DOWNSTATE HEALTH SCIENCES UNIVERSITY

Age Friendly Medication Recommendations

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
Antihistamines		
First-generation antihistamines Brompheniramine Chlorpheniramine **Cyproheptadine** Dimenhydrinate **Diphenhydramine (oral)** Doxylamine **Hydroxyzine** **Meclizine** **Promethazine** Triprolidine	• Highly anticholinergic • Clearance reduced with advanced age • Tolerance develops when used as hypnotic • Risk of confusion, dry mouth, constipation, and other anticholinergic effects or toxicity • Cumulative exposure associated with an increased risk of falls, delirium, and dementia • Use of diphenhydramine in situations such as acute treatment of severe allergic reactions may be appropriate	Allergic Rhinitis and Associated Symptoms • **Loratadine PO** • **Fluticasone nasal spray** • **Artificial tears** Pruritus • **Loratadine PO** • **White Petrolatum (Aquaphor, Eucerin)** • **Lidocaine topical** • **Topical steroids (e.g., hydrocortisone, triamcinolone)** For Cyproheptadine as Appetite Stimulant – Consider dietary consultation
Anti-infective		
Ciprofloxacin	CrCl <30 mL/min – Increased risk of CNS effects (e.g., seizures, confusion) and tendon rupture	• PO: CrCl <30 mL/min, 500 mg every 24 hours • IV: CrCl <30 mL/min, 200-400 mg every 12-24 hours
Nitrofurantoin	Potential for pulmonary toxicity, hepatoxicity, and peripheral neuropathy, especially with long-term use	Avoid if CrCl <30 mL/min
Sulfamethoxazole-Trimethoprim	CrCl <30 mL/min – Risk of worsening of kidney function and hyperkalemia	• CrCl 15-30 mL/min, 50% of recommended dose • CrCl <15 mL/min, 25-50% of recommended dose
Antiplatelets		
Aspirin For primary prevention of cardiovascular disease	Risk of major bleeding Note: Aspirin is generally indicated for secondary prevention in older adults with established cardiovascular disease.	• Avoid initiating aspirin for primary prevention of cardiovascular disease • Consider deprescribing aspirin in older adults already taking it for primary prevention
Prasugrel	Increased risk of major bleeding	Consider lower dose (5 mg) for those 75 years old and older
Ticagrelor	Increased risk of major bleeding	Use with caution in adults 75 years old and older

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
Antithrombotics		
Dabigatran For long-term treatment of nonvalvular atrial fibrillation or venous thromboembolism (VTE)	• Increased risk of GI and major bleeding • CrCl <30 mL/min – Lack of evidence for efficacy and safety	• Use caution in selecting dabigatran over other DOACs • CrCl 15-30 mL/min: 75 mg twice daily
Enoxaparin	CrCl <30 mL/min – Increased risk of bleeding	CrCl <30 mL/min: • For Prophylaxis, 30 mg every 24 hours • For Treatment, administer every 24 hours • Consider Unfractionated Heparin
Fondaparinux	CrCl <30 mL/min – Increased risk of bleeding	CrCl <30 mL/min: Contraindicated
Warfarin For the treatment of nonvalvular atrial fibrillation or venous thromboembolism (VTE)	Higher risks of major bleeding (particularly intracranial bleeding) and similar or lower effectiveness for the treatment of nonvalvular atrial fibrillation and VTE, when compared to DOACs	• Avoid unless alternatives (i.e., DOACs) contraindicated or there are substantial barriers to their use. • May be reasonable to continue, particularly among those with well-controlled INRs (i.e., >70% time in the therapeutic range) and no adverse effects • **DOACs: Apixaban or Rivaroxaban** • For long-term treatment of VTE, guidelines suggest reducing dose of certain agents after 6 months (e.g., for apixaban, reduce dose to 2.5mg twice daily after 6 months). • Consider nonpharmacologic alternatives, e.g., percutaneous left atrial appendage occlusion and surgical left atrial appendage ligation or removal in selected patients
Rivaroxaban For long-term treatment of nonvalvular atrial fibrillation or venous thromboembolism (VTE)	• Increased risk of major bleeding and GI bleeding in older adults than other DOACs, particularly apixaban • CrCl <15 mL/min - Lack of efficacy or safety evidence	Avoid if CrCl <15 mL/min For Atrial Fibrillation CrCl 15-50 mL/min: 15 mg daily with the evening meal

