

Balancing Safety & Efficacy: Addressing Medication Dilemmas in Older Adults

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Disclosure

Dr. Polomoff has no financial relationships with ineligible companies.

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Objectives

1. Analyze pharmacokinetic and pharmacodynamic changes associated with aging
2. Identify opportunities for deprescribing and medication management
3. Use evidence-based tools and strategies to optimize medication regimens, applying deprescribing frameworks and decision aids in real-world geriatric care

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What is advancing age?



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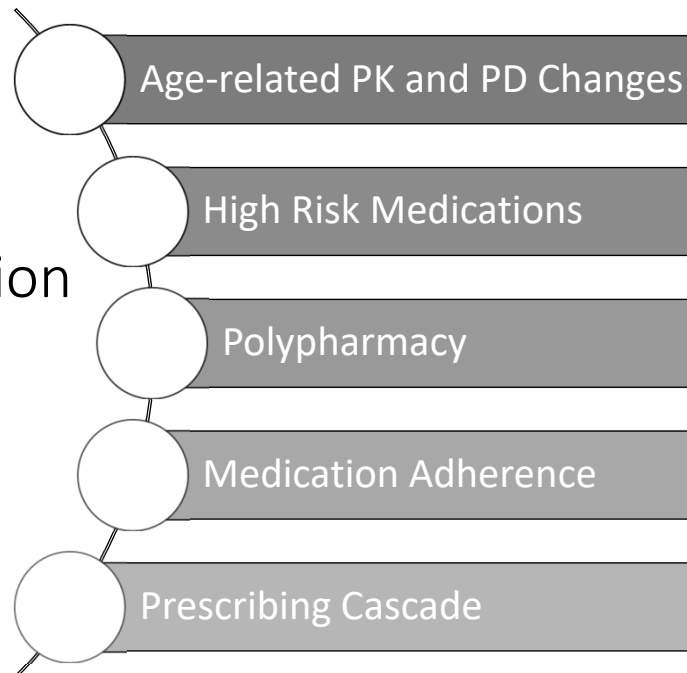
Changes with Aging

- Decreased vision
- Decreased hearing
- Decreased dexterity
- Fall risk
- Comorbidities
- Pharmacokinetics (PK) & Pharmacodynamics (PD)

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Common Medication Dilemmas in Older Adults

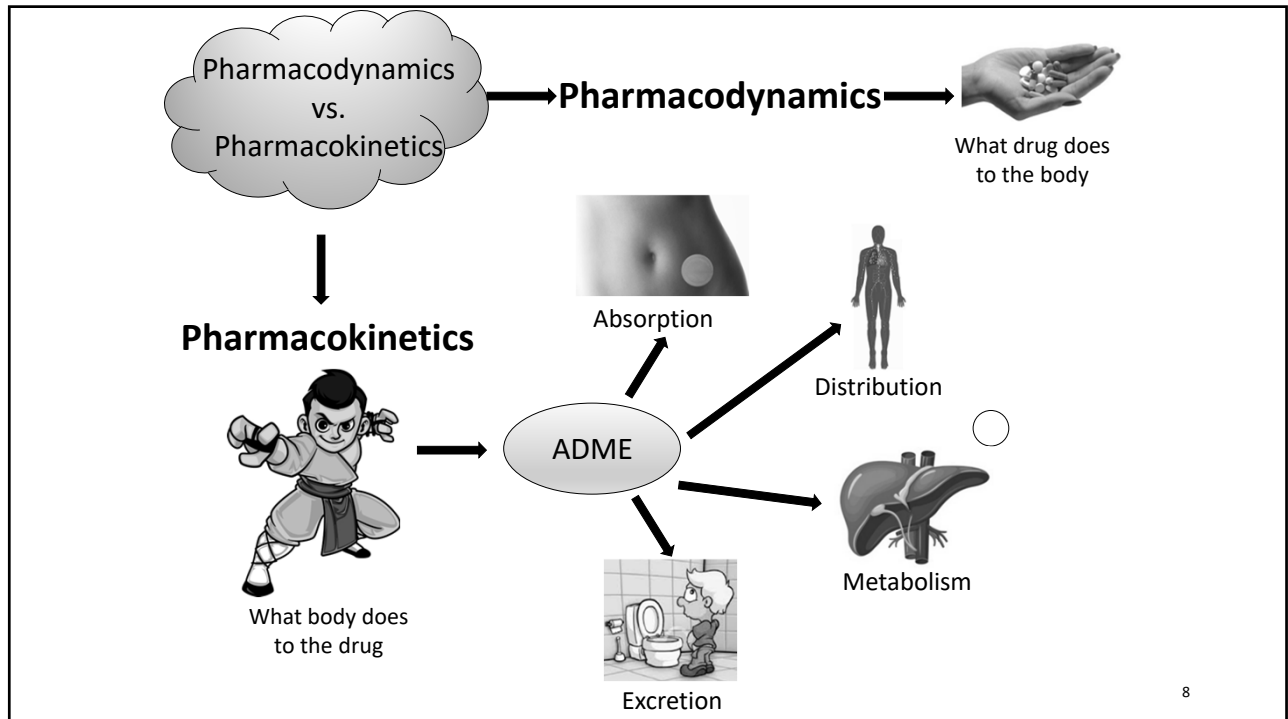


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Common Medication Dilemmas in Older Adults

- Age-related PK and PD Changes
- High Risk Medications
- Polypharmacy
- Medication Adherence
- Prescribing Cascade

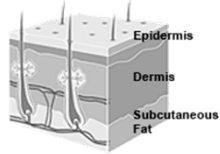
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Physiologic Changes with Age that May Change Drug PK: Absorption

Physiologic Change	Effect on PK
GI ↑ or no change stomach pH ↓ GI blood flow Slowed gastric emptying & transit	GI ↓ Absorption of drugs requiring acidic environment (Iron, calcium, Vitamin B12) Prolonged absorption (NSAIDs, aspirin, potassium chloride tablets)
Skin Thinning of dermis Loss of subcutaneous fat	Skin ↓ or no change to drug reservoir formation with transdermal formulation



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Physiologic Changes with Age that May Change Drug PK: Distribution

Physiologic Change	Effect on PK
↓ Total body water ↑ Total body fat ↓ or unchanged albumin	↓ Vd for hydrophilic drugs (lithium) ↑ Vd for lipophilic drugs (diazepam, amiodarone) ↑ Free fraction of highly protein-bound drugs (phenytoin, warfarin, valproic acid)

