE = Srong$
Antiarrhythmic drugs (Class Ia, Ic, III) Amiodarone Dofetilide	Avoid antiarrhythmic drugs as first-line treatment of atria fibrillation.
Dronedarone Flecalnide Butilide	Data suggest that rate control yields better balance of benefits and harms than rhythm control for most older adults.
# Procainamide # Propafenone ! Quinidine ! Sotalol	Amiodarone is associated with multiple toxicities, including thyroid disease, pulmonary disorders, and QT interval prolongation. $QE = High$; $SR = Strong$
Disopyramide*	Avoid. Disopyramide is a potent negative inotrope and therefore may induce heart failure in older adults; strongly anticholinergic; other antiarrhythmic drugs preferred. $CE = low SE = Strong$
Pronedarone	Avoid in patients with permanent atrial fibrillation or heart failure. Worse outcomes have been reported in patients taking drone-darone who have permanent atrial fibrillation or heart failure. In general, rate control is preferred over rhythm control for atrial fibrillation. DE = Moderate; SR = Strong
	Avoid. In heart failure, higher dosages associated with no additional penefit and may increase risk of toxicity; decreased renal clearance may increase risk of toxicity. SE = Moderous SR = Strong

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Organ System/ Therapeutic Category/Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Nifedipine, immediate release ^e	Avoid. Potential for hypotension; risk of precipitating myocardial ischemia. $QE = High; SR = Strong$
pironolactone ≥25 mg/day	Avoid in patients with heart failure or with a CrCl <30 mLmin. In heart failure, the risk of hyperkalemia is higher in older adults if taking \geq 25 mg/day. QE = Moderate; $SR \simeq Strong$
Central Nervous System	
Forthery T.C.As, alone or in combination: Amitriptyline Chlordazepoxide- amitriptyline Clomipramine Doxepin >6 mg/day Imipramine Perphenazine-amitriptyline - 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 sec- ond- (atypical) generation (see online for full by)	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 14 Amobarbita * 15 Butabarbita * 16 Butabarbita * 17 Bentobarbita * 18 Pincobarbita * 19 Pincobarbita * 2 Secobarbita * 2 Secobarbita *	Avoid. High rate of physical dependence; tolerance to sleep benefits; greater risk of overdose at low dosages. $QE = t + high$; $SR = Strong$
Benzodiazepines Short- and intermediate-acting: * Alprazodam * Estazodam * Lorazepam * Oxazepam * Triazodam * Triazodam Long-acting: * Chlorazepate * Chlordiazepoxide * Chlordiazepoxide-anitriptyline * Ciddintun-chlordiazepoxide * Clorazepam * Diazepam * Diazepam * Diazepam * Diazepam * Quazepam * 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 seizuire disorders, rapid eye movement sleep disorders, benzodiazepine withdrawal, ethanol withdrawal, severe generalized anxiety disorder, periprocedural anesthesia, end-of-life care. QE = High; SR = Strong
Civoral hydrate*	Tolerance occurs within 10 days and risk outweighs the benefits if 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

Organ System/	Recommendation, Rationale,
Therapeutic Category/Drug(s)	Quality of Evidence (QE) & Strength of Recommendation (SR)
Nonbenzodiazepine ypnotics - Eszopiclone - Zolpidem - Zaleplon	Avoid chronic uso (>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 = Strung
ergot mesylates [‡] soxsuprine [‡]	Avoid. Lack of efficacy. QE = High; SR = Strong
ndocrine	
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 foreast and endometrium); fack of cardioprotective effect and cognitive protection in other 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 Potch), Week (Topical)
Growth hormone	Avoid, except as hormone replacement following pituitary gland removal. Effect on body composition is small and associated with edema, ar thralgia, 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. OE = 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

