Timely Topics on Care of Older and Aging Adults

Polypharmacy and Deprescribing

January 12, 2022 | Holly Dorscheid, PharmD, BCACP

AdvocateAuroraHealth

Objectives

Upon completion of the activity the learner should be able to

- Understand general risks associated with polypharmacy in older adults
- Determine when a medication is potentially inappropriate and should be considered for deprescribing
- Identify potential side effects of anticholinergic medications in older adults
- Utilize resources for recognizing potentially inappropriate medications and deprescribing
- Recognize the role of the multidisciplinary team to decrease risk of polypharmacy

Prescribing in Older Adults

13%
of the US Population

30%
of prescription medications

3 to 5
medications prescribed on average

40%
have taken a dietary supplement in the past year

61%
taking at least one prescription

$3 billion
spent on prescription medications annually

1. Williams CM. *Am Fam Physician*. 2002;66(10):1917-1925.

Polypharmacy

Simultaneous use of multiple medications

- Several thresholds for minimum number of medications
- Sometimes defined as prescribing more than clinically indicated

Overall goal to prevent over- and under-prescribing

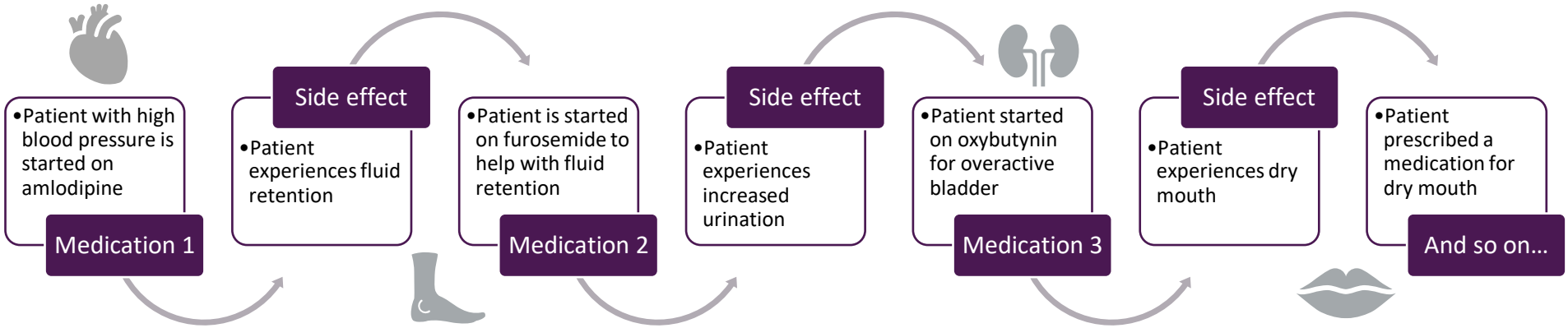
2. Rochon PA. Drug prescribing for older adults. UpToDate. Published April 26, 2021.

Risks of Polypharmacy

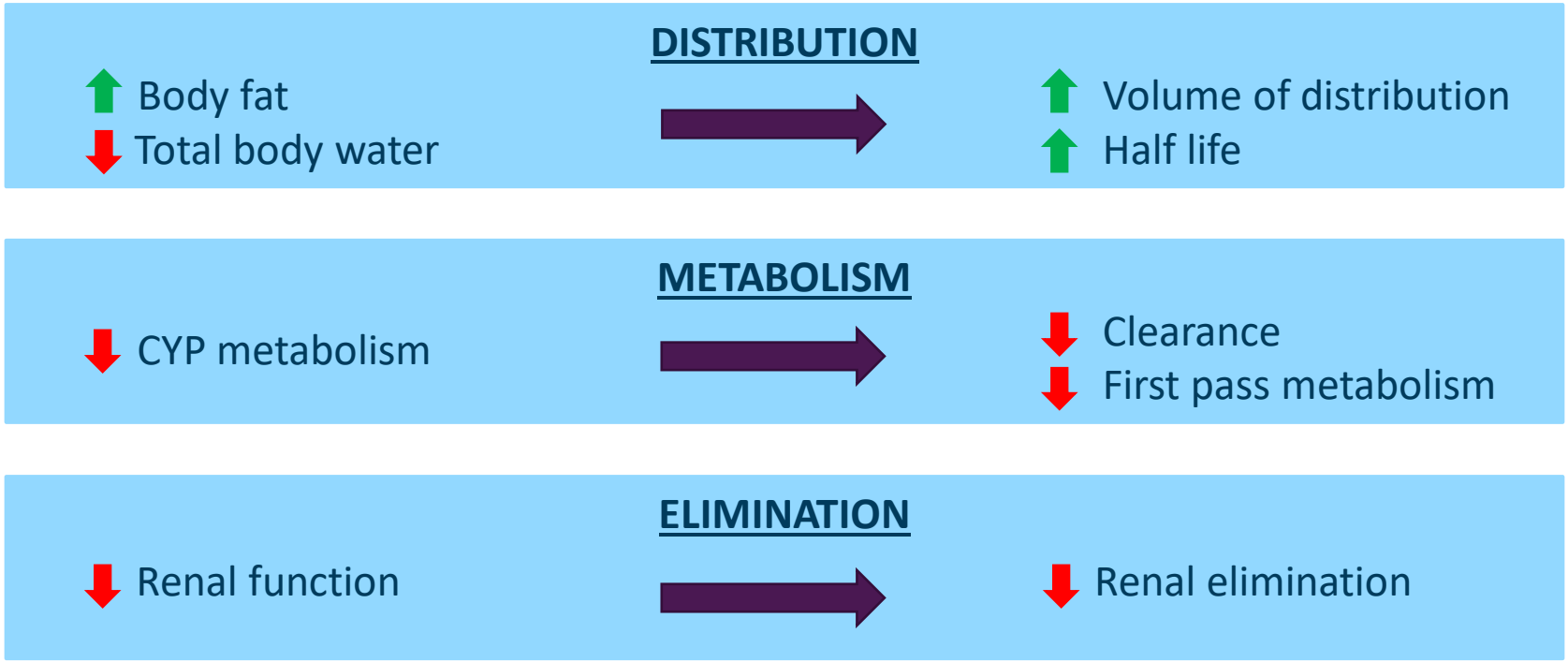
- Adverse drug reactions
- Falls
- Nonadherence
- Drug-drug interactions
- Prescribing cascades
- Increased hospitalizations and cost of care

2. Rochon PA. Drug prescribing for older adults. UpToDate. Published April 26, 2021.
3. Hoel RW, Giddings Connolly RM, Takahashi PY. *Mayo Clinic Proceedings*. 2021;96(1):242-256.

What is a Prescribing Cascade?