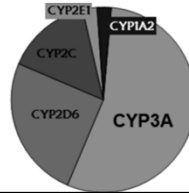
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Physiologic Changes with Age that May Change Drug PK: Metabolism (Liver)

Physiologic Change	Effect on PK
↓ Liver mass	↓ First-pass extraction and metabolism
↓ Blood flow to liver	↑ Half-life and ↓ clearance of drugs with high first-pass extraction
↓ in CYP enzymes	↓ in Phase I (CYP450) metabolism No change in Phase II drug metabolism (lorazepam, oxazepam, temazepam)

Proportion of Drugs Metabolized by Major P450 Enzymes

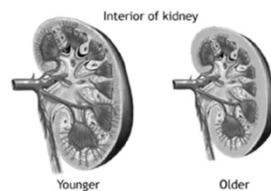


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Physiologic Changes with Age that May Change Drug PK: Excretion (Renal)

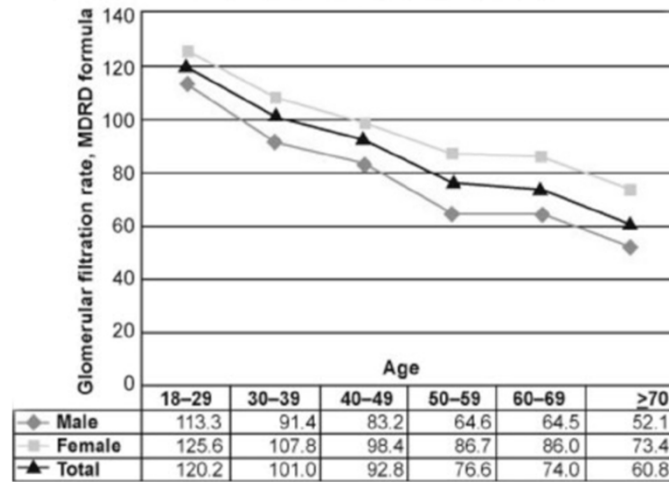
Physiologic Change	Effect on PK
↓ Glomerular filtration rate by 50%	↓ Renal elimination
↓ Renal blood flow by 50-60%	↑ Half-life of renally eliminated drugs and metabolites
↓ Tubular secretion	
↓ Renal mass by 10-20%	



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Renal Decline by Gender and Age



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Renal Function Estimation

Cockcroft-Gault equation

$$\text{CrCl for Males (mL/min)} = \frac{(140 - \text{Age}) (\text{Weight})}{(72) (SCr_{ss})}$$

$$\text{CrCl for Females (mL/min)} = \frac{(140 - \text{Age}) (\text{Weight})}{(72) (SCr_{ss})} \times 0.85$$

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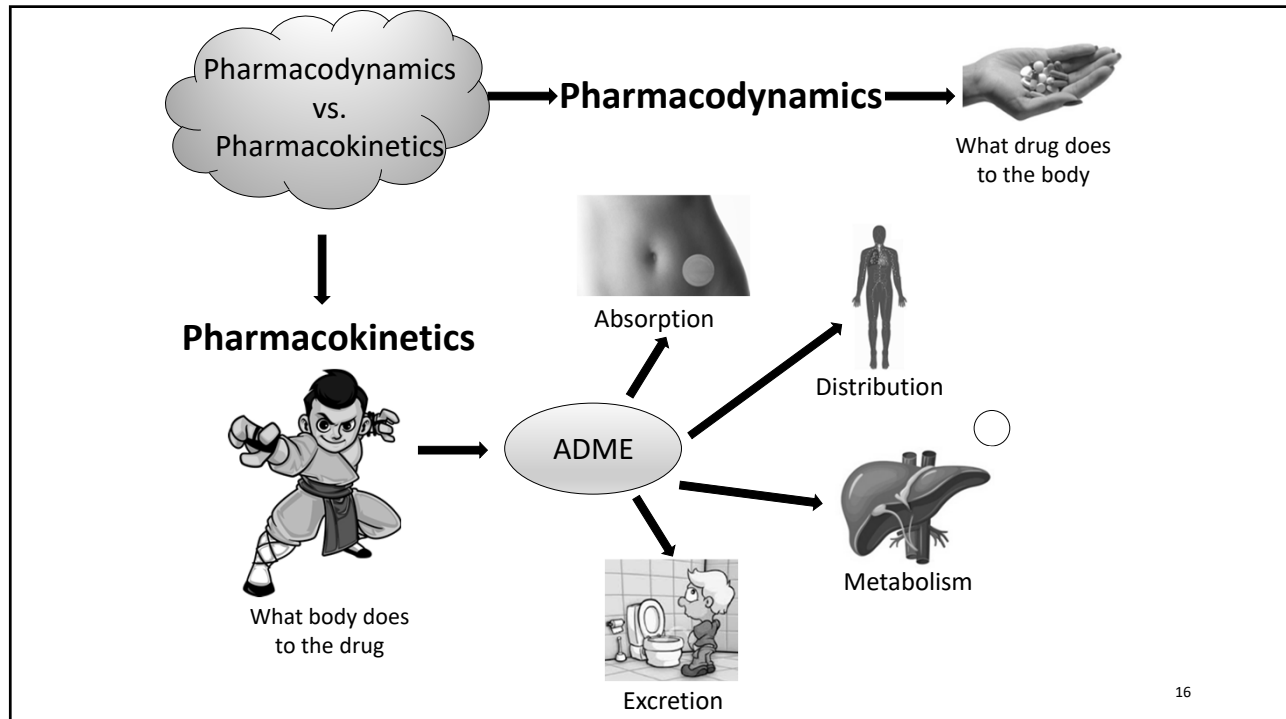
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Effect of Aging on Elimination

Class	Decreased Renal Elimination
Analgesics	Morphine
Antibiotics	Aminoglycosides Ciprofloxacin, levofloxacin Nitrofurantoin
Cardiovascular drugs	Dabigatran, rivaroxaban, apixaban Enoxaparin, heparin Lisinopril
Diuretics	Amiloride, triamterene Furosemide, HCTZ
Psychoactive drugs	Risperidone
Others	Gabapentin Lithium Glyburide Ranitidine

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Pharmacodynamics

- Increased sensitivity → toxicity
 - Benzodiazepines, opioids, antipsychotics, anticholinergics
 - ↑ Sensitivity to CNS effects
- Decreased sensitivity → ↓ response
 - β agonists
- ↓ Baroreceptor response & impaired homeostasis → orthostatic hypotension
 - Diuretics, ACEI

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Active Learning Question #1

The absorption of drugs requiring acidic environment (iron, calcium, Vitamin B12) generally _____ with aging.