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
Non-selective alpha-1 blockers **Doxazosin** **Prazosin** Terazosin	High risk of orthostatic hypotension	• First-line agents: Thiazide diuretics, CCBs, ACEIs, and ARBs • Beta blockers in selected cases (e.g., recent MI or acute coronary syndrome, HFrEF, AF, or angina) • For resistant HTN: **Spironolactone** and **Hydralazine**, after considering other causes of resistant HTN (e.g., medication non-adherence, hyperaldosteronism) • Alternatives to immediate-release nifedipine include other CCBs (e.g., **Amlodipine, Nifedipine ER**)
Central alpha-agonists **Clonidine** Guanfacine	• High risk of adverse CNS effects • May cause bradycardia and orthostatic hypotension	
Nifedipine, immediate release	Potential for hypotension; risk of precipitating myocardial ischemia	
Antiarrhythmic Agents		
Amiodarone	• Greater toxicities than other antiarrhythmics used in atrial fibrillation • Reasonable first-line therapy in patients with concomitant heart failure or substantial left ventricular hypertrophy for rhythm control	For Rhythm Control: • **Dofetilide** and **Sotalol** • **Dronedarone, Flecainide**, and Propafenone if the patient has normal LV function, no CAD or prior MI, and no significant structural heart disease (e.g., LVH) For Rate Control: • Beta-blockers - **Metoprolol** • Non-dihydropyridine calcium channel blockers (**Diltiazem, Verapamil**) if the patient has LVEF >40% For Digoxin Only: • Initiate guideline-directed medical therapy for HFrEF • First line agents: **Sacubitril/Valsartan** (or an **ACEI/ARB** if Sacubitril/Valsartan is not tolerated or unaffordable), **Beta blocker, MRA, and SGLT2i** • **Hydralazine-Nitrates** may be used for Black patients with NYHA class III-IV HFrEF • Use **diuretics** as needed for fluid retention
Dronedarone	Worse outcomes in people who have permanent atrial fibrillation or severe or recently decompensated heart failure with HFrEF (e.g., left ventricular ejection fraction ≤35%) who have milder symptoms (NYHA class I or II)	
Digoxin For first-line treatment of atrial fibrillation or heart failure	• Should not be used as a first-line agent • If used for atrial fibrillation or heart failure, avoid dosages >0.125 mg/day • Decreased renal clearance of digoxin may lead to an increased risk of toxic effects	
Dofetilide	CrCl <60 mL/min – QTc prolongation and torsades de pointes	• CrCl 40-60 mL/minute: 250 mcg twice daily • CrCl 20-39 mL/minute: 125 mcg twice daily • CrCl <20 mL/minute: Contraindicated