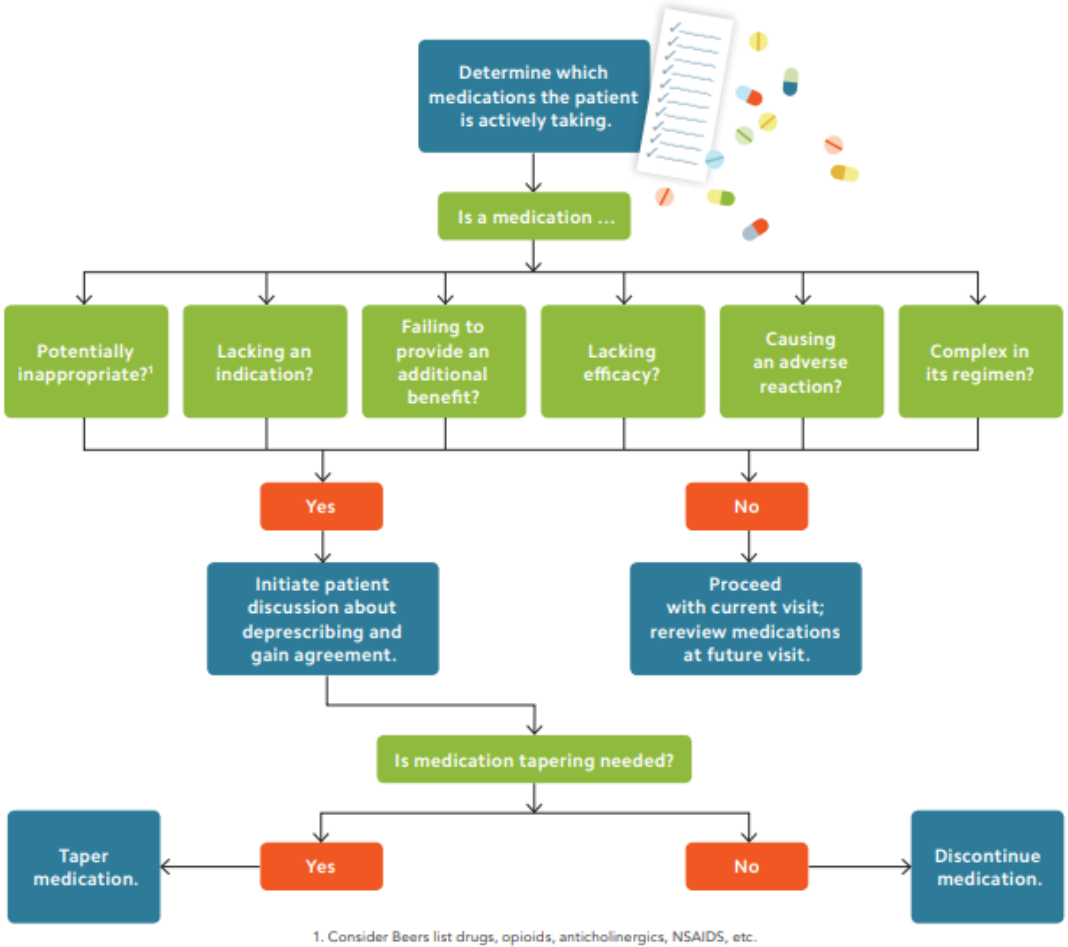


Pharmacokinetics in the Aging Adult



2. Rochon PA. Drug prescribing for older adults. UpToDate. Published April 26, 2021.
4. Ruscin JM, Linnebur SA. Pharmacokinetics in Older Adults. Merck Manual. Published July 2021.