- a. Increase
- b. Decrease
- c. Stay the same

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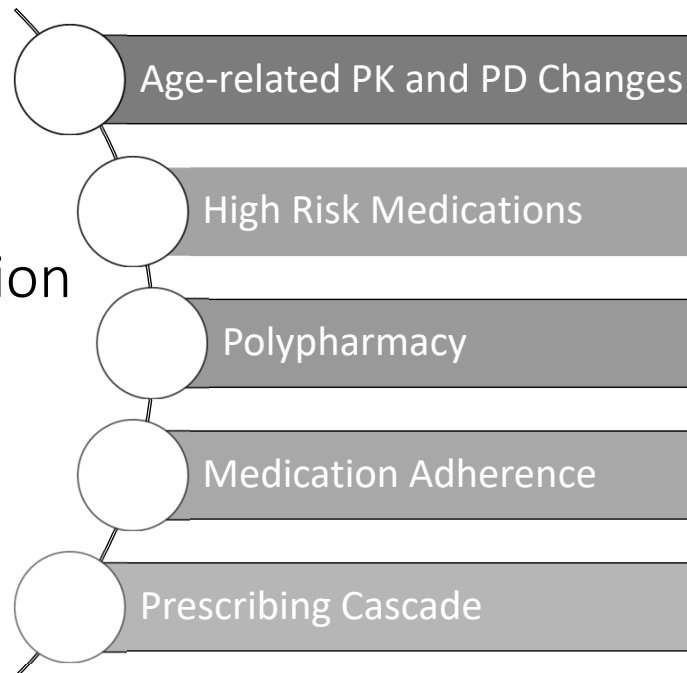
Active Learning Question #2

There is generally _____ sensitivity and _____ response to beta agonists with aging.

- a. Decreased, decreased
- b. Increased, increased
- c. Decreased, increased
- d. Increased, decreased

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Common Medication Dilemmas in Older Adults



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American Geriatrics Society (AGS) Beers Criteria

- Last updated 2023
- List of potentially inappropriate medications that are typically best avoided by older adults in most circumstances
- www.americangeriatrics.org

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Avoid any combination of
 ≥ 3 of these CNS-active drugs:

-
- Antiepileptics
 - Antipsychotics
 - Antidepressants (TCA, SSRI, SNRI)
 - Opioids
 - Benzodiazepines
 - "Z drugs" hypnotics (eszopiclone, zolpidem, zaleplon)
 - Skeletal muscle relaxants (cyclobenzaprine, tizanidine, etc)



Increased risk of falls

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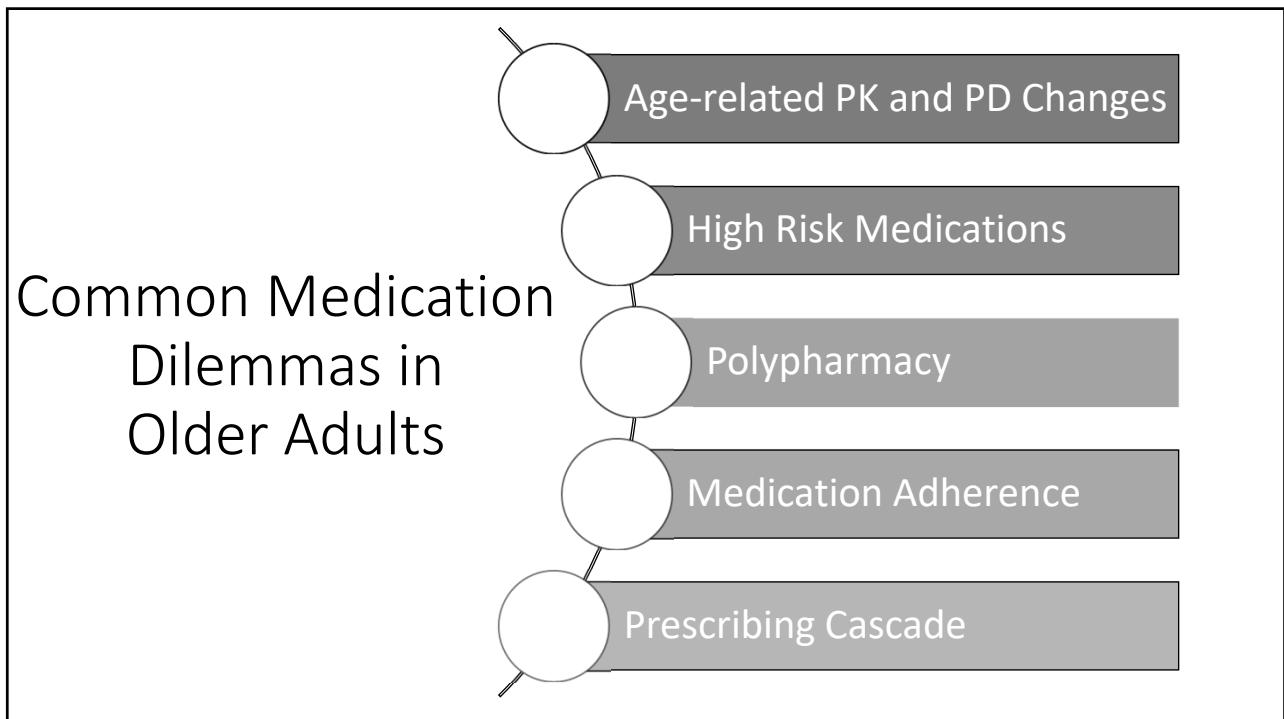
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Avoid in Delerium and Dementia

- Anticholinergics (Benadryl)
- Benzodiazepines (alprazolam)
- Z-drugs (Lunesta, Ambien, Sonata)
- Antipsychotics (increases risk of stroke and mortality in dementia)

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Medications in pillbox which patient is taking

- Alfuzosin 10 mg HS
- Aspirin 81 mg daily
- Isosorbide mononitrate 60 mg daily
- Klor-Con 20 mg BID
- Lisinopril 2.5 or 5 mg daily
- Metoprolol succinate 100 mg daily
- Prednisone 1 or 2.5 mg daily
- Vesicare 10 mg daily