Organ System/ Therapeutic Category/Drug(s)	rentially Inappropriate Medication Use in Older Adults Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Pain Medications	
Meperidina	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 Dictofenac Diffumisal Etodolac Fenoprofet Ketoprofen Ketoprofen Melofomamate Mefenamic acid Meloxicam Nabumetone Napiroxen Oxaprozin Piroxicam Sulindac Tolmetin	Avoid chronic use unless other alternatives are not effective and patient can take gastroprotective 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 antiphatelet 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 his most adverse effects. QE = Moderate (Indomethacin), High (Kotorolac); SR = Strong
Pentazocine*	Avoid. Oploid 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 = Storig
Skeletal muscle relaxants Carisoprodol Chlorzoxazone Gyclobenzaprine Metakolone Methocarbanol Opplenadrine	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
testinal; NSAIDs, nonsteroidal anti-inflamm	ions:ACEI, angiotensin converting-enzyme inhibitors:ARB, angiotensin stem: COX, cyclooxygenase; CrCl, creatinine clearance; GI, gastroin- tatory drugs: SIADH, syndrome of inappropriate antidiuretic hormone 1; TCAs, tricyclic antidepressants; QE, Quality of Evidence

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

Disease or Syndrome	rug-Syndrome Interactions That May Exacert Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)
Syncope	Acetylcholinesterase fahibitors (AChFls) Peripheral alpha blockers Doxazosin Prazosin Tertazosin Cretiary TCAs Chlorpromazine, thioridazine, and olan- zapine	Avoid. Increases risk of orthostatic hypotension or brady-cardia. QE = High (Alpha blockers), Moderate (AChEls, TCAs and antipsychotes); SR = Stong (AChEls and TCAs), Weak (Alpha blockers and antipsychotes)
Central Nervo	us System	
Chronic seizures or epilepsy	Bupropion Chlorpromazine Clozapine Maprotiline Olanzapine Thioridazine Thiothixene Tramadol	Avoid. Lowers seizure threshold; may be acceptable in patients with well-controlled soizures in whom alternative agents have not been effective. QE = Moderate; SR = Strong
Delirium	MalTCAS Anticholinergies (see online for full list) Benzodiazepines Chlorpromazine Corticosteroids H,-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) Benizodiazepines H,-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. OE = High: SR = Strong
l-listory 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 * Phenylophrine Stimulants * Amphetamine * Methylophenidate * Pemoline Theobronines Theophylline * Caffeine	Avoid. CNS stimulant effects. QE =: Moderate; SR == Strong
Parkinson's disease	All antipsychotics (see online publica- tion for full list, except for quetiapine and clozapine) Antiemetics Metoclopramide Prochlorperazine Promethazine	Avoid. Dopanine receptor antigonists with potential to worsen parkinsonian symptoms. Quetiapine and clozapine appear to be less likely to precipitate worsening of Parkinson disease. QE == Moderate: SR == Strong

