

Potentially Inappropriate Medications in Older Adults According to Beers List and STOPP Criteria

Note: These guidelines are not applicable in all circumstances. Avoid use when possible. Use with caution when necessary.

CENTRAL NERVOUS SYSTEM

Beers List

Anticholinergic Antidepressants (alone or in combination):

Amitriptyline, amoxapine, clomipramine, desipramine, doxepin (> 6 mg/d) imipramine, nortriptyline, paroxetine, protriptyline, trimipramine

Antipsychotics – 1st (conventional) & 2nd (atypical) generation:

Avoid except in schizophrenia, bipolar or short-term use as antiemetic during chemotherapy.

Increase risk of CVA, increase rate of cognitive decline and mortality in people with dementia.

Barbiturates:

Amobarbital, butabarbital, butalbital, mephobarbital, pentobarbital, phenobarbital, secobarbital

Benzodiazepines (BZDs):

Short- and intermediate-acting: alprazolam, estazolam, lorazepam, oxazepam, temazepam, triazolam

Long-acting BZDs: clorazepate, chlordiazepoxide (alone or in combination with amitriptyline or clidinium), clonazepam, diazepam, flurazepam, quazepam

Non-BZD “Z” Drugs:

Eszopiclone, zaleplon, zolpidem

Others:

Meprobamate, ergoloid, mesylates, isoxsuprine

STOPP Criteria

Tricyclic antidepressants:

- In patients with dementia
- First line for depression

SSRIs with ↓Na

Neuroleptics:

- With anticholinergic s/e
- For behavior in dementia
- Used as hypnotics

Antipsychotics in Parkinsonism or Lewy Body disease:

(except quetiapine and clozapine)

Benzodiazepines:

Used > 4 weeks

Anticholinergic/Antimuscarinics:

- In dementia or delirium
- Used to treat EPS of neuroleptic medications

Phenothiazines:

As first-line treatment

Levodopa or Dopamine:

Agonists used for benign essential tremor

CARDIOVASCULAR

Beers List

Peripheral Alpha-1 Blockers:

Doxazosin, Prazosin, Terazosin

Central Alpha Agonists:

Clonidine for first-line treatment of hypertension (HTN)

Other CNS alpha-agonists:

- Guanabenz
- Methyldopa
- Guanfacine
- Reserpine (> 0.1 mg/d)

Others:

Disopyramide

Dronedarone, amiodarone

Digoxin (for first-line treatment of atrial fibrillation or of heart failure)

Nifedipine (immediate release form)

Acetylcholinesterase inhibitors

Tertiary tricyclic antipsychotics

Antipsychotics:

- Chlorpromazine
- Thioridazine
- Olanzapine

Trimethoprim-sulfamethoxazole (with ACE inhibitor or ARB and decreased creatinine clearance)

In patients with heart failure:

NSAIDs, COX-2 inhibitors, non-dihydropyridine calcium channel blockers, thiazolidinediones, cilostazol, dronedarone

STOPP Criteria

Centrally acting anti-hypertensives:

- Methyldopa
- Clonidine
- Guanfacine

Loop diuretic for:

- HTN first-line
- Dependent ankle edema
- HTN with urinary incontinence

Others:

- Digoxin for heart failure
- Diltiazem and Verapamil in New York Heart Association (NYHA) class 3-4 heart failure
- Beta blockers when heart rate less than 50 beats/min
- Amiodarone first-line for supraventricular tachycardia (SVT)



ENDOCRINE

Beers List

Androgens:

- Methyltestosterone
- Testosterone

Desiccated thyroid:

- Estrogens with or without progestines (oral or transdermal – excludes intravaginal estrogen)

Growth hormone

Sliding scale insulin:

- Insulin regimens containing only short- or rapid-acting insulin dosed according to current blood glucose levels without concurrent use of basal or long-acting insulin

Long-acting Sulfonylureas:

- Chlorpropamide
- Glimepiride
- Glyburide (aka glibenclamide)

STOPP Criteria

- Sulfonylureas with prolonged duration of action in type 2 diabetes mellitus:
 - Chlorpropamide
 - Glimepiride
- Thiazolidinediones in persons with heart failure
 - Rosiglitazone
 - Pioglitazone
- Beta blockers in persons with diabetes mellitus with frequent hypoglycemic episodes
- Estrogens in people with history of breast cancer or venous thromboembolism
- Estrogens without progesterone in women with an intact uterus
- Androgens in the absence of primary or secondary hypogonadism

ANALGESICS

Beers List

Non-cyclooxygenase-2 (Non-COX-2) NSAIDs:

Aspirin > 325 mg/day, diclofenac, diflunisal, etodolac, fenoprofen, ibuprofen, ketoprofen, meclofenamate, mefenamic acid, meloxicam, nabumetone, naproxen, oxaprozin, piroxicam, sulindac, tolmetin, indomethacin, ketorolac (includes parenteral)

Other:

Meperidine

STOPP Criteria

- Use of oral or transdermal “strong” opioids as first-line therapy for mild pain:
 - Morphine
 - Oxycodone
 - Fentanyl
 - Buprenorphine
 - Methadone
 - Tramadol
- Use of regular, scheduled opioids without a scheduled laxative
- Use of long-acting opioids without short-acting opioids for breakthrough pain