Medications outside of pillbox which patient is taking

- Insulin regular U-500 40 units TID
- Proair HFA inhaler 2 puffs PRN

Medications found outside of pillbox which patient believes he is taking

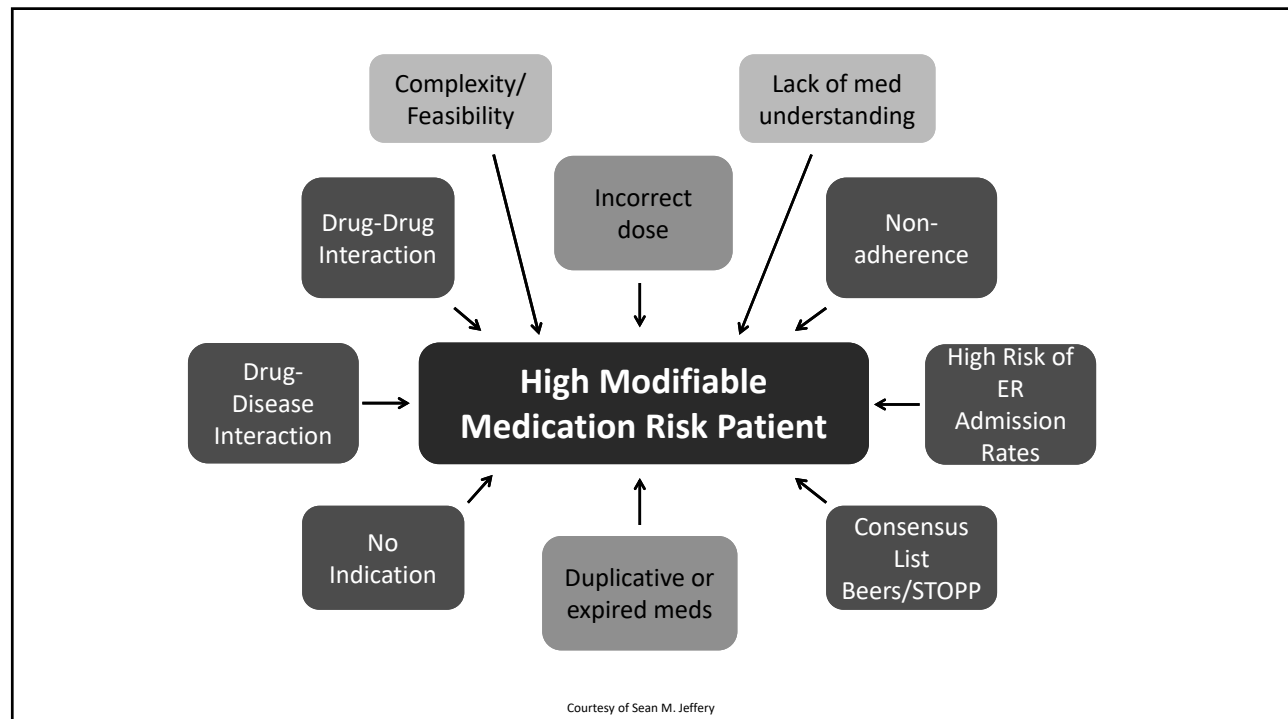
- Advil 200mg (exp: 6/2016)
- Aspirin 81mg (exp: 8/2011) – Walgreens brand
- Aspirin 81mg (exp: 4/2012) – CVS brand
- Debrox ear wax removal (exp: 12/2015)
- ERO ear wax removal (exp: 09/2010)
- Ibuprofen 200 mg
- Mucinex (guaifenesin)
- Mucinex extra strength
- Mucinex D (guaifenesin + pseudoephedrine)
- Cortisporin otic suspension (exp: 2/2016)
- Pantoprazole 20mg tab
- Zolpidem tartrate 10 mg

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Medications found that patient states he is NOT taking:

- Allopurinol 100 mg (exp: 9/2016)
- Aspirin 325mg enteric coated
- Acetaminophen ER 650 mg (exp: 7/2016)
- Centrum multi-vitamin
- Capzasin (capsaicin) no-mess applicator (exp: 10/2015)
- Diphenhydramine 25 mg (exp: 1/2015)
- **Furosemide 40 mg**
- Glucosamine + chondroitin + MSM
- Kim Tien Thao (desmodium styracifolium) 120mg – “for kidney stones and gallstones”
- Lisinopril 5 mg
- Metolazone 2.5 mg (not-labeled)
- Tussin DM (dextromethorphan 20 mg + guaifenesin 200 mg)

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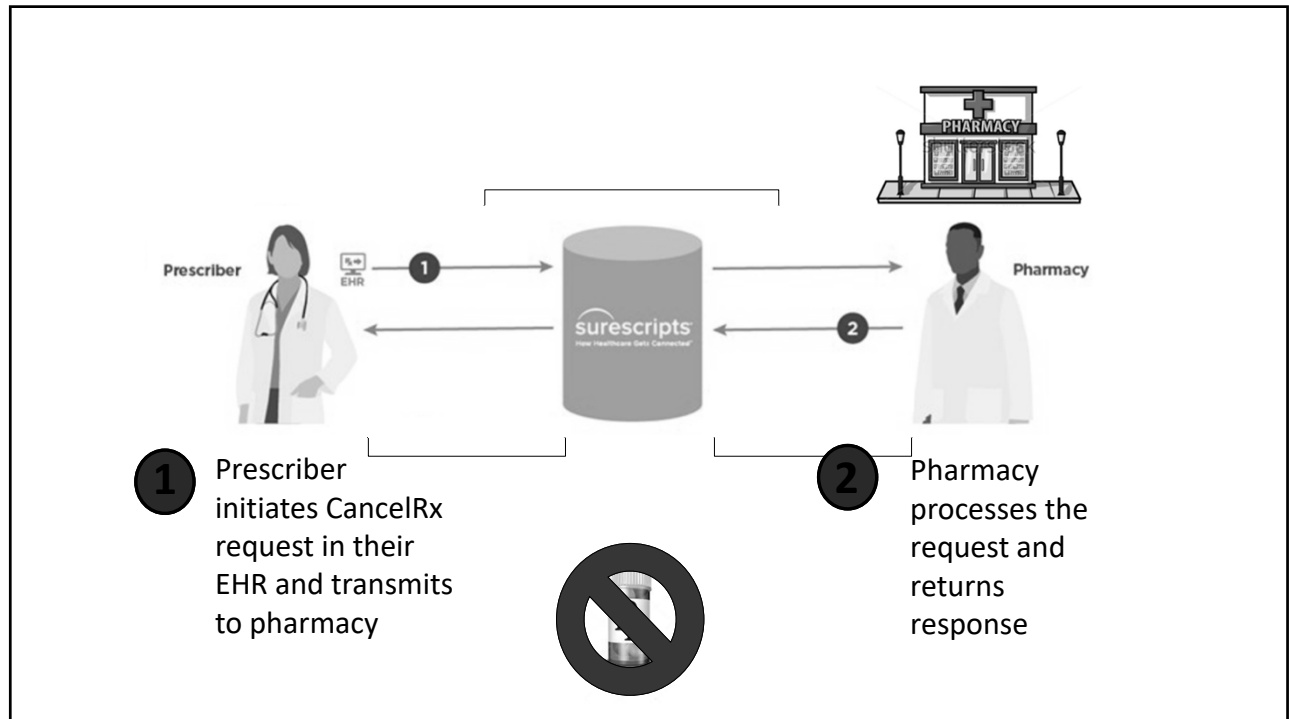
What is CancelRx?