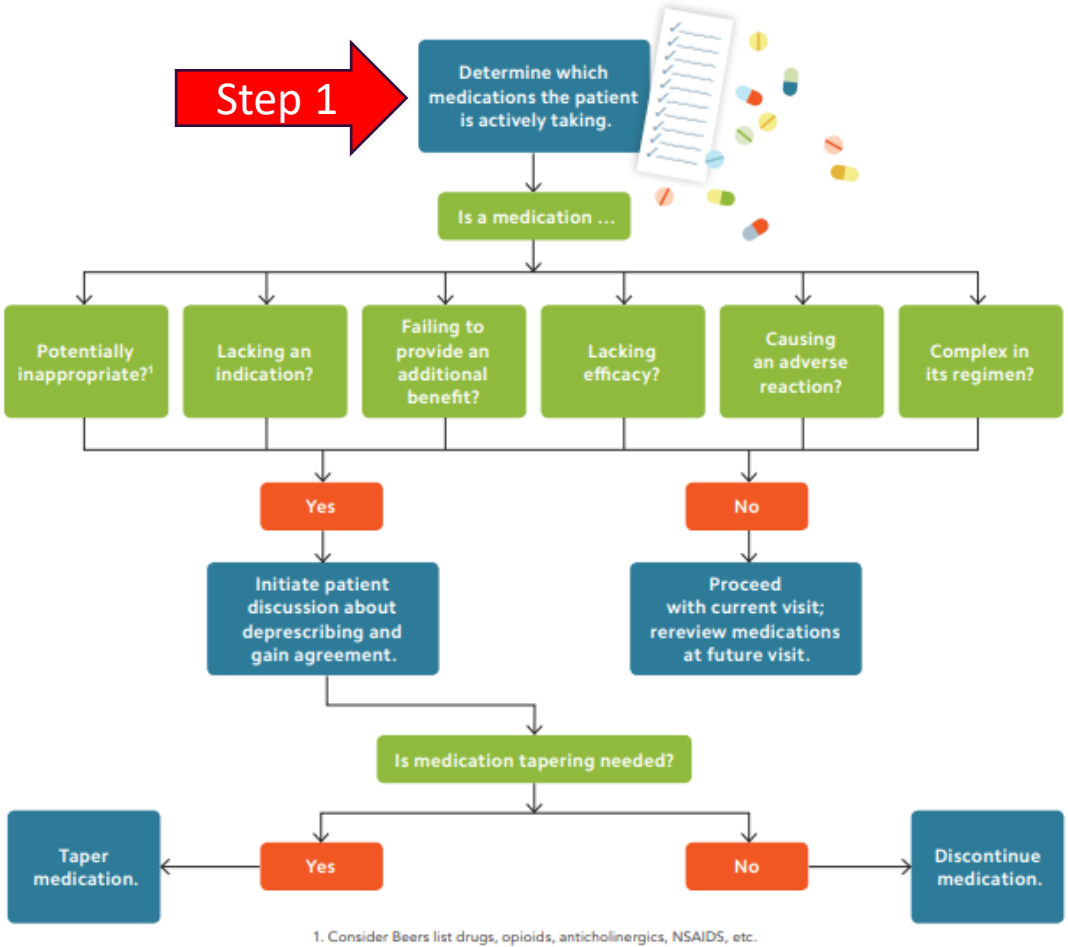
General Deprescribing Algorithm



1. Consider Beers list drugs, opioids, anticholinergics, NSAIDS, etc.

5. Endsley S. *Fam Pract Manag*. 2018;25(3):28-32.

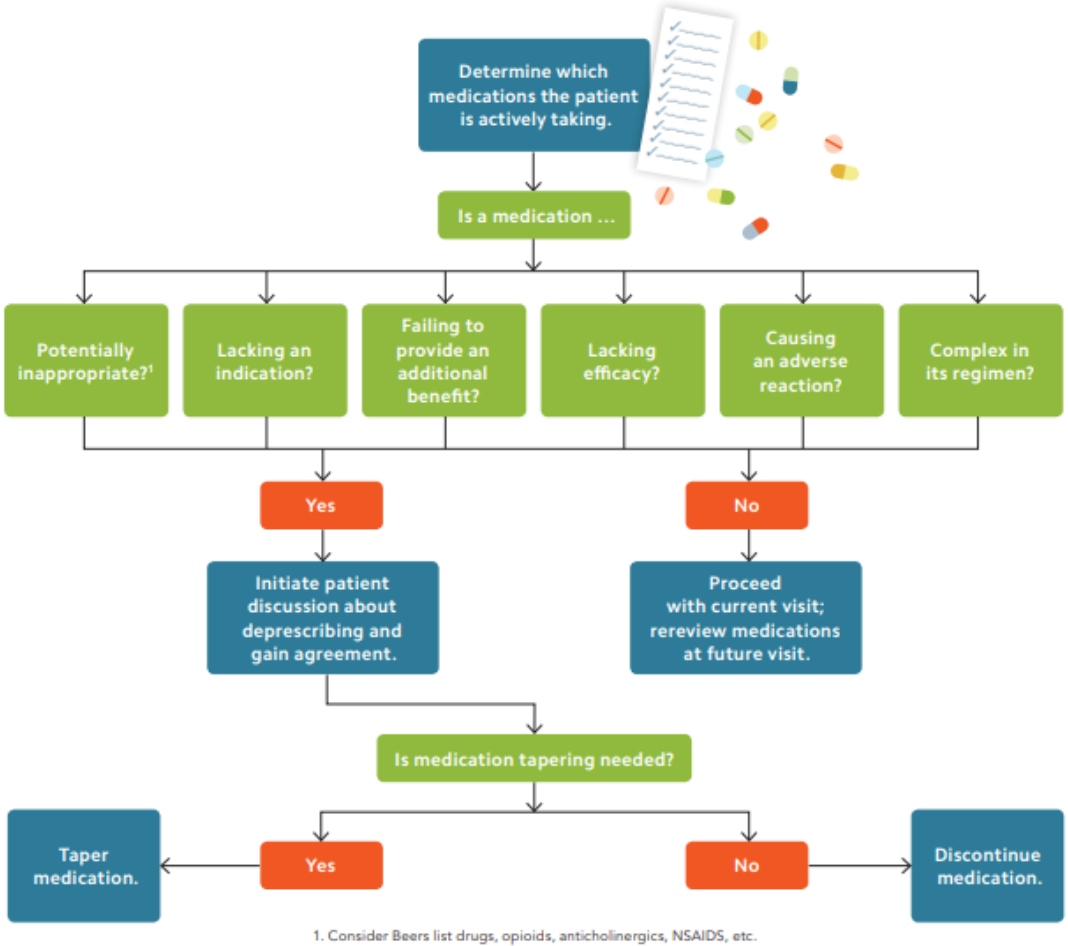
General Deprescribing Algorithm



5. Endsley S. *Fam Pract Manag*. 2018;25(3):28-32.

General Deprescribing Algorithm

Step 2



1. Consider Beers list drugs, opioids, anticholinergics, NSAIDS, etc.

5. Endsley S. *Fam Pract Manag*. 2018;25(3):28-32.

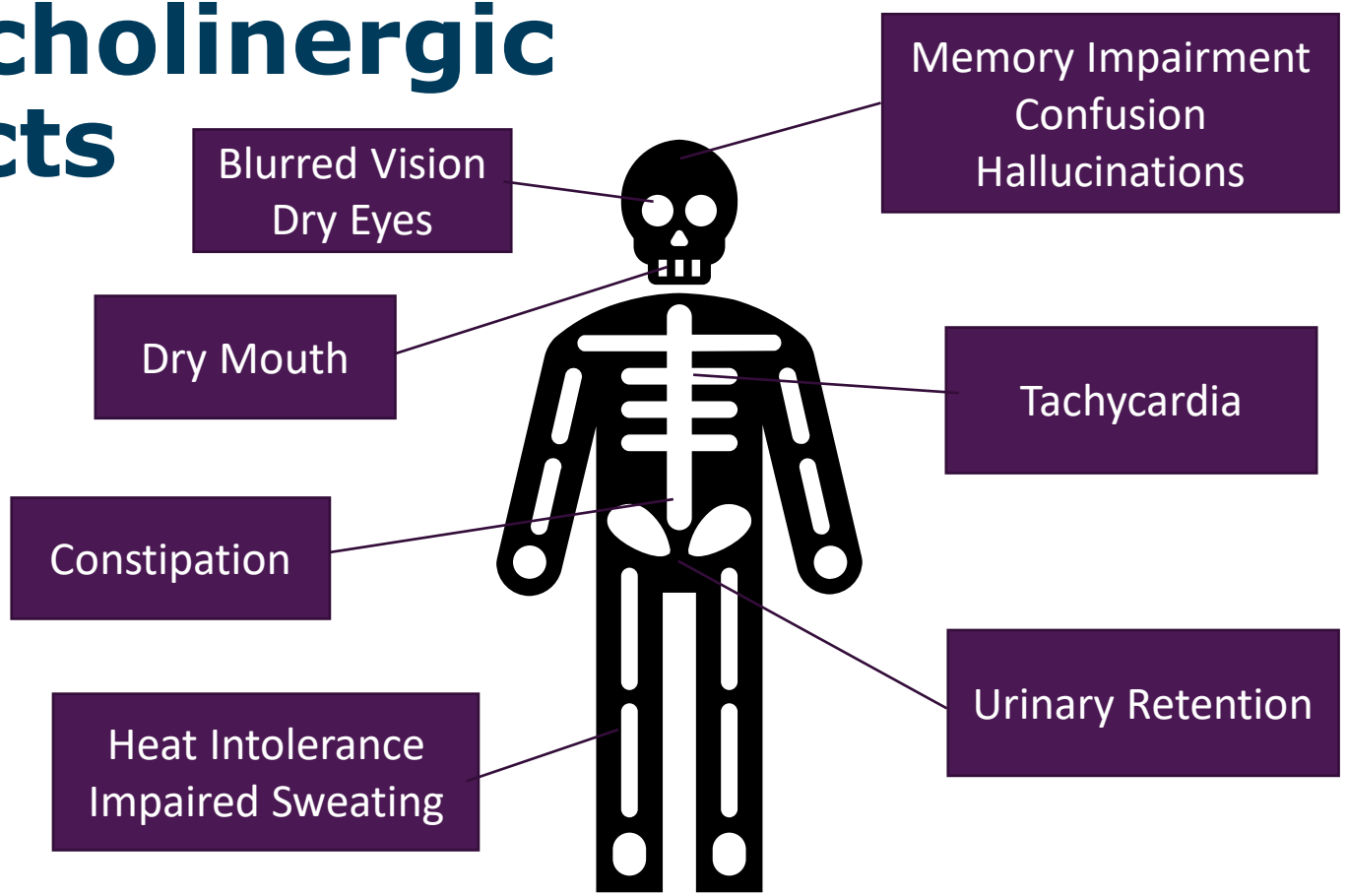
When Is a Medication Potentially Inappropriate?