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
Diuretics		
Amiloride	CrCl <30 mL/min – Risk of Hyperkalemia and hyponatremia	Avoid
Spironolactone	CrCl <30 mL/min – Risk of Hyperkalemia	Avoid
Triamterene	CrCl <30 mL/min – Risk of Hyperkalemia and hyponatremia	Avoid
Central Nervous System Agents		
Antidepressants with strong anticholinergic activity, alone or in combination **Amitriptyline** Amoxapine Clomipramine Desipramine Doxepin >6 mg/day Imipramine **Nortriptyline** Paroxetine	Highly anticholinergic, sedating, and cause orthostatic hypotension	• Avoid if possible • If needed, Consider TCA without active metabolites: **Nortriptyline** • Alternative Antidepressants: **Sertraline**, Citalopram
Duloxetine	CrCl <30 mL/min – Increased GI adverse effects (nausea, diarrhea)	Avoid
Gabapentin **Pregabalin** **Levetiracetam**	Risk of CNS adverse effects: • CrCl <60 mL/min for Gabapentin and Pregabalin • CrCl ≤80 mL/min for Levetiracetam	Gabapentin CrCl 30 to 59 mL/min, 400-1400 mg/day CrCl 15 to 29 mL/min, 200-700 mg/day CrCl <15 mL/min, 100-300 mg/day Pregabalin CrCl 30-60 mL/min, 75-300 mg/day in 2 to 3 divided doses CrCl 15-30 mL/min, 25-150 mg/day daily or 2 divided doses CrCl <15 mL/min, 25-75 mg daily

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
		Levetiracetam CrCl 50 to 80 mL/min, 500-1000 mg every 12 h CrCl 30 to 50 mL/min, 250-750 mg every 12 h CrCl <30 mL/min, 250-500 mg every 12 h
Carbamazepine **Oxcarbazepine**	May exacerbate or cause SIADH or hyponatremia	Use with cautions – No dose adjustment necessary Monitor sodium levels when starting or changing dosages
Antiparkinsonian agents with strong anticholinergic activity **Benztropine (oral)** Trihexyphenidyl	Not recommended for prevention or treatment of extrapyramidal symptoms due to antipsychotics	For Parkinson's Disease • First-line: **Levodopa** (often in combination with **Carbidopa**) and dopamine agonists (Ropinirole, Pramipexole) are typically preferred • **Amantadine** can be useful for managing levodopa-induced dyskinesia and "off" time in advanced disease but should be used with caution For Tardive Dyskinesia • Reversible causes of tardive dyskinesia should be identified and addressed, including medications and deprescribing attempts (e.g., Metoclopramide, Haloperidol)
Antipsychotics, first- (typical) and second- (atypical) generation **Aripiprazole** **Haloperidol** **Olanzapine** **Quetiapine** **Risperidone** Others	Increased risk of stroke and greater rate of cognitive decline and mortality in persons with dementia If used, periodic deprescribing attempts should be considered to assess ongoing need and/or the lowest effective dose.	• Avoid, except in FDA-approved indications such as schizophrenia, bipolar disorder, Parkinson disease psychosis, adjunctive treatment of major depressive disorder, or for short-term use as an antiemetic • Use the lowest possible dose for the least amount of time, combine with non-pharmacological strategies For Insomnia There is insufficient evidence to recommend **Trazodone, Mirtazapine, Melatonin**, and other medications commonly prescribed for older adults with insomnia disorder.
Barbiturates Butalbital **Phenobarbital** **Primidone**	High rate of physical dependence, tolerance to sleep benefits, greater risk of overdose at low dosages	