National Council for Prescription Drug Programs (NCPDP) SCRIPT Standard transaction

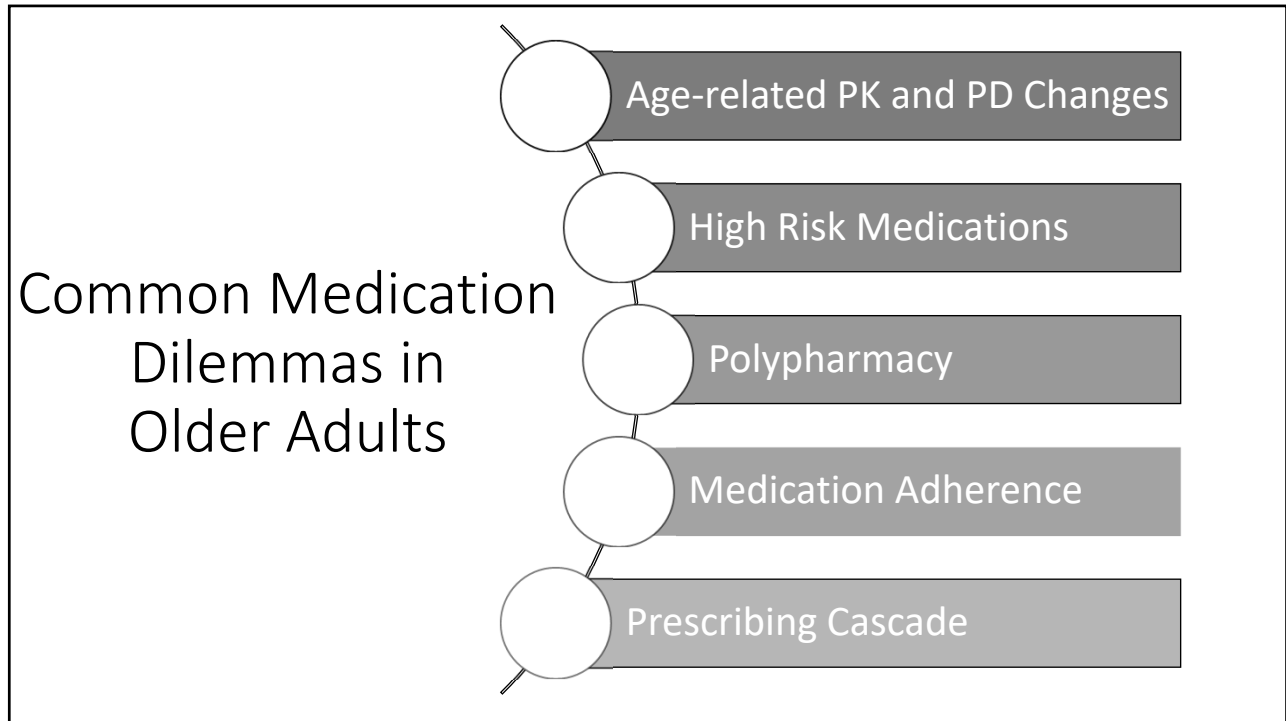
Electronic message sent via EHR from Clinician to Pharmacy to request that a Rx be discontinued



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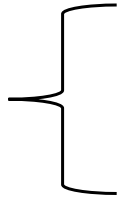
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2024 CMS Medicare Part D Star Ratings Measures & respective weightings

PQA measures



Measure Name	2024
Call Center - Foreign Language Interpreter and TTY Availability	4
Complaints about the Drug Plan	4
Members Choosing to Leave the Plan	4
Drug Plan Quality Improvement	5
Rating of Drug Plan	4
Getting Needed Prescription Drugs	4
MPF Price Accuracy	1
Medication Adherence for Diabetes Medications	3
Medication Adherence for Hypertension (RAS antagonists)	3
Medication Adherence for Cholesterol (Statins)	3
MTM Program Completion Rate for CMR	1
Statin Use in Persons with Diabetes	1

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Medicare Part D Star Ratings Adherence Measures

Measure	Weight
Medication Adherence for Diabetes Medications	3
Medication Adherence for Hypertension Medications (ACEI/ARB)	3
Medication Adherence for Cholesterol Medications (Statins)	3

The ability of a patient to take a prescribed dose of medication at the prescribed frequency for the prescribed length of time for at least 80% of the time.
 This is based on Rx refills using claims data.
 Calculation used for the measure is Proportion of Days Covered (PDC).

$$PDC = \frac{\text{\# of covered days by prescription claims}}{\text{\# of days in measurement period}}$$

PDC Goal ≥ 80%

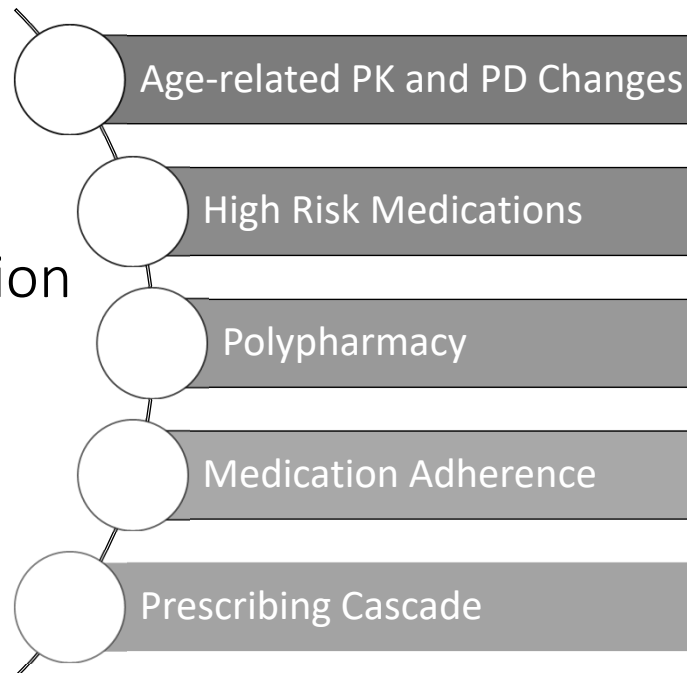
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Strategies for Improving Medication Adherence