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Clironic constipation Clironic constipation First-generation antihistamines as single agent or part of combination products Brompheutramine (various) Clematine Clematine Clematine Clematine Clematine Clematine Constipation Repeated Pythocogramine Clematine Clematine Carious) Claribooxanine Clematine Clematine (various) Claribooxanine Clematine Clematine (various) Diphenrydramine Deschorpheniramine Deschorpheniramine (various) Diphenrydramine Deschorpheniramine (various) Diphenrydramine Deschorpheniramine (various) Diphenrydramine Pocylamide Hydroxyzine Fromed lazine Triprolidine Anticloflinegics/amispasmodics (see online for full kit of drugs with strong anticholinegic peopretics Belladonna alkaloids Cliriamine-Abordiazepoxide Dicysorphine Proparticles Scopelarnine Proparticles Proparticle	Disease or Syndrome		Recommendation, Rationale, Quality of Evidence
Constipation Darifenacin Fescierodine Oxybarynin (oral) Soliferacin Tolterodine Trospinin Nondihydropyridine CCB Diltizzen Verapamil First-generation antihistamines as single agent or part of combination products Prompheniramine Chiorpheniramine Chemastine (various) Cyproheptadine Dexbrompheniramine Chemastine (various) Ophenilydramine Dexbrompheniramine Dexbrompheniramine Dexbrompheniramine Chemastine (various) Diphenlydramine Dexbrompheniramine Dexbrompheniramine Dexbrompheniramine Chemastine (various) Diphenlydramine Dexplorinemine Dexplorinemine Triprolidine Anticholinergics/antispasmodics (see online for full lst of drugs with strong anticholinergic properties) Autipsychotics Belladonna alkalods Cildinium-chloridazepoxide Dicydomine Hyoscyamine Propantheline Scopolamine Tertary TCAs (amitriptyline, clonuipration, doxepin, imipramine, and trimipramine) Propantheline Scopolamine Tertary TCAs (amitriptyline, clonuipration, doxepin, imipramine, and trimipramine) Propantheline Scopolamine Tertary TCAs (amitriptyline, clonuipration, doxepin, imipramine, and trimipramine) Propantheline Scopolamine Tertary TCAs (amitriptyline, clonuipration, doxepin, imipramine, and trimipramine) Tolterodine Trospine Triprolidine Trospine Triprolidine Triprolidin		Annual Control of the	1 (X) or strength of recommendation (SR)
Solistracini Tolterodine Trospian Nondihydropyridine CCB Diltizem Verapamil First-generation antihistamines as single agent or part of combination products Tolteromine Chlospheniramine (various) Carbinoxamine Clenastine (various) Cyproheptadine Dexklorpheniramine (various) Diphenlydramine Dexklorpheniramine (various) Diphenlydramine Doxylamine Hydroxyzine Promethazine Triprolidine Anticholinergics/antispasmodics (see online for full lst of drugs with strong anticholinergic properties) Antipsychotics Belladoma alkaloids Cidinium-chlordiazepoxide Dicydomine Hydroxyzine Propandseline Scopolamine Ter day T.CAs (antitriptyline, cloniipratine, drugs) Ilistory of astric or usedenal laces Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoproste disputational ulcers. QE = Moderate; SR = Strong Avoid. May increase risk of kidney injury. May increase risk of acute kidney injury. GE = Moderate (NSAIDs), low (Irianterene); SR = Strong intravaginal estrogen) Policy of intravaginal estrogen)		Darifenacin Fesoterodine	Can worsen constipation; agents for urinary incon-
Nondilydropyridine CCB Dilthzem		Solfenacin Tolterodine	constipation; response variable; consider alternative agent if constipation develops.
Beent or part of combination products Bromphenitamine (various) Carbinoxamine Clemastine (various) Cyprohepadine Dexhlorpheniramine Dexhlorpheniramine Dexhlorpheniramine Dexhlorpheniramine Dexhlorpheniramine Dexhlorpheniramine Doxylamine Doxylamine Doxylamine Doxylamine Anticholinergics/antispasmodics (see online for full list of drugs with strong anticholinergic properties) Antippychotics Beldadoma alkaloids Clidinium-chlordiazepoxide Dicyclomine Hyoscyamine Proparticline Scopolamine Hryoscyamine Appirin (~325 mg/day) Non-COX-2 selective NSAIDs Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprosted astric or undersal leers Appirin (~325 mg/day) Non-COX-2 selective NSAIDs Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprosted astric or undersal leers Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprosted astric or undersal leers Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprosted astric or undersal leers Avoid unless other alternatives are not effective and patient can take gastroprotective agent (proton-pump inhibitor or misoprosted astronomy inhibitor or misoprosted as an advance of the patient can take gastroprotective agent (proton-pump inhibitor or misoprosted as an advance of the patient can take gastroprotective agent (proton-pump inhibitor or misoprosted as an advance of the patient can take gastroprotective agent (proton-pump inhibitor or misoprosted as an advance of the patient can take gastroprotective agent (proton-pump inhibitor or misoprosted as an advance of the patient can take gastroprotective agent (proton-pump inhibitor or misoprosted as a patient can take gastroprotective agent (proton-pump inhibitor or misoprosted as a patient can take gastroprotective agent (proton-pump inhibit		Diltiazem	Others); SR = Strong
listory of astric or word astric or NSAIDs (Aspirin (>325 mg/day) (A		agent or part of combination products Bromphenitramine (various) Carbinoxamine Chlosphenitramine Dexbromphenitramine Dexbromphenitramine Dexbromphenitramine Dexbromphenitramine Dexbromphenitramine Dexphenitramine Dexphenitramine Dexplainte Diphenitydramine Doxylamine Hydroxylamine Promethazine Triprolidine Anticholinergics/antispasmodics (see online for full list of drugs with strong anticholinergic properties) Antipsychotics Belladonna alkaloids Cildinium-chlordiazepoxide Dicyclomine Hyoscyamine Propantheline Scopolamine Scopolamine Ier day TCAs (amitriptyline, clonnip-	
QE = Moderate; SR = Strong	astric or uodenal	Aspirin (>325 mg/day)	fective and patient can take gastroprotective agent (proton-pump inhibitor or misoprostol). May exacerbate existing ulcers or cause new/addi-
hronic kid- y disease ages IV kitV Triamterene (alone or in combination) Avoid, May increase risk of kidney injury. May increase risk of acute kidney injury. QE = Moderate (MSAIDs), Low (friamterene); SR = Str (MSAIDs), Weak (Triamterene) Avoid in women.			
y disease ges IV dV Triamterene (alone or in combination) May increase risk of kidney injury. May increase risk of kidney injury. QE = Moderate (NSAIDs), Low (friamterene); SR = Str (NSAIDs), Weak (Triamterene) Continence intravayinal estrogen) Avoid in women.			
liviamterene (alone or in combination) May increase risk of acute kidney injury. QE = Moderate (NSAIDs), Low (friamterene); SR = Str (NSAIDs), Weak (Triamterene) (NSAIDs), Weak (Triamterene) Avoid in women.	y disease iges IV	NSAIDs	
continence intravaginal estrogen) Avoid in women.		livianterene (alone or in combination)	May increase risk of acute kidney injury. QE = Moderate (NSAIDs), Low (Triamterene): SR = Strong
Aggravation of incontinence.	types) in	fistrogen oral and transdermal (excludes intravaginal estrogen)	Avoid in women.