DRUGS THAT INCREASE RISK OF FALLS

Beers List

Anticonvulsants

Antipsychotics

Benzodiazepines

Tricyclic antidepressants (TCAs)

Serotonin reuptake inhibitors (SSRIs)

Serotonin norepinephrine reuptake inhibitors (SNRIs)

Opioids

Non-benzodiazepine, benzodiazepine receptor agonists (Non-BZD “Z” drugs):

- Eszopiclone
- Zaleplon
- Zolpidem

STOPP Criteria

Benzodiazepines (BZDs)

Neuroleptic drugs

Vasodilator drugs with persistent postural hypotension:

- Alpha-1 receptor blockers
- Calcium channel blockers
- Nitrates (long-acting)
- ACE inhibitors
- ARBs
- Minoxidil
- Hydralazine

Hypnotic Non-benzodiazepine, benzodiazepine receptor agonists (Non-BZD “Z” drugs):

- Eszopiclone
- Zaleplon
- Zolpidem

MUSCULOSKELETAL

Beers List

Carisoprodol, cyclobenzaprine, chlorzoxazone, metaxalone, methocarbamol, orphenadrine

STOPP Criteria

- Non-COX-2 selective NSAIDs without concurrent proton pump inhibitor (PPI) or H2 antagonist in persons with history of peptic ulcer disease or gastrointestinal bleeding
- NSAID with established hypertension or heart failure
- Long-term use of NSAIDs (> 3 months) for relief of osteoarthritis symptom pain where paracetamol has not been tried (use simple analgesics first)
- Long-term corticosteroid use (> 3 months) as monotherapy for rheumatoid arthritis
- Oral corticosteroid use for osteoarthritis
- Long-term NSAID or colchicine use for prevention of gout relapse (use xanthine-oxidase inhibitors first-line if not contraindicated)
- COX-2 NSAIDs in concurrent cardiovascular disease
- NSAID with corticosteroids without PPI
- Oral bisphosphonates in persons with history of upper gastrointestinal disease



ANTICHOLINERGICS

Beers List

First Generation Antihistamines:

Brompheniramine, carbinoxamine, chlorpheniramine, clemastine, cyproheptadine, dexbrompheniramine, dexchlorpheniramine, dimenhydrinate, diphenhydramine (oral), doxylamine, hydroxyzine, meclizine, promethazine, pyrilamine, triprolidine

Antiparkinsonian Agents:

Benzotropine, trihexyphenidyl

Antispasmodics:

Atropine (excludes ophthalmic), belladonna alkaloids, clindinium-chlordizepoxide, dicyclomine, homatropine (excludes ophthalmic), hyoscyamine, methscopolamine, propantheline, scopolamine

Antidepressants:

Amitriptyline, amoxapine, clomipramine, desipramine, doxepin (> 6mg), imipramine, nortriptyline, paroxetine, protriptyline, trimipramine

Antimuscarinics:

Darifenacin, fesoterodine, flavoxate, oxybutinin, solifenacin, tolterodine, trospium

Antipsychotics:

Chlorpromazine, clozapine, loxapine, olanzapine, perphenazine, thioridazine, trifluoperazine

Skeletal muscle relaxants:

Cyclobenzaprine, orphenadrine

Antiarrhythmic:

Disopyramide

Antiemetics:

Metoclopramide, prochloroperazine, promethazine

STOPP Criteria

- Concomitant use of two or more drugs with antimuscarinic/anticholinergic properties – examples:
 - Bladder antispasmodics
 - Intestinal antispasmodics
 - Tricyclic antidepressants
 - First generation antihistamines

ANTITHROMBOTIC

Beers List (Avoid)

Dipyridamole – oral, short-acting (does not apply to the extended-release combination with aspirin)

Warfarin used with amiodarone

Warfarin used with NSAIDs

Warfarin used with ciprofloxacin

Warfarin used with macrolides (excluding azithromycin)

Warfarin used with trimethoprim-sulfamethoxazole

Beers List (Use With Caution)

Aspirin for primary prevention of cardiac disease and colorectal cancer

Dabigatran

Prasugrel

Rivaroxaban

STOPP Criteria

Aspirin, clopidogrel, dipyridamole, vitamin K antagonist, direct thrombin inhibitor, factor Xa inhibitors in patients with a high risk for bleeding

GASTROINTESTINAL AND GENITORURINARY

Beers List – Gastrointestinal

Aspirin (> 325 mg)

Non-COX-2 selective NSAIDs

Metoclopramide (unless for gastroparesis with duration of use not to exceed 12 weeks except in rare cases)

Mineral oil, administered orally

PPIs (avoid scheduled use > 8 weeks unless person at high risk)