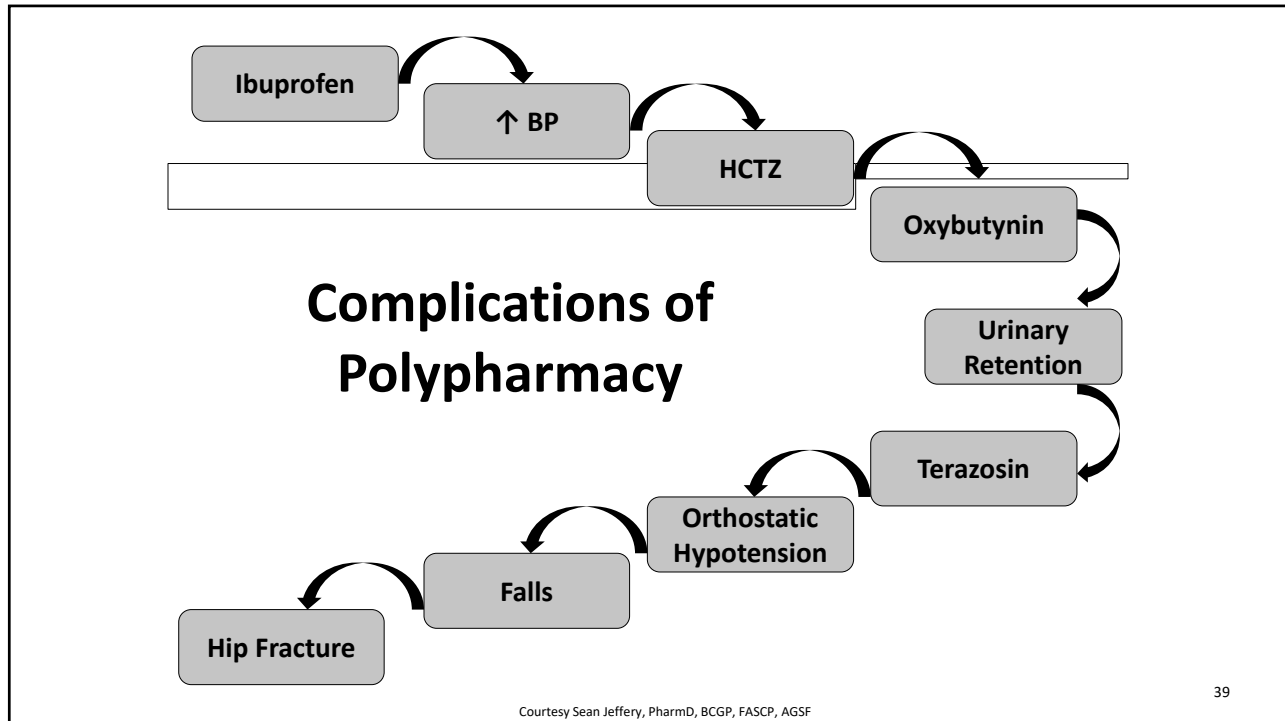
Barrier	Possible Strategies
Cost	Switch 30 to 90 day Rx and Mail order can result in lower copay Maximize generic prescribing
Difficulty Refilling Medications	Request Rx's to be synchronized Switch to local pharmacy with delivery service and/or pillbox prefill option Auto-refill programs
Forgetfulness	Encourage use of pillbox Use reminder system (set an alarm on phone, link taking medication to a daily routine like eating meals)
Overly Complex Medication Regimen	Consolidate to less frequent dosing Identify opportunities for deprescribing
Side effects	Review for alternatives and assess risks vs. benefits Make recommendation to provider
Goals of care not aligned with medication use	Review patient's beliefs (cultural, religious, moral) to identify reasons for not taking Rx Talk about expectations of taking the medication and prevention of a worse outcome

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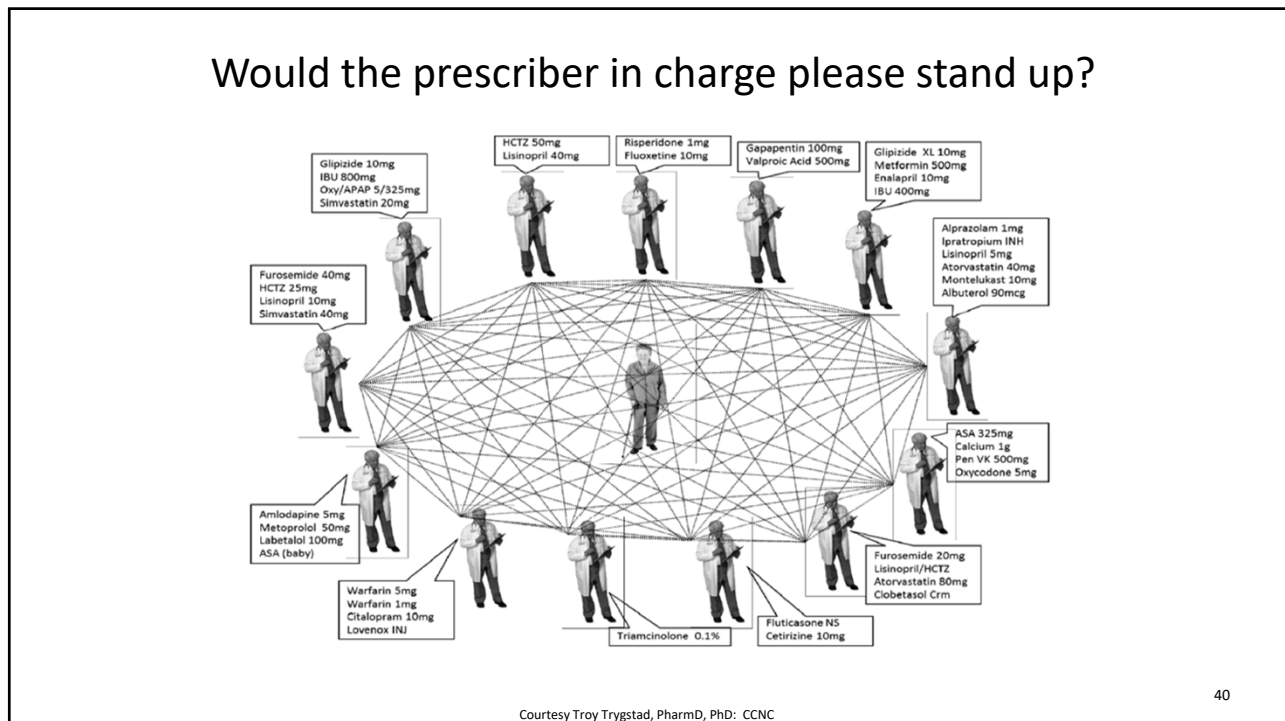
Common Medication Dilemmas in Older Adults