High risk for side effects or toxicity

- Anticholinergic activity
- Sedation
- Orthostatic hypotension
- Bradycardia
- Hypoglycemia
- GI bleeding
- Risk of falls and fractures

2. Rochon PA. Drug prescribing for older adults. UpToDate. Published April 26, 2021.
6. 2019 American Geriatrics Society Beers Criteria Update Expert Panel. *J Am Geriatr Soc*. 2019;67(4):674-694.

Anticholinergic Effects



2. Rochon PA. Drug prescribing for older adults. UpToDate. Published April 26, 2021.

Medication Class with High Anticholinergic Activity	Examples
First generation antihistamines	Diphenhydramine, hydroxyzine, chlorpheniramine, meclizine
Antiemetics	Promethazine, prochlorperazine
Antiparkinsonian agents	Benztropine, trihexyphenidyl
Overactive bladder agents	Darifenacin, fesoterodine, oxybutynin, solifenacin, tolterodine, trospium
Spasmolytics	Dicyclomine, atropine, hyoscyamine, scopolamine
Antidepressants (particularly TCAs)	Amitriptyline, nortriptyline, imipramine, desipramine, doxepin, paroxetine
Antipsychotics	Chlorpromazine, fluphenazine, thioridazine, clozapine, olanzapine, quetiapine

6. 2019 American Geriatrics Society Beers Criteria Update Expert Panel. *J Am Geriatr Soc*. 2019;67(4):674-694.
7. Muench J, Hamer AM. *Am Fam Physician*. 2010;81(5):617-622.

Potentially Inappropriate Medications (PIPs)

- Proton Pump Inhibitors (PPIs)
- Amiodarone
- Sedative Hypnotics
- Antipsychotics
- NSAIDs
- Sliding Scale Insulin

6. 2019 American Geriatrics Society Beers Criteria Update Expert Panel. *J Am Geriatr Soc*. 2019;67(4):674-694.

Resources for Identifying PIPs

Beers Criteria	Screening Tool of Older Person's Prescriptions (STOPP)
• Medications to avoid in most circumstances or in specific situations	• Medications significantly associated with adverse drug events

6. 2019 American Geriatrics Society Beers Criteria Update Expert Panel. *J Am Geriatr Soc*. 2019;67(4):674-694.
8. O'Mahony D, O'Sullivan D, Byrne S, O'Connor MN, Ryan C, Gallagher P. *Age Aging*. 2015;44(2):213-218.

Beers Criteria

- Medications to avoid
- Medications that may exacerbate certain disease states
- Medications to use with caution
- Clinically relevant drug-drug interactions
- Medications to dose reduce in older adults

6. 2019 American Geriatrics Society Beers Criteria Update Expert Panel. *J Am Geriatr Soc*. 2019;67(4):674-694.

Beers Criteria

Table 2. 2019 American Geriatrics Society Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults[a]

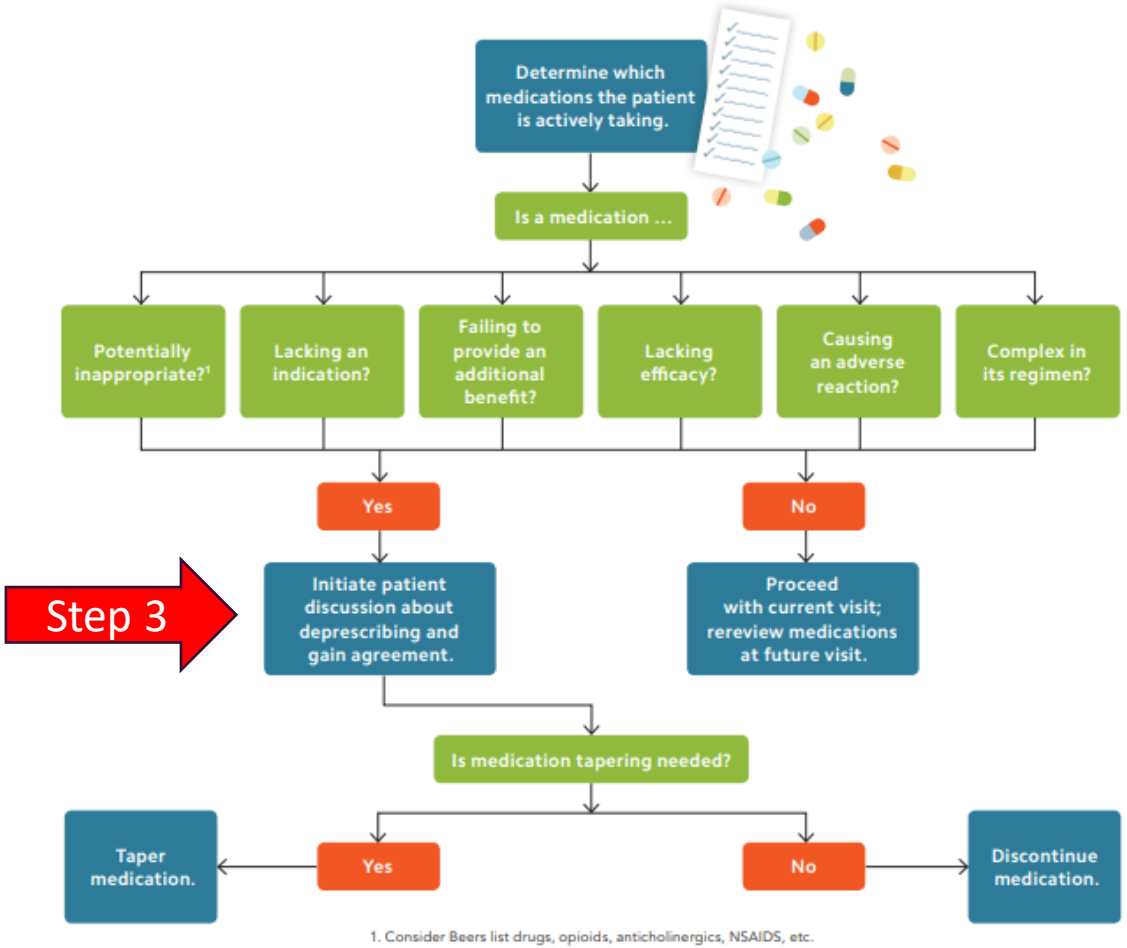
Organ System, Therapeutic Category, Drug(s)	Rationale	Recommendation	Quality of Evidence	Strength of Recommendation
Anticholinergics[b]				
First-generation antihistamines Brompheniramine Carbinoxamine Chlorpheniramine Clemastine Cyproheptadine Dexbrompheniramine Dexchlorpheniramine Dimenhydrinate Diphenhydramine (oral) Doxylamine Hydroxyzine Meclizine Promethazine Pyrilamine Triprolidine	Highly anticholinergic; clearance reduced with advanced age, and tolerance develops when used as hypnotic; risk of confusion, dry mouth, constipation, and other anticholinergic effects or toxicity Use of diphenhydramine in situations such as acute treatment of severe allergic reaction may be appropriate.	Avoid	Moderate	Strong