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
Benzodiazepines **Alprazolam** **Chlordiazepoxide** **Clobazam** **Clonazepam** Clorazepate **Diazepam** Estazolam **Lorazepam** **Midazolam** Oxazepam Temazepam Triazolam	• Risks of abuse, misuse, and addiction • Concomitant use of opioids may result in profound sedation, respiratory depression, coma, and death • Older adults have increased sensitivity to benzodiazepines and decreased metabolism of long-acting agents; the continued use of benzodiazepines may lead to clinically significant physical dependence • In general, all benzodiazepines increase the risk of cognitive impairment, delirium, falls, fractures, and motor vehicle crashes in older adults • May be appropriate for seizure disorders, rapid eye movement sleep behavior disorder, benzodiazepine withdrawal, ethanol withdrawal, severe generalized anxiety disorder, and periprocedural anesthesia	Guidelines do not recommend these drugs for insomnia disorder in adults. For Anxiety Symptoms Generalized Anxiety Disorder: **Escitalopram, Sertraline**, Venlafaxine, **Duloxetine, Buspirone, Pregabalin** – Panic Disorder: **Sertraline, Escitalopram**, Venlafaxine – Social Anxiety Disorder: **Sertraline, Escitalopram**, Venlafaxine (also: Beta blocker, e.g., **Propranolol**, for performance-only anxiety) – PTSD, global symptoms: **Sertraline**, Venlafaxine – PTSD, nightmares: **Prazosin**
Nonbenzodiazepine receptor agonist hypnotics (“Z-drugs”) Eszopiclone Zaleplon **Zolpidem**	Delirium, falls, fractures, increased emergency room visits/hospitalizations, motor vehicle crashes)	
Meprobamate For Anxiety Symptoms	High rate of physical dependence; very sedating	
Analgesics		
Non-COX-2-selective NSAIDs, oral: **Aspirin >325 mg/day** Diclofenac Diflunisal Etodolac Flurbiprofen **Ibuprofen** **Indomethacin**	Increased risk of GI bleeding or 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 1% of patients treated for 3–6 months and in 2%–4% of patients	• Avoid chronic use unless other alternatives are not effective and the patient can take a gastroprotective agent (proton-pump inhibitor or misoprostol). • Avoid short-term scheduled use in combination with oral or parenteral corticosteroids, anticoagulants, or antiplatelet agents unless other alternatives are not effective and the patient can take a gastroprotective agent (proton-pump inhibitor or misoprostol).

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
Ketorolac Meloxicam Nabumetone **Naproxen** Oxaprozin Piroxicam Sulindac	treated for 1 year; these trends continue with longer duration of use. Also, can increase blood pressure and induce kidney injury. Risks are dose-related.	• For nociceptive pain: Instead of Meperidine, choose a different opioid. • Instead of skeletal muscle relaxants or long-term use of NSAIDs, consider the following: – Short term use of NSAIDs – Topical NSAIDs (e.g., **Diclofenac gel**) – COX-2 selective inhibitors (e.g., **Celecoxib**) – Other topical agents, including **Capsaicin** and related agents (e.g., menthol-containing ointments), **Lidocaine** – **Acetaminophen** – Intra-articular corticosteroids • For neuropathic pain: Instead of TCAs, consider the following – SNRIs (e.g., **Duloxetine**) – **Gabapentin, Pregabalin** – Other topical agents, including **Capsaicin**, Menthol, **Lidocaine**
Indomethacin **Ketorolac (oral and parenteral)**	Increased risk of GI bleeding/peptic ulcer disease and acute kidney injury and risk of adverse CNS effects	
<u>Skeletal muscle relaxants</u> **Baclofen** Carisoprodol Chlorzoxazone **Cyclobenzaprine** Metaxalone Methocarbamol Orphenadrine	Poorly tolerated by older adults due to anticholinergic adverse effects, sedation, and increased risk of fractures Baclofen: eGFR <60 mL/minute/1.73 m^2 – Increased risk of encephalopathy requiring hospitalization	<u>Baclofen</u> • CrCl 50-80 mL/min: 5 mg every 12 hours, titrate cautiously; do not exceed 50 mg/day or ~66% of the usual maximum daily dose, whichever is less. • CrCl 30 to <50 mL/min: 2.5 mg every 8 hours; titrate cautiously; do not exceed 40 mg/day or ~50% of the usual maximum daily dose, whichever is less. • CrCl <30 mL/minute: Avoid if possible or 2.5 mg every 12 hours or less; titrate with extreme caution; do not exceed 20 mg/day or ~33% of the usual maximum daily dose, whichever is less.

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
Tramadol	• CrCl <30 mL/min – Risk of CNS adverse effects • May exacerbate or cause SIADH or hyponatremia	• Immediate release: Increase dosing interval to every 12 hours; maximum: 200 mg/day • Monitor sodium levels closely when starting or changing dosages
Endocrine Agents		
Androgens Methyltestosterone **Testosterone**	Potential for cardiac problems; potential risks in men with prostate cancer	Avoid unless indicated for confirmed hypogonadism with clinical symptoms
Estrogens with or without progestins	Evidence of carcinogenic potential (breast and endometrium); lack of cardioprotective effect and cognitive protection in older women Higher risk of heart disease, stroke, blood clots, and dementia. Evidence indicates that vaginal estrogens for the treatment of vaginal dryness are safe and effective.	• Do not initiate systemic estrogen (e.g., oral tablets or transdermal patches) • Consider deprescribing • Vaginal cream/tablets: use low-dose intravaginal estrogen for the management of dyspareunia, recurrent lower urinary tract infections, and other vaginal symptoms <u>For Genitourinary Syndrome of Menopause (GSM)</u> GSM-associated bladder symptoms: **Vaginal estrogen** <u>For pharmacologic management of overactive bladder symptoms:</u> Consider β-3 agonists over antimuscarinic agents <u>For GSM-associated vaginal atrophy or dyspareunia</u>: – Non-hormonal vaginal lubricants/moisturizers – Intravaginal medications including estrogen, dehydroepiandrosterone (DHEA) <u>For GSM-associated vasomotor symptoms</u> (e.g., hot flashes): SSRIs (Paroxetine, Citalopram, **Escitalopram**) or SNRIs (Venlafaxine), **Gabapentin**

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
		For Recurrent UTIs in Women First-line preventive therapy is **vaginal estrogen** If necessary, prophylactic antibiotics such as Trimethoprim or **Fosfomycin** may be used
Insulin, sliding scale	• Higher risk of hypoglycemia • Avoid insulin regimens that include only short- or rapid-acting insulin dosed according to current blood glucose levels without concurrent use of basal or long-acting insulin. • This recommendation does not apply to regimens that contain basal insulin or long-acting insulin.	Addition of basal insulin and pre-prandial bolus insulin
Sulfonylureas Gliclazide Glimepiride **Glipizide** **Glyburide**	Higher risk of cardiovascular events, all-cause mortality, and hypoglycemia than alternative agents Increase the risk of cardiovascular death and ischemic stroke Long-acting agents (e.g., glyburide, glimepiride) confer a higher risk of prolonged hypoglycemia than short-acting agents (e.g., glipizide)	• Avoid sulfonylureas as first- or second-line monotherapy or add-on therapy unless there are substantial barriers to the use of safer and more effective agents. • If a sulfonylurea is used, choose short-acting agents (e.g., glipizide) over long-acting agents (e.g., glyburide, glimepiride) Alternatives to sulfonylureas: – **Metformin** remains a first-line option; ensure patients are on the maximal tolerated dose (as appropriate given renal function) before increasing other medications. – Alternatives include SGLT2 inhibitors (**Dapagliflozin**), GLP1-RAs, and DPP4 inhibitors (**Sitagliptin**)
Sodium-glucose cotransporter-2 (SGLT2) inhibitors Bexagliflozin Canagliflozin **Dapagliflozin** Empagliflozin Ertugliflozin	Increased risk of urogenital infections and euglycemic diabetic ketoacidosis	Use with caution. Monitor patients for urogenital infections and ketoacidosis.

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
Megestrol For Weight Loss	Minimal effect on weight; increases the risk of thrombotic events and possibly death in older adults.	Treatment should focus on non-pharmacologic strategies
Growth hormone	Impact on body composition is small and associated with edema, arthralgia, carpal tunnel syndrome, gynecomastia, and impaired fasting glucose.	Avoid, except for patients rigorously diagnosed by evidence-based criteria with growth hormone deficiency due to an established etiology.
Gastrointestinal Agents		
H2 Blockers Cimetidine **Famotidine** Nizatidine	CrCl <50 mL/min – Risk of Mental Status Changes	Famotidine: CrCl <50 mL/min, 20 mg Q24H
Proton-pump inhibitors Dexlansoprazole **Esomeprazole** Lansoprazole Omeprazole Pantoprazole Rabeprazole	• Risk of C. difficile infection, pneumonia, GI malignancies, bone loss, and fractures. • Avoid scheduled use for >8 weeks unless for high-risk patients (e.g., oral corticosteroids or chronic NSAID use), erosive esophagitis, Barrett's esophagitis, pathologic hypersecretory condition, or demonstrated need for maintenance treatment (e.g., failure of drug discontinuation trial or H2-RAs) • Avoid use for >8weeks unless indicated for high-risk patients or failure to respond to less intensive therapy.	For GERD and Associated Symptoms • For nocturnal symptoms: H2 receptor antagonists (**Famotidine**) • For those on twice daily PPI: consider dose reduction to once daily, if not complete discontinuation.
Metoclopramide	• Can cause extrapyramidal effects, including tardive dyskinesia; increased risk in frail older adults and with prolonged exposure. • Avoid except for short term management of gastroparesis (do not exceed 12 weeks use)	For Gastroparesis (Chronic) and Associated Nausea • **Ondansetron** for nausea • Consider short course of **Erythromycin** 50–100 mg 4 times daily, 30–45 min before main meals and at bedtime
GI antispasmodics with strong anticholinergic activity For Intestinal Cramping and Diarrhea	Highly anticholinergic, uncertain effectiveness.	For diarrhea: **Loperamide** (for short-term use)

Drug by Therapeutic Category *Bold=Formulary Item*	Rationale	Recommendation / Alternative Treatment
Atropine (excludes ophthalmic) Clidinium-chlordiazepoxide **Dicyclomine** Hyoscyamine Scopolamine		
Mineral oil (Oral) For Constipation	Potential for aspiration and adverse effects	Consider stimulant laxatives (e.g., **Senna**) and/or osmotic laxatives (e.g., **Polyethylene glycol, magnesium-containing laxatives**)
Genitourinary Agents		
Desmopressin For Nocturia and Nocturnal Polyuria	High risk of hyponatremia	• Avoid for treatment of nocturia or nocturnal polyuria • For overactive bladder: **Oxybutynin, Tolterodine** • For men with BPH-associated lower urinary tract symptoms: Tamsulosin, Finasteride
Miscellaneous Agents		
Colchicine	CrCl <30 mL/min – Risk of GI, neuromuscular, and bone marrow toxicity	• Reduce dose; monitor for adverse effects • Initiate prophylaxis at 0.3 mg daily • Dialysis and gout prophylaxis: 0.3 mg twice weekly for gout prophylaxis • Avoid chronic use in hemodialysis • Dialysis and gout treatment: 0.6 mg single dose no more than once every 14 days
Probenecid	Loss of effectiveness in patients with eGFR 30 to 60 mL/minute/1.73 m^2 without increased risk of toxicity	Avoid in individuals with CrCl <30 mL/min

References:

1. 2023 American Geriatrics Society Beers Criteria® Update Expert Panel, "American Geriatrics Society 2023 Updated AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults," Journal of the American Geriatrics Society 71, no. 7 (2023): 2052–2081.
2. J. T. Hanlon, T. P. Semla, and K. E. Schmader, "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," Journal of the American Geriatrics Society 63, no. 12 (2015): e8–e18.
3. American Geriatrics Society Beers Criteria® Alternatives Panel, Steinman MA. Alternative Treatments to Selected Medications in the 2023 American Geriatrics Society Beers Criteria®. J Am Geriatr Soc. 2025 Sep;73(9):2657-2677
4. UpToDate Lexidrug. (2025). Lexi-Drugs [Database]. UpToDate Inc. Retrieved Dec 19, 2025, from https://online.lexi.com/lco/action/home