Disease or D	012 AGS Beers Criteria for Potentially Inap rug-Syndrome Interactions That May Exace	propriate Medication Use in Older Adults Due to Drug- rbate the Disease or Syndrome
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 Strongly anticholinergic drugs, except antimuscarinics for trinary incontinence (see Table 9 for complete list).	Avoid in men. May decrease urinary flow and cause urinary reten- tion. QE = Moderate; SR = Strong (labeled agents), Weak (All others)
Stress or mixed urinary in- continence	Alpha-blockers Doxazosin Prazosin Terazosin	Avoid in women. Aggravation of incontinence. QE = Moderate; SR = Strong

tion; SSRIs, selective serotonin reuptake inhibitors; TCAs, tricyclic antidepressants; QE, Quality of Evidence

Drug(s)	Recommendation, Rationale, Quality of Evidence (QE) & Strength of Recommendation (SR)	
Aspirin for primary preven- tion of cardiac events	Use with caution in adults ≥80 years old. Lack of evidence of benefit versus risk in individuals ≥80 years old. QE = Low, SR = Weak	
Dabigatran	Use with caution in adults ≥75 years old or if CrCl <30 mL/min, 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 QE = Moderate; SR =Wed	
Prasugrel	Use with caution in adults ≥75 years old. 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). QE = Moderate; SR = Week.	
Antipsychotics Carbantazepine Carboplatin Cisplatin Mircazapine SNRIs SSRIs TCAs Vincristine	Use with caution. 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. $QE = Moderate$; $SR = Strong$	
Vasodilators	Use with caution. May exacerbate episodes of syncope in individuals with history of syncope. QE = Moderate; SR = Weak	

secretion; SSRIs, selective serotonin requartice; SIADH, syndrome of inappropriate antifluretic hormone SR, Strength of Recommendation; TCAs, tricyclic antidepressants; QE, Quality of Evidence

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