STOPP Criteria

1. Digoxin for heart failure with normal systolic ventricular function (no clear evidence of benefit)
2. Verapamil or diltiazem with NYHA Class III or IV heart failure (may worsen heart failure).
3. Beta-blocker in combination with verapamil or diltiazem (risk of heart block).
4. Beta blocker with bradycardia (< 50/min), type II heart block or complete heart block (risk of complete heart block, asystole).
5. Amiodarone as first-line antiarrhythmic therapy in supraventricular tachyarrhythmias (higher risk of side-effects than beta-blockers, digoxin, verapamil or diltiazem)
6. Loop diuretic as first-line treatment for hypertension (safer, more effective alternatives available).
7. Loop diuretic for dependent ankle oedema without clinical, biochemical evidence or radiological evidence of heart failure, liver failure, nephrotic syndrome or renal failure (leg elevation and /or compression hosiery usually more appropriate).
8. Thiazide diuretic with current significant hypokalaemia (i.e. serum K+ < 3.0 mmol/l), hyponatraemia (i.e. serum Na+ < 130 mmol/l) hypercalcaemia (i.e. corrected serum calcium > 2.65 mmol/l) or with a history of gout (hypokalaemia, hyponatraemia, hypercalcaemia and gout can be precipitated by thiazide diuretic)
9. Loop diuretic for treatment of hypertension with concurrent urinary incontinence (may exacerbate incontinence).
10. Centrally-acting antihypertensives (e.g. methyldopa, clonidine, moxonidine, rilmenidine, guanfacine), unless clear intolerance of, or lack of efficacy with, other classes of antihypertensives (centrally-active antihypertensives are generally less well tolerated by older people than younger people)
11. ACE inhibitors or Angiotensin Receptor Blockers in patients with hyperkalaemia.

8. O'Mahony D, O'Sullivan D, Byrne S, O'Connor MN, Ryan C, Gallagher P. *Age Aging*. 2015;44(2):213-218.

General Deprescribing Algorithm



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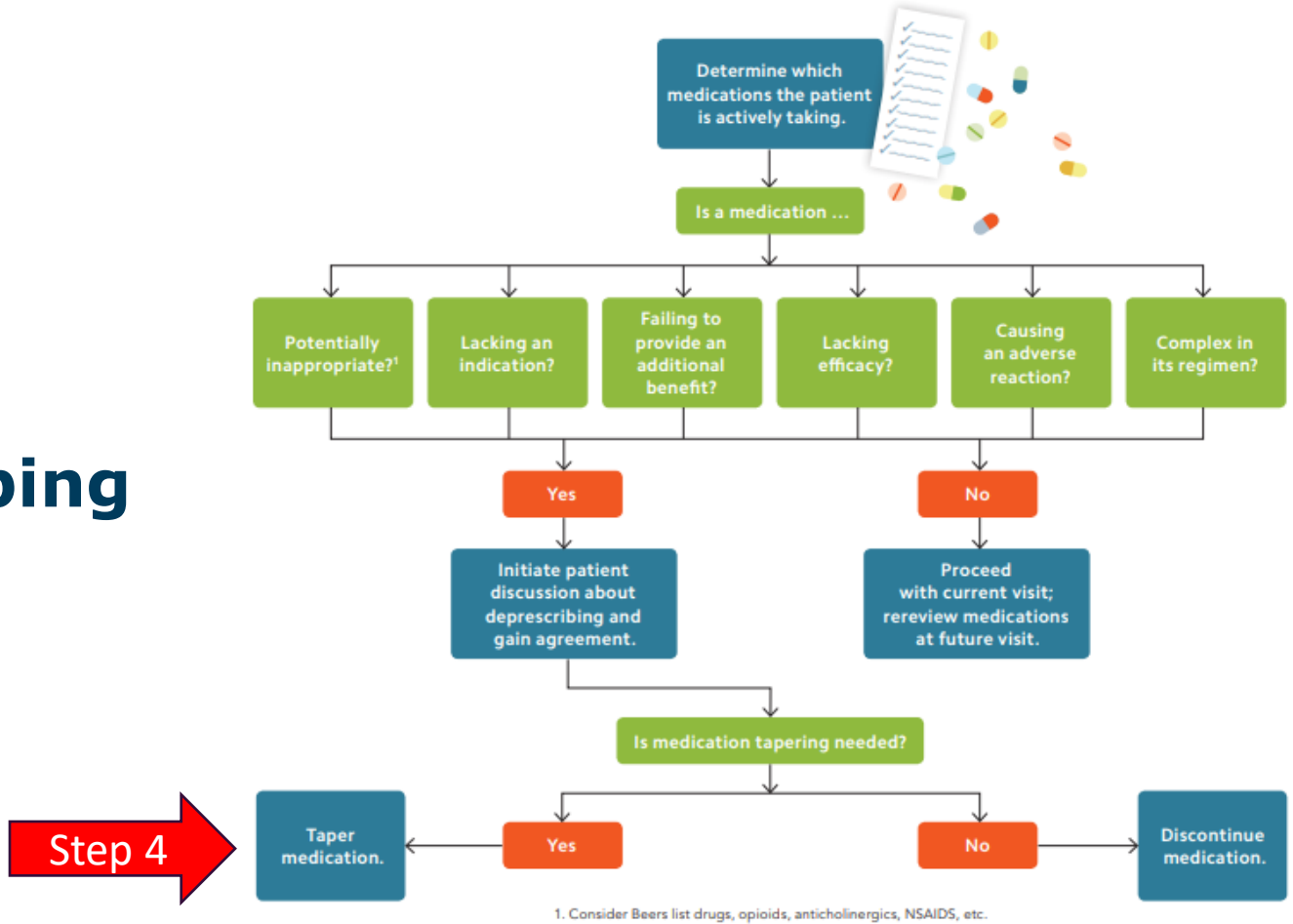


