

# High risk medications

Updated May 2017

Classification	Drug name	Risk	Alternatives When Diagnosis is NOT KNOWN* If diagnosis is known - refer to FER Alternatives document
First-generation antihistamines	brompheniramine	Highly anticholinergic (risk of confusion, dry mouth, constipation, blurred vision, drowsiness, hallucinations, difficulty urinating)	<b>second-generation antihistamines</b>
	carbinoxamine		cetirizine (generic for Zyrtec) OTC <sup>1</sup>
	chlorpheniramine	Clearance reduced with advanced age (risk of toxicity)	fexofenadine (generic for Allegra) OTC <sup>1</sup>
	clemastine		loratadine (generic for Claritin) OTC <sup>1</sup>
	cyproheptadine (PERIACTIN)		CLARINEX SYRUP
	dexbrompheniramine		desloratadine (generic for Clarinex)
	dexchlorpheniramine		desloratadine ODT (generic for Clarinex RediTab)
	diphenhydramine (oral) (BENADRYL)		levocetirizine (generic for Xyzal)
	doxylamine		<b>intranasal steroids</b>
	hydroxyzine (ATARAX, VISTARIL)		FLONASE ALLERGY OTC <sup>1</sup>
	promethazine (PHENERGAN)		NASACORT ALLERGY OTC <sup>1</sup>
triprolidine	RHINOCORT ALLERGY OTC <sup>1</sup>		
Parkinson disease	benztropine (oral) (COGENTIN)	Not recommended for prevention of extrapyramidal symptoms with antipsychotics	diphenhydramine OTC <sup>1</sup>
	trihexyphenidyl (ARTANE)		amantadine
Antiplatelets	dipyridamole (PERSANTINE)	Dipyridamole immediate-release may cause orthostatic hypotension	carbidopa/levodopa ODT (generic for Parcopa)
	ticlopidine (TICLID)	Ticlopidine - Safer, effective alternatives available	carbidopa/levodopa (generic for Sinemet)
Anti-infective	nitrofurantoin (MACROBID, MACRODANTIN) <i>Nitrofurantoin is included in CMS's 5-star measure if beneficiary has two or more fills and receives 90 or more cumulative days of treatment in a calendar year.</i>	Potential for pulmonary toxicity, hepatotoxicity, and peripheral neuropathy, especially with long-term use	carbidopa/levodopa ER (generic for Sinemet CR)
			aspirin/dipyridamole (generic for Aggrenox)
Alpha blockers (central)	guanfacine (TENEX)	High risk of adverse CNS effects (may cause bradycardia and orthostatic hypotension)	clopidogrel (generic for Plavix)
	methylidopa (ALDOMET)		EFFIENT
	reserpine (>0.1 mg/day)*	*Reserpine is included in CMS's 5 -star measure for any beneficiary with two or more fills in a calendar year.	BRILINTA
			<b>None recommended by The American Geriatrics Society; however, may consider the following:</b>
			ciprofloxacin (generic for Cipro)
			MONUROL
			trimethoprim (generic for Proloprim)
			trimethoprim/sulfamethoxazole (generic for Bactrim)
			trimethoprim/sulfamethoxazole DS (generic for Bactrim DS)
			<b>Thiazide-type diuretics</b>
			chlorthalidone (generic for Thalitone)
			hydrochlorothiazide (generic for Hydrodiuril, Microzide)
			indapamide (generic for Lozol)
			metolazone (generic for Zaroxolyn)

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			<b>ACE inhibitors</b> benazepril (generic for Lotensin) captopril (generic for Capoten) enalapril (generic for Vasotec) fosinopril (generic for Monopril) lisinopril (generic for Prinivil, Zestril) moexipril (generic for Univasco) perindopril (generic for Aceon) quinapril (generic for Accupril) ramipril (generic for Altace) trandolapril (generic for Mavik)
			<b>Angiotensin Receptor Blocker (ARB)</b> candesartan (generic for Atacand) eprosartan (generic for Teveten) irbesartan (generic for Avapro) losartan (generic for Cozaar) telmisartan (generic for Micardis) valsartan (generic for Diovan)
			<b>Calcium Channel Blockers</b> AFEDITAB CR (generic for Adalat CC) amlodipine (generic for Norvasc) AZOR CARDIZEM LA DILT-XR (generic for Dilacor XR) diltiazem (generic for Cardizem) diltiazem CD (generic for Cardizem CD) diltiazem ER (generics for Cardizem LA and Tiazac) felodipine ER (generic for Plendil) isradipine (generic for DynaCirc) nicardipine (generic for Cardene) nifedipine ER (generic for Procardia XL) nisoldipine ER (generic for Sular) verapamil (generic for Calan) verapamil ER (generic for Calan SR, Isoptin SR) verapamil SR (generic for Verelan)
Alpha blockers (central)	guanfacine ER (INTUNIV)	High risk of adverse CNS effects (may cause bradycardia and orthostatic hypotension)	<b>Non-amphetamine ADHD medications</b> clonidine extended-release (generic Kapvay) STRATTERA