STOPP Criteria – Gastrointestinal

- Prochlorperazine or metoclopramide with Parkinsonian symptoms
- PPIs for uncomplicated peptic ulcer disease or erosive peptic esophagitis at full therapeutic dosage for > 8 weeks
- Drugs likely to cause constipation in persons with chronic constipation where non-constipating alternatives are appropriate
 - Antimuscarinic/anticholinergic drugs
 - Opioids
 - Verapamil
 - Aluminum antacids
- Oral elemental iron doses greater than 200 mg/day – examples:
 - Ferrous fumarate
 - Ferrous gluconate
 - Ferrous sulfate
 - Polysaccharide-iron complex (PIC)
 - PIC plus folic acid
 - Vitamin B12

Beers List – Genitourinary

Desmopressin for nocturia or nocturnal polyuria

STOPP Criteria – Genitourinary

- Selective alpha-1 blockers in persons with symptomatic orthostatic hypotension or micturition syncope
- Antimuscarinic drugs for overactive bladder in persons with:
 - Dementia or chronic cognitive impairment
 - Narrow-angle glaucoma
 - Chronic prostatism

Aspirin:

- > 160 mg daily long-term use
- With history of peptic ulcer disease without concomitant PPI
- Plus clopidogrel as secondary stroke prevention

Vitamin K antagonist, direct thrombin inhibitor or factor Xa inhibitors:

- With antiplatelet agents in patients with stable coronary, cerebrovascular or peripheral arterial disease without a clear indication for anticoagulant therapy
- In combination with aspirin in patients with chronic atrial fibrillation
- For > 6 months for first deep venous thrombosis (DVT) or > 12 months for first pulmonary embolus without continuing risk factors

Ticlopidine in any circumstance

NSAIDs:

- In combination with vitamin K antagonist, direct thrombin inhibitor or factor Xa inhibitors
- In combination with antiplatelets without PPI prophylaxis



RENAL

Beers List

NSAIDs (non-COX and COX- selective, oral and parenteral, nonacetylated salicylates) in chronic kidney disease (CKD) stage IV or creatinine clearance < 30 ml/min

Reduce dose if CrCl:

Dofetilide 20-59 ml/min
Edoxaban 15-50 ml/min
Enoxaparin < 30 ml/min
Rivaroxaban 15-50 ml/min for nonvalvular atrial fibrillation
Gabapentin < 60 ml/min
Levetiracetam < 80 ml/min
Pregabalin < 60 ml/min
Tramadol immediate release < 30 ml/min
Cimetidine < 50 ml/min
Famotidine < 50 ml/min
Nizatidine < 50 ml/min
Ranitidine < 50 ml/min
Colchicine < 30 ml/min

Avoid use if CrCl:

Amiloride < 30 ml/min
Apixaban < 25 ml/min
Dabigatran < 30 ml/min
Dofetilide < 20 ml/min
Edoxaban < 15 or > 95 ml/min
Fondaparinux < 30 ml/min
Rivaroxaban < 30 ml/min
Spironolactone < 30 ml/min
Triamterene < 30 ml/min
Duloxetine < 30 ml/min
Tramadol extended-release form
Probenecid < 30 ml/min
Nitrofurantoin < 30 ml/min
Ciprofloxacin < 30 ml/min
Trimethoprim-Sulfamethoxazole < 30 ml/min

STOPP Criteria

Avoid use if eGFR:

Digoxin < 30 ml/min/1.73 m²
Direct thrombin inhibitors < 30 ml/min/1.73 m²
Factor Xa inhibitors < 15 ml/min/1.73 m²
NSAIDs < 50 ml/min/1.73 m²
Colchicine < 10 ml/min/1.73 m²
Metformin < 30 ml/min/1.73 m²

MISCELLANEOUS

Beers List

Drugs that exacerbate or cause SIADH or hyponatremia:

Antipsychotics¹, carbamazepine, diuretics, mirtazapine, SNRIs, SSRIs, TCAs, tramadol

Drugs that can induce or worsen delirium:

Anticholinergics
Antipsychotics¹
Benzodiazepines
Corticosteroids (oral or parenteral²)

H2-receptor antagonists:

- Cimetidine
- Famotidine
- Nizatidine
- Ranitidine

Meperidine

Non-benzodiazepine, benzodiazepine receptor agonist hypnotics (non-BZD "Z" drugs):

- Eszopiclone
- Zaleplon
- Zolpidem

Drugs that worsen dementia or cognitive impairment:

Anticholinergics
Antipsychotics¹, chronic and as-needed use
Non-benzodiazepine, benzodiazepine receptor agonist hypnotics (non-BZD "Z" drugs):

- Eszopiclone
- Zaleplon
- Zolpidem

Dextromethorphan/quinidine (does not apply to Pseudobulbar Affect)

Drugs that worsen Parkinson's Disease:

Antiemetics:

- Metoclopramide
- Prochlorperazine
- Promethazine

All antipsychotics (except clozapine, pimavanserin, quetiapine - none of these are ideal in efficacy or safety)

STOPP Criteria

Respiratory:

- Theophylline as monotherapy for COPD
- Systemic corticosteroids instead of inhaled corticosteroids for maintenance therapy in moderate-severe COPD
- Anti-muscarinic bronchodilators with history of glaucoma or bladder outlet obstruction
- Benzodiazepines with acute or chronic respiratory failure