Step 4

5. Endsley S. *Fam Pract Manag*. 2018;25(3):28-32.

Resources for Appropriate Prescribing and Deprescribing

MedStopper	Deprescribing.org	Screening Tool to Alert doctors to the Right Treatment (START)	AAH System Reference
• Tool to create customized deprescribing plans	• Contains deprescribing guidelines and algorithms	• Potential prescribing omissions in older adult patients	• Recommendations for alternatives to Beers Criteria medications

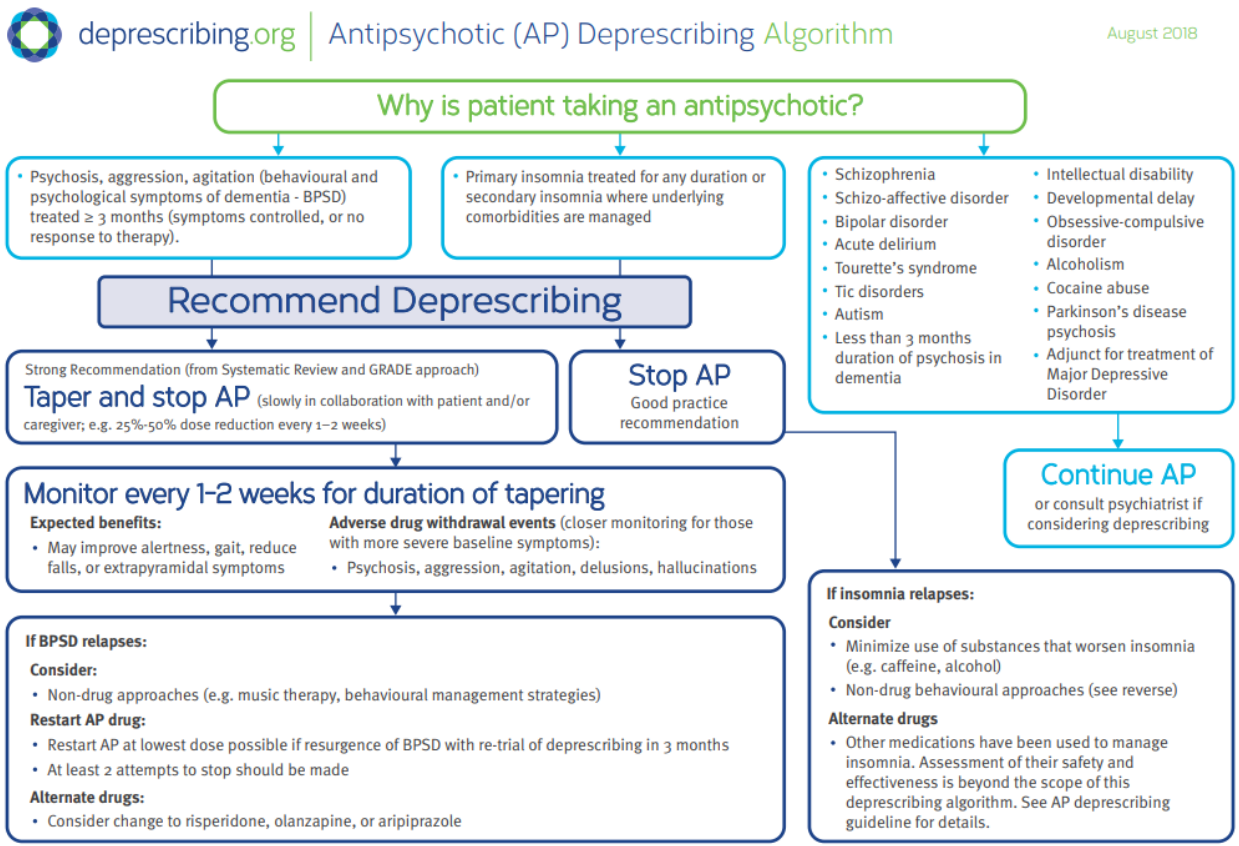
8. O'Mahony D, O'Sullivan D, Byrne S, O'Connor MN, Ryan C, Gallagher P. *Age Aging*. 2015;44(2):213-218. 9. McCormack J, Mangin D, Farrell B, et al. MedStopper.com. 10. Farrell B, McCarthy L, Tannenbaum C, et al. Deprescribing.org. Published January 15, 2021. 11. AAH Pharmacy Practice Council. Advocate Aurora Health Beers Criteria for potentially inappropriate medication use in older adults. Published November 2021.

MedStopper

Stopping Priority RED=Highest GREEN=Lowest	Medication/ Category/ Condition	May Improve Symptoms?	May Reduce Risk for Future Illness?	May Cause Harm?	Suggested Taper Approach	Possible Symptoms when Stopping or Tapering	Beers/STOPP Criteria
	glyburide (DiaBeta, Glynase, Micronase) / Sulfonylurea / **type 2 diabetes**		 CALC / NNT		Tapering not required	symptoms of increased thirst/increased urination, re-measure A1c in 3 months, measure blood glucose only if high glucose symptoms occur/return	Details
	temazepam (Restoril) / Benzodiazepine / **insomnia**				If used daily for more than 3-4 weeks. Reduce dose by 25% every week (i.e. week 1-75%, week 2-50%, week 3-25%) and this can be extended or decreased (10% dose reductions) if needed. If intolerable withdrawal symptoms occur (usually 1-3 days after a dose change), go back to the previously tolerated dose until symptoms resolve and plan for a more gradual taper with the patient. Dose reduction may need to slow down as one gets to smaller doses (i.e. 25% of the original dose). Overall, the rate of discontinuation needs to be controlled by the person taking the medication.	rebound insomnia, tremor, anxiety, as well as more serious, rare manifestations including hallucinations, seizures, and delirium	Details
	omeprazole (Prilosec, Losec) / Proton pump inhibitor / **heartburn/GERD**				If used daily for more than 3-4 weeks. Reduce dose by 50% every 1 to 2 weeks. Once at 25% of the original dose and no withdrawal symptoms have been seen, stop the drug. If any withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose.	return of symptoms, heartburn, reflux	Details