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Cardiovascular (other)	disopyramide (NORPACE, NORPACE CR)	Disopyramide is a potent negative inotrope and may induce heart failure in older adults.	<b>For atrial fibrillation rate control:</b> diltiazem (generic for Cardizem) diltiazem CD (generic for Cardizem CD) diltiazem ER (generic for Cardizem LA, Tiazac) verapamil (generic for Calan, Isoptin) verapamil ER (generic for Calan SR, Isoptin SR) verapamil SR (generic for Verelan)
	digoxin (>0.125 mg/day) (LANOXIN) *Digoxin is included in CMS's 5-star measure only when a beneficiary has 2 or more fills with an average daily dose > 0.125 mg.	Digoxin is not a first-line drug for use in atrial fibrillation. The	<b>For atrial fibrillation rhythm control:</b> flecainide (generic for Tambocor) propafenone (generic for Rythmol) dofetilide (TIKOSYN)
Cardiovascular (other)	nifedipine (immediate-release)	Risk of precipitating myocardial ischemia and possible hypotens	amlodipine (generic for Norvasc) felodipine ER (generic for Plendil) nifedipine ER (generic for Procardia XL)
Tertiary tricyclic antidepressants (single agent and combination products)	amitriptyline (ELAVIL) amitriptyline/chlordiazepoxide (LIMBITROL) amitriptyline/perhenazine (TRIAVIL) clomipramine (ANAFRANIL) doxepin (>6 mg/day)* (SINEQUAN) <i>Does higher than 6 mg/day are included in CMS's 5-star measure for beneficiaries with two or more fills in a calendar year. Doses of doxepin less than 6 mg/day are not included because its side effect profile is similar to placebo.</i>	These drugs are highly anticholinergic (risk of confusion, dry mouth, constipation, blurred vision, drowsiness, hallucinations, difficulty urinating) and cause orthostatic hypotension.	<b>For depression:</b> bupropion bupropion (generic for Wellbutrin) bupropion SR (generic for Wellbutrin SR) bupropion XL (generic for Wellbutrin XL) FORFIVO XL <b>SSRI's</b> citalopram (generic for Celexa) escitalopram (generic for Lexapro) fluoxetine (generic for Prozac) fluoxetine delayed-release (generic for Prozac Weekly) sertraline (generic for Zoloft) VIIBRYD <b>SNRI's</b> desvenlafaxine ER duloxetine (generic for Cymbalta) FETZIMA PRISTIQ venlafaxine (generic for Effexor) venlafaxine ER (generic for Effexor XR)
	imipramine (TOFRANIL, TOFRANIL-PM) trimipramine (SURMONTIL)		

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			<b>For neuropathic pain:</b> capsaicin topical duloxetine (generic for Cymbalta) FETZIMA PRISTIQ venlafaxine (generic for Effexor) venlafaxine ER (generic for Effexor XR) gabapentin desvenlafaxine ER LYRICA lidocaine 5% patch (for diabetic neuropathy, postherpetic neuralgia, and cancer-related neuropathy only)
			<b>For epilepsy:</b> lamotrigine (generic for Lamictal) levetiracetam (generic for Keppra) other anticonvulsants
Antipsychotics, first-generation (conventional)	thioridazine (MELLARIL)	Increased risk of stroke, cognitive decline, and mortality in persons with dementia. Avoid use for behavioral problems related to dementia or delirium unless there is threat of substantial harm to self or others.	<b>For schizophrenia, use nonanticholinergic antipsychotics:</b> aripiprazole (generic for Abilify) haloperidol tablet (generic for Haldol) risperidone (generic for Risperdal) risperidone ODT (generic for Risperdal M-Tab) thiothixene (generic for Navane) ziprasidone (generic for Geodon)
Barbiturates	amobarbital (AMYTAL) butobarbital (BUTISOL) butalbital (FIORICET, FIORINAL, ETC.) pentobarbital (NEMBUTAL) phenobarbital (LUMINAL) secobarbital (SECONAL)	High rate of physical dependence, tolerance to sleep benefits, and a greater risk of overdose at low doses	<b>For epilepsy:</b> lamotrigine (generic for Lamictal) levetiracetam (generic for Keppra) other anticonvulsants