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Deprescribing Guidelines and Tools

- Beers Criteria
- STOPP-START Tool
- STOPP-Frail Tool
- Canadian Deprescribing Guidelines
- Australia's Primary Tasmania Health Guidelines
- Anticholinergic Cognitive Burden Scale
- Medication Appropriateness Index (MAI)
- MedStopper

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STOPP START Toolkit Supporting Medication Review

STOPP:

Screening Tool of Older People's potentially
inappropriate Prescriptions

START:

Screening Tool to Alert doctors to
Right Treatments

Version 2

June 2016

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<p>BNF Chapter 6. Endocrine System</p> <p>STOP:</p> <p>Sulfonylureas with a long duration of action (e.g. glibenclamide, chlorpropamide, glimepiride) with type 2 diabetes mellitus (<i>risk of prolonged hypoglycaemia</i>).</p> <p>Metformin if eGFR below 30 ml/min/1.73m² (<i>risk of lactic acidosis</i>).</p> <p>Pioglitazone in patients with heart failure (<i>risk of exacerbation of heart failure</i>).</p> <p>Oestrogens:</p> <ul style="list-style-type: none"> with a history of breast cancer or venous thromboembolism (<i>increased risk of recurrence</i>). without progestogen in patients with intact uterus (<i>risk of endometrial cancer</i>). <p>Any hormone replacement therapy in females with:</p> <ul style="list-style-type: none"> acute liver disease (<i>metabolised by the liver</i>). oestrogen-dependent cancer (<i>may worsen prognosis</i>). undiagnosed vaginal bleeding or untreated endometrial hyperplasia. active thrombophlebitis, thrombophilic disorder (<i>increased risk of venous thromboembolism</i>). active or recent arterial thromboembolic disease (e.g. angina or myocardial infarction) (<i>at increased risk of arterial thrombosis</i>). <p>Androgens (male sex hormones) in the absence of primary or secondary hypogonadism (<i>risk of androgen toxicity; no proven benefit outside of the hypogonadism indication</i>).</p> <p>Bisphosphonates:</p> <ul style="list-style-type: none"> if greater than 5 years treatment duration (for drug holiday), after discussion of risks and benefits. if unexplained thigh, hip or groin pain is reported, after discussion of risks and benefits. given orally in patients with a current or recent history of upper gastrointestinal disease i.e. dysphagia, oesophagitis, gastritis, duodenitis, or peptic ulcer disease, or upper gastrointestinal bleeding (<i>risk of relapse/exacerbation of oesophagitis, oesophageal ulcer, oesophageal stricture</i>). <p>Bisphosphonates or Denosumab in patients considered at low fracture risk (FRAX® assessment tool).</p> <p>Denosumab if patient is unable to have regular dental check ups.</p>	<p>BNF Chapter 6. Endocrine System</p> <p>START:</p> <p>ACEI or AIIRA (if intolerant of ACEI) in diabetes with evidence of renal disease i.e. dipstick proteinuria or microalbuminuria (greater than 30 mg/24 hours) with or without serum biochemical renal impairment.</p> <p>Bisphosphonates and vitamin D and calcium (where dietary calcium intake inadequate) in patients taking long-term systemic glucocorticosteroid therapy (greater than or equal to 7.5 mg prednisolone per day (or equivalent) for 3 months or more).</p> <p>Vitamin D and calcium (where dietary calcium intake inadequate) supplement:</p> <ul style="list-style-type: none"> in patients with known osteoporosis and/or previous fragility fracture(s) and/or (Bone Mineral Density T-scores greater than -2.5 in multiple sites). in older people who are housebound or experiencing falls or with osteopenia (Bone Mineral Density T-score is in the range of -1 to -2.5 in multiple sites). <p>Bone anti-resorptive or anabolic therapy (e.g. bisphosphonate) in patients with documented osteoporosis, where no pharmacological or clinical status contraindication exists (Bone Mineral Density T-scores is less than -2.5 in multiple sites) and/or previous history of fragility fracture(s).</p> <p>Personalised management plan for diabetes, including dietary and other aspects of lifestyle modification: increasing physical activity and losing weight, alcohol intake and smoking advice (where applicable).</p> <p>A group education programme for diabetes eg. <u>DESMOND</u> (type 1) and <u>DAFNE</u> (type 2) referral programmes.</p>
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<p style="text-align: center;">STOPP-Frail</p> <p style="text-align: center;">Screening Tool of Older Persons Prescriptions in Frail adults with limited life expectancy</p> <p>STOPP-Frail is a list of potentially inappropriate prescribing indicators designed to assist physicians with stopping such medications in older patients (≥65 years) who meet ALL of the criteria listed below:</p> <ol style="list-style-type: none"> End-stage irreversible pathology Poor one year survival prognosis Severe functional impairment or severe cognitive impairment or both Symptom control is the priority rather than prevention of disease progression <p>The decision to prescribe/not prescribe medications to the patient, should also be influenced by the following issues:</p> <ol style="list-style-type: none"> Risk of the medication outweighing the benefit Administration of the medication is challenging Monitoring of the medication effect is challenging Drug adherence/compliance is difficult <p>Disclaimer (STOPP-Frail)</p> <p>Whilst every effort has been made to ensure that the potentially inappropriate prescribing criteria listed in STOPP-Frail are accurate and evidence-based, it is emphasized that the final decision to avoid or initiate any drug referred to in these criteria rests entirely with the prescriber. It is also to be noted that the evidence base underlying certain criteria in STOPP-Frail may change after the time of publication of these criteria. Therefore, it is advisable that prescribing decisions should take account of current published evidence in support of or against the use of drugs or drug classes described in STOPP-Frail.</p> <p>Author : Hanora Lavan, A., Gallagher, P., Parsons, C., & O'Mahony, D. (2017)</p>	<p>Section A: General</p> <p>A1: Any drug that the patient persistently fails to take or tolerate despite adequate education and consideration of all appropriate formulations.</p> <p>A2. Any drug without clear clinical indication.</p> <p>Section B: Cardiovascular system</p> <p>B1. Lipid lowering therapies (statins, ezetimibe, bile acid sequestrants, fibrates, nicotinic acid and acipimox) These medications need to be prescribed for a long duration to be of benefit. For short-term use, the risk of ADEs outweighs the potential benefits [43–45]</p> <p>B2. Alpha-blockers for hypertension Stringent blood pressure control is not required in very frail older people. Alpha blockers in particular can cause marked vasodilatation, which can result in marked postural hypotension, falls and injuries [46]</p> <p>Section C: Coagulation system</p> <p>C1: Anti-platelets Avoid anti-platelet agents for primary (as distinct from secondary) cardiovascular prevention (no evidence of benefit) [47]</p> <p>Section D: Central Nervous System</p> <p>D1. Neuroleptic antipsychotics Aim to reduce dose and gradually discontinue these drugs in patients taking them for longer than 12 weeks if there are no current clinical features of behavioural and psychiatric symptoms of dementia (BPSD) [48–52]</p> <p>D2: Memantine Discontinue and monitor in patients with moderate to severe dementia, unless memantine has clearly improved BPSD (specifically in frail patients who meet the criteria above) [53–56]</p>
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Canadian Deprescribing Guidelines