9. McCormack J, Mangin D, Farrell B, et al. MedStopper.com.

Deprescribing.org



10. Farrell B, McCarthy L, Tannenbaum C, et al. Deprescribing.org. Published January 15, 2021.

deprescribing.org | Antipsychotic (AP) Deprescribing Notes

August 2018

Commonly Prescribed Antipsychotics

Antipsychotic	Form	Strength
Chlorpromazine	T IM, IV	25, 50, 100 mg l25 mg/mL
Haloperidol (Haldol®)	T L IR, IM, IV LA IM	0.5, 1, 2, 5, 10, 20 mg 2 mg/mL 5 mg/mL 50, 100 mg/mL
Loxapine (Xylac®, Loxapac®)	T L IM	2.5, 5, 10, 25, 50 mg 25 mg/L 25, 50 mg/mL
Aripiprazole (Abilify®)	T IM	2, 5, 10, 15, 20, 30 mg 300, 400 mg
Clozapine (Clozaril®)	T	25, 100 mg
Olanzapine (Zyprexa®)	T D IM	2.5, 5, 7.5, 10, 15, 20 mg 5, 10, 15, 20 mg 10mg per vial
Paliperidone (Invega®)	ER T PR IM	3, 6, 9 mg 50mg/0.5mL, 75mg/0.75mL, 100mg/1mL, 150mg/1.5mL
Quetiapine (Seroquel®)	IR T ER T	25, 100, 200, 300 mg 50, 150, 200, 300, 400 mg
Risperidone (Risperdal®)	T S D PR IM	0.25, 0.5, 1, 2, 3, 4 mg 1 mg/mL 0.5, 1, 2, 3, 4 mg 12.5, 25, 37.5, 50 mg

IM = intramuscular, IV = intravenous, L = liquid, S = suppository, SL = sublingual, T = tablet, D = disintegrating tablet, ER = extended release, IR = immediate release, LA = long-acting, PR = prolonged release

Antipsychotic side effects

- **APs associated with increased risk of**:
  - Metabolic disturbances, weight gain, dry mouth, dizziness
  - Somnolence, drowsiness, injury or falls, hip fractures, EPS, abnormal gait, urinary tract infections, cardiovascular adverse events, death
- **Risk factors**: higher dose, older age, Parkinsons', Lewy Body Dementia

Engaging patients and caregivers

Patients and caregivers should understand:

- The rationale for deprescribing (risk of side effects of continued AP use)
- Withdrawal symptoms, including BPSD symptom relapse, may occur
- They are part of the tapering plan, and can control tapering rate and duration

Tapering doses

- No evidence that one tapering approach is better than another
- Consider:
  - Reduce to 75%, 50%, 25% of original dose on a weekly or bi-weekly basis and then stop; **or**
- Consider slower tapering and frequent monitoring in those with severe baseline BPSD
- Tapering may not be needed if low dose for insomnia only

Sleep management

Primary care:

1. Go to bed only when sleepy
2. Do not use your bed or bedroom for anything but sleep (or intimacy)
3. If you do not fall asleep within about 20-30 min at the beginning of the night or after an awakening, exit the bedroom
4. If you do not fall asleep within 20-30 min on returning to bed, repeat #3
5. Use your alarm to awaken at the same time every morning
6. Do not nap
7. Avoid caffeine after noon
8. Avoid exercise, nicotine, alcohol, and big meals within 2 hrs of bedtime

Institutional care:

1. Pull up curtains during the day to obtain bright light exposure
2. Keep alarm noises to a minimum
3. Increase daytime activity and discourage daytime sleeping
4. Reduce number of naps (no more than 30 mins and no naps after 2pm)
5. Offer warm decaf drink, warm milk at night
6. Restrict food, caffeine, smoking before bedtime
7. Have the resident toilet before going to bed
8. Encourage regular bedtime and rising times
9. Avoid waking at night to provide direct care
10. Offer backrub, gentle massage

BPSD management

- Consider interventions such as: relaxation, social contact, sensory (music or aroma-therapy), structured activities and behavioural therapy
- Address physical and other disease factors: e.g. pain, infection, constipation, depression
- Consider environment: e.g. light, noise
- Review medications that might be worsening symptoms

10. Farrell B, McCarthy L, Tannenbaum C, et al. Deprescribing.org. Published January 15, 2021.

START Criteria

1. Disease-modifying anti-rheumatic drug (DMARD) with active, disabling rheumatoid disease.
2. Bisphosphonates and vitamin D and calcium in patients taking long-term systemic corticosteroid therapy.
3. Vitamin D and calcium supplement in patients with known osteoporosis and/or previous fragility fracture(s) and/or (Bone Mineral Density T-scores more than -2.5 in multiple sites).
4. Bone anti-resorptive or anabolic therapy (e.g. bisphosphonate, strontium ranelate, teriparatide, denosumab) in patients with documented osteoporosis, where no pharmacological or clinical status contraindication exists (Bone Mineral Density T-scores -> 2.5 in multiple sites) and/or previous history of fragility fracture(s).
5. Vitamin D supplement in older people who are housebound or experiencing falls or with osteopenia (Bone Mineral Density T-score is > -1.0 but < -2.5 in multiple sites).
6. Xanthine-oxidase inhibitors (e.g. allopurinol, febuxostat) with a history of recurrent episodes of gout.
7. Folic acid supplement in patients taking methotrexate.

8. O'Mahony D, O'Sullivan D, Byrne S, O'Connor MN, Ryan C, Gallagher P. *Age Aging*. 2015;44(2):213-218.

AAH Beers Criteria Alternatives

MEDICATION *alphabetical by generic name*	**RECOMMENDATIONS for ELDERLY PATIENTS** *based on Beers Criteria, EU(7)-PIM, FORTA, AHC expert opinion*	**Rationale**	**Strength of recommendation** *definitions follow*	**Possible Alternatives** *Per guidelines, tertiary medication databases, expert opinions*
Alprazolam	Initial dose: No greater than 0.25 mg three times daily (IR) for 65 or older	Increased risk of cognitive impairment, delirium, over-sedation, falls, mortality, increased sensitivity	Moderate/strong	Buspirone or sertraline for GAD w/depression Short-term, low dose lorazepam 0.5 mg
Amitriptyline	Avoid if possible*	Highly anticholinergic, sedating May cause orthostatic hypotension, increased intraocular pressure, cardiac arrhythmias, risk of falls	High/strong	Depression: SSRI (avoid paroxetine), SNRI (avoid fluoxetine), bupropion If TCA necessary: nortriptyline (low dose) Neuropathic pain: gabapentin, nortriptyline (low dose), duloxetine, lidocaine patch, pregabalin If for sleep, consider trazodone, mirtazapine, melatonin
Amiodarone	For atrial fibrillation: avoid as first line therapy unless patient has heart failure or substantial left ventricular hypertrophy Recommend low initial dosing, low maintenance dose or recommend alternative agent	Increased risk of QT interval prolongation Greater risk of toxicities	High/strong	Rate controlling agents

Role of the Multidisciplinary Team

Primary Care Provider	Nurse	Medical Assistant	Social Work	Outpatient Pharmacy
• Assess for medication efficacy and side effects at each visit • Provide new prescriptions with every medication change	• Provide education regarding medications and administration • Alert provider when medication concerns are identified	• Complete medication reconciliation at every contact with patient	• Advocate for patients' wishes regarding their healthcare • Identify solutions for social determinants of health that contribute to a patient's condition	• Review medications from all providers for polypharmacy • Assist with disposal of discontinued medications • Provide support for medication adherence

Population Health Management at AAH

"At the most basic level, population health management is making the most efficient use of our health care resources to improve the health of a population. We define our population as those patients for whom we are sharing a large portion of the medical costs with the payers…those in value-based insurance contracts."