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CNS (other)	chloral hydrate (SOMNOTE) meprobamate (MILTOWN)	Avoid in older adults with or at high risk of delirium because of the potential of inducing or worsening delirium. Avoid antipsychotics for behavioral problems of dementia or delirium unless nonpharmacological options (e.g., behavioral interventions) have failed or are not possible and the older adult is threatening substantial harm to self or others. Antipsychotics are associated with greater risk of cerebrovascular accident (stroke) and mortality in persons with dementia.  Meprobamate has a high rate of physical dependence and is very sedating.	<b>For anxiety:</b> buspirone (generic for Buspar) <b>SSRI's</b> citalopram (generic for Celexa) escitalopram (generic for Lexapro) fluoxetine (generic for Prozac) fluoxetine delayed-release (generic for Prozac Weekly) sertraline (generic for Zoloft) VIIBRYD <b>SNRI's</b> desvenlafaxine ER duloxetine (generic for Cymbalta) FETZIMA PRISTIQ venlafaxine (generic for Effexor) venlafaxine ER (generic for Effexor XR)
Nonbenzodiazepine hypnotics	eszopiclone (LUNESTA) zolpidem (AMBIEN, AMBIEN CR) zaleplon (SONATA)  Included in CMS's 5-star measure with two or more fills with 90 or more cumulative days of any combination of these drugs.	Risk of: delirium, falls, and fractures; increased emergency department visits and hospitalizations; and motor vehicle crashes.  These drugs produce minimal improvement in sleep latency and duration.	<b>None recommended by The American Geriatrics Society; however, may consider the following:</b>  ROZEREM trazodone temazepam <sup>BEERS</sup> <small><sup>BEERS</sup> Not recommended by The American Geriatrics Society because of increased risk for cognitive impairment, delirium, falls, fractures, and motor vehicle accidents.</small>
Vasodilators for dementia	ergoloid mesylates (HYDERGINE) isoxsuprine (VASODILAN)	Lack of efficacy	donepezil (generic for Aricept) galantamine (generic for Razadyne) rivastigmine (generic for Exelon) memantine (generic for Namenda) NAMENDA XR
Endocrine	desiccated thyroid (ARMOUR THYROID, NP THYROID)  estrogens <b>CONJUGATED ESTROGEN</b> CENESTIN, ENJUVIA, PREMARIN	There are concerns about cardiac effects with desiccated thyroid and safer alternatives are available.  There is evidence of potential breast and endometrium cancer. There is a lack of cardioprotective effect and cognitive protection in older women.	levothyroxine (generic for Levoxyl, Synthroid, Unithroid) liothyronine (generic for Cytomel) THYROLAR (levothyroxine/liothyronine) TIROSINT (levothyroxine capsule) <b>For dyspareunia and vulvovaginitis:</b> ESTRING ESTRACE VAGINAL CREAM