Proton Pump Inhibitor (PPI)

Proton pump inhibitors – or PPIs – are a class of drugs used to treat heartburn, gastroesophageal reflux disease and gastric ulcers. PPIs reduce the production of acid by blocking the enzyme in the wall of the stomach that produces acid

- Proton Pump Inhibitor evidence-based deprescribing guideline (published in Canadian Family Physician)
- Proton Pump Inhibitor deprescribing algorithm (English)
- Proton Pump Inhibitor deprescribing algorithm (French)
- Proton pump inhibitor deprescribing guideline information pamphlet (English)
- Proton pump inhibitor deprescribing guideline information pamphlet (French)
- Proton pump inhibitor deprescribing infographic (English)
- Proton pump inhibitor deprescribing infographic (French)
- Proton pump inhibitor patient decision aid
- Whiteboard video on using the Proton Pump Inhibitor deprescribing algorithm (English)
- Whiteboard video on using the Proton Pump Inhibitor deprescribing algorithm (French)

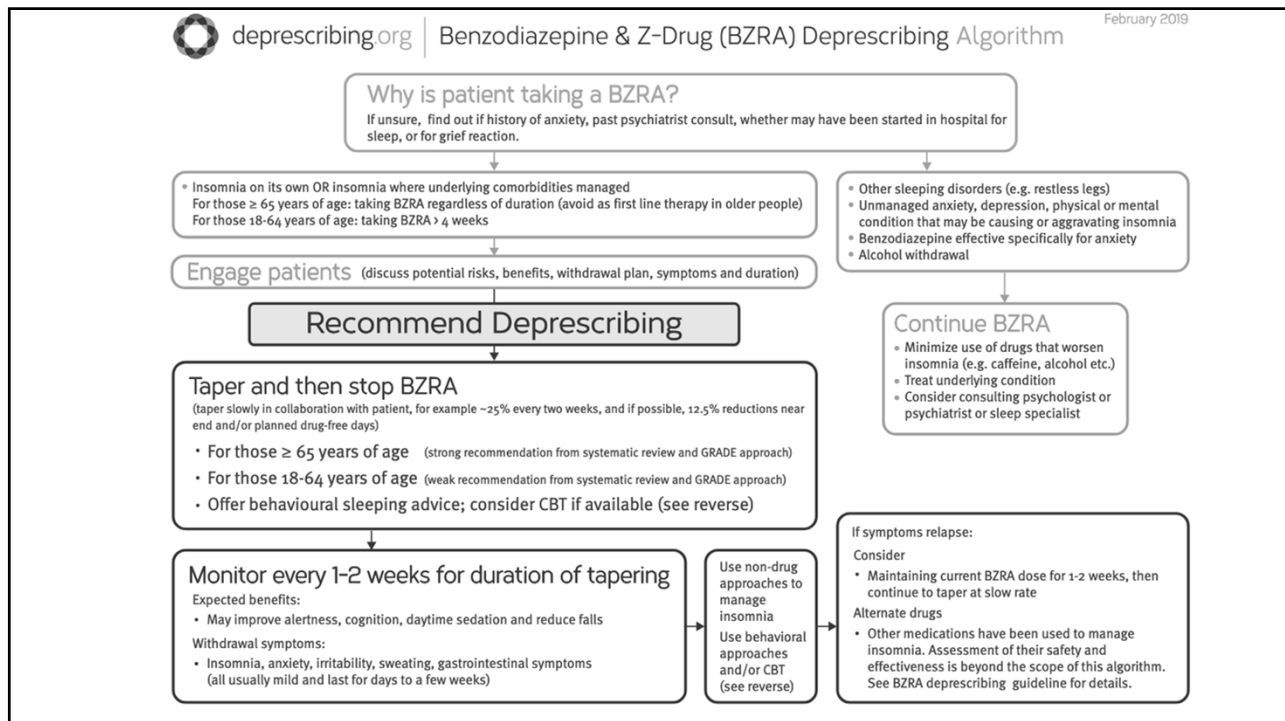
Antihyperglycemic

Antipsychotic

Benzodiazepine Receptor Agonist (BZRA)

Cholinesterase Inhibitors (ChEIs) and Memantine

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Step-By-Step Taper from the Canadian Deprescribing Guidelines

WEEKS	TAPERING SCHEDULE							✓
	MO	TU	WE	TH	FR	SA	SU	
1 and 2	●	●	●	●	●	●	●	
3 and 4	◐	●	◐	◐	●	◐	◐	
5 and 6	◑	◑	◑	◑	◑	◑	◑	
7 and 8	◒	◒	◒	◒	◒	◒	◒	
9 and 10	◓	◓	◓	◓	◓	◓	◓	
11 and 12	◔	◔	◔	◔	◔	◔	◔	
13 and 14	◕	◕	◕	◕	◕	◕	◕	
15 and 16	×	◕	×	×	◕	×	◕	
17 and 18	×	×	×	×	×	×	×	

What the symbols mean

● Full dose ◐ Half dose ◑ Quarter of a dose × No dose

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