AdvocateAuroraHealth

Population Health Team

Care Managers

- Provide additional clinical support and care coordination
- Assist with self-management and assessment of health status

Social Work

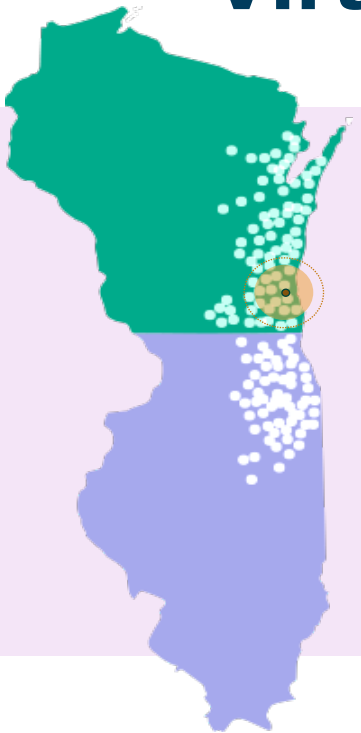
- Identify available healthcare, financial, and other needed resources

Pharmacy

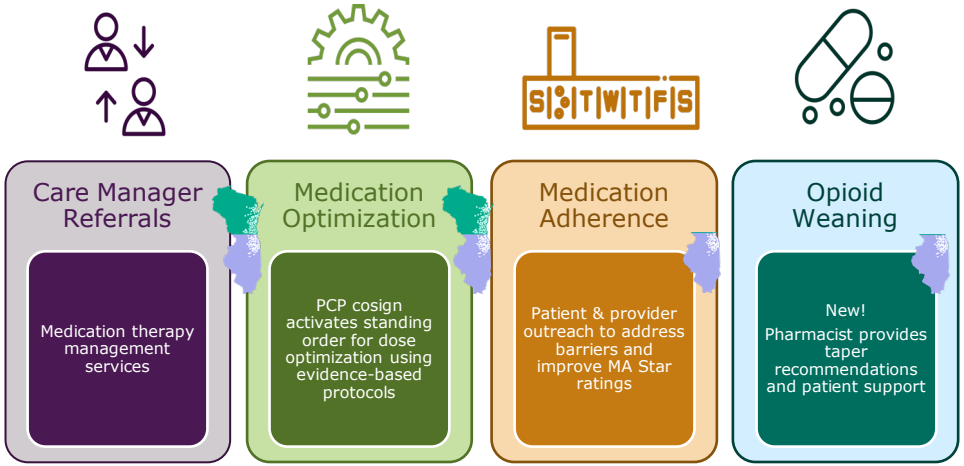
- Complete medication reviews as requested by care managers
- Provide medication recommendations to providers as appropriate

EPH Pharmacy Services

Virtual Team



- 7 pharmacists
- 2 pharmacy technicians
- Licensed in both WI & IL
- Virtual patient outreach
  - Telephone
  - Video
- Manager: Marisa Goninen



Learning Assessment

LF is an 85 year-old male with a PMH of depression, hypertension, atrial fibrillation, and COPD who presents to clinic complaining of drowsiness, dry mouth, and urinary retention. He brings in his medications as listed below. BP is 128/76, HR 72. His mood has been stable. COPD has been well controlled. Denies excessive bruising or bleeding.

Amitriptyline 50 mg by mouth at bedtime
Apixaban 5 mg by mouth twice daily
Carvedilol 25 mg by mouth twice daily
Lisinopril 40 mg by mouth daily
Pantoprazole 40 mg by mouth daily
Tiotropium 2.5 mcg/actuation- Inhale 2 puffs once daily

Learning Assessment

Which medication is most important to consider deprescribing for LF currently?

A. Amitriptyline
B. Apixaban
C. Lisinopril
D. Pantoprazole
E. None, all medications are appropriate

Learning Assessment

Which medication is most important to consider deprescribing for LF currently?

A. Amitriptyline

B. Apixaban

C. Lisinopril

D. Pantoprazole

E. None, all medications are appropriate

Diabetes Management

Consider health and functional status when determining goals

Older adults are at greater risk of hypoglycemia

Pharmacotherapy considerations

- Avoid sulfonylureas if possible
- Prefer GLP-1 agonists prior to initiation of insulin
- Avoid overtreatment and simplify regimen when possible

12. American Diabetes Association. *Diabetes Care.* 2021;44(Supplement 1): S168-S179.

References

1. Williams CM. Using Medications Appropriately in Older Adults. *Am Fam Physician*. 2002;66(10):1917-1925.
2. Rochon PA. Drug prescribing for older adults. UpToDate. https://www.uptodate.com/contents/drug-prescribing-for-older-adults. Published April 26, 2021. Accessed December 21, 2021.
3. Hoel RW, Giddings Connolly RM, Takahashi PY. Polypharmacy management in older patients. *Mayo Clinic Proceedings*. 2021;96(1):242-256. doi:10.1016/j.mayocp.2020.06.012
4. Ruscin JM, Linnebur SA. Pharmacokinetics in Older Adults. Merck Manual. https://www.merckmanuals.com/professional/geriatrics/drug-therapy-in-older-adults/pharmacokinetics-in-older-adults. Published July 2021. Accessed December 21, 2021.
5. Endsley S. Deprescribing Unnecessary Medications: A Four-Part Process. *Fam Pract Manag*. 2018;25(3):28-32.
6. 2019 American Geriatrics Society Beers Criteria Update Expert Panel. American Geriatrics Society 2019 updated AGS Beers Criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2019;67(4):674-694.
7. Muench J, Hamer AM. Adverse effects of antipsychotic medications. *Am Fam Physician*. 2010;81(5):617-622.
8. O'Mahony D, O'Sullivan D, Byrne S, O'Connor MN, Ryan C, Gallagher P. STOPP/START criteria for potentially inappropriate prescribing in older people: version 2. *Age Aging*. 2015;44(2):213-218.
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Questions?