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	<p><b>CONJUGATED ESTROGEN COMBINATIONS</b> DUAVEE, PREMPHASE, PREMPRO</p> <p><b>ESTERIFIED ESTROGEN</b> MENEST</p> <p><b>ESTERIFIED ESTROGEN &amp; METHYLTESTOSTERONE</b> COVARYX, COVARYX H.S., EEMT, EEMT HS, ESSIAN, ESSIAN HS, ESTRATEST, ESTRATEST HS, SYNTEST DS, SYNTEST HS</p> <p><b>ESTRADIOL</b> ALORA, CLIMARA, DELESTROGEN, DEPGYNOGEN, DEPO-ESTRADIOL, DEPOGEN, DIVIGEL, ELESTRIN, ESCLIM, ESTRACE, ESTRADERM, ESTRASORB, ESTRING, ESTROGEL, EVAMIST, FEMPATCH, FEMRING, GYNODIOL, GYNOGEN LA, MENOSTAR, MINIVELLE VALERGEN VIVELLE VIVELLE DOT</p> <p><b>ESTRADIOL COMBINATIONS</b> ACTIVELLA, COMBIPATCH, LOPREEZA, MIMVEY, MIMVEY LO</p>		<p>PREMARIN VAGINAL CREAM</p> <p>VAGIFEM</p> <p>Yuvafem</p> <p><b>For vasomotor symptoms:</b></p> <p><b>SSRI's</b></p> <p>citalopram (generic for Celexa)</p> <p>fluoxetine (generic for Prozac)</p> <p>paroxetine (generic for Paxil)</p> <p><b>SNRI's</b></p> <p>Desvenlafaxine ER</p> <p>PRISTIQ</p> <p>venlafaxine (generic for Effexor)</p> <p>venlafaxine ER (generic for Effexor XR)</p>
	megestrol (MEGACE, MEGACE ES)	Megestrol has minimal effect on weight and increases risk of thrombotic events, and possibly death, in older adults.	None recommended by The American Geriatrics Society.
Sulfonylureas, long-duration	chlorpropamide (DIABINESE)	Chlorpropamide has a prolonged half-life in older adults that can cause prolonged hypoglycemia.	<p>glimepiride (generic for Amaryl)</p> <p>glipizide (generic for Glucotrol)</p>
		Causes syndrome of inappropriate antidiuretic hormone secretion.	<p>glipizide ER (generic for Glucotrol XL)</p>
	glyburide (DIABETA, GLYNASE, MICRONASE)	Glyburide has a higher risk of severe prolonged hypoglycemia in older adults.	<p>glimepiride (generic for Amaryl)</p> <p>glipizide (generic for Glucotrol)</p> <p>glipizide ER (generic for Glucotrol XL)</p>
Gastrointestinal	trimethobenzamide (TIGAN)	One of the least effective antiemetic drugs; can cause extrapyramidal adverse effects (agitation, abnormal or involuntary movement, and pseudoparkinsonism)	<p><b>None recommended by The American Geriatrics Society; however, may consider the following:</b></p> <p>prochlorperazine</p>
Pain medications	meperidine (DEMEROL)	Not effective as a pain reliever in commonly used doses. Meperidine may have a higher risk of neurotoxicity, including delirium, compared to other opioids.	<p>morphine sulfate immediate-release</p> <p>morphine sulfate extended-release 12-hour capsule</p> <p>morphine sulfate extended-release tablet</p>

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	pentazocine (TALACEN, TALWIN, TALWIN COMPOUND, TALWIN NX)	Causes CNS adverse effects more commonly than other opioid analgesics, including confusion and hallucinations. This drug is also a mixed agonist and antagonist.	oxycodone/acetaminophen (generic for Percocet) tramadol (generic for Ultram) hydromorphone oxycodone oxymorphone hydrocodone/acetaminophen	
Non-COX-selective NSAIDS	indomethacin (INDOCIN) ketorolac (SPRIX, TORADOL)  v	Increased risk of gastrointestinal bleeding, peptic ulcer disease, and acute kidney injury in older adults compared to other NSAID's.	acetaminophen (generic for Tylenol) ibuprofen <sup>BEERS</sup> (generic for Motrin) naproxen <sup>BEERS</sup> (generic for Naprosyn) diclofenac	OTC <sup>1</sup>
Skeletal muscle relaxants	carisoprodol (SOMA) chlorzoxazone (LORSONE, PARAFON FORTE DSC) cyclobenzaprine (FLEXERIL) metaxalone (SKELAXIN) methocarbamol (ROBAXIN) orphenadrine (NORFLEX)	Most muscle relaxants are poorly tolerated by older adults because some have anticholinergic adverse effects, sedation, and increased risk of fractures.	acetaminophen (generic for Tylenol) ibuprofen <sup>BEERS</sup> (generic for Motrin) naproxen <sup>BEERS</sup> (generic for Naprosyn) diclofenac  <sup>BEERS</sup> Use only if no heart failure and estimated GFR > 30 mL/min. <sup>BEERS</sup> Use PPI combination if used > 7 days. <b>The following may also be considered, but are not recommended by the American Geriatrics Society:</b> baclofen tizanidine <sup>BEERS</sup> <sup>BEERS</sup> Avoid use of tizanidine in men because of urinary retention.	OTC <sup>1</sup>

**References**

1. Pharmacy Quality Alliance. *Use of High-Risk Medications in the Elderly (HRM)*. Available at: <http://pqaalliance.org/images/uploads/files/HRM2015.pdf>, last accessed Jan. 5, 2016.
2. American Geriatrics Society 2015 Beers Criteria Update Expert Panel. *American Geriatrics Society 2015 Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults*. JAGS 2015; 1-20.
3. 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. JAGS 2015; 1-11.
4. *Clinical Pharmacology*. Elsevier Gold Standard. Available at: <https://www.clinicalpharmacology.com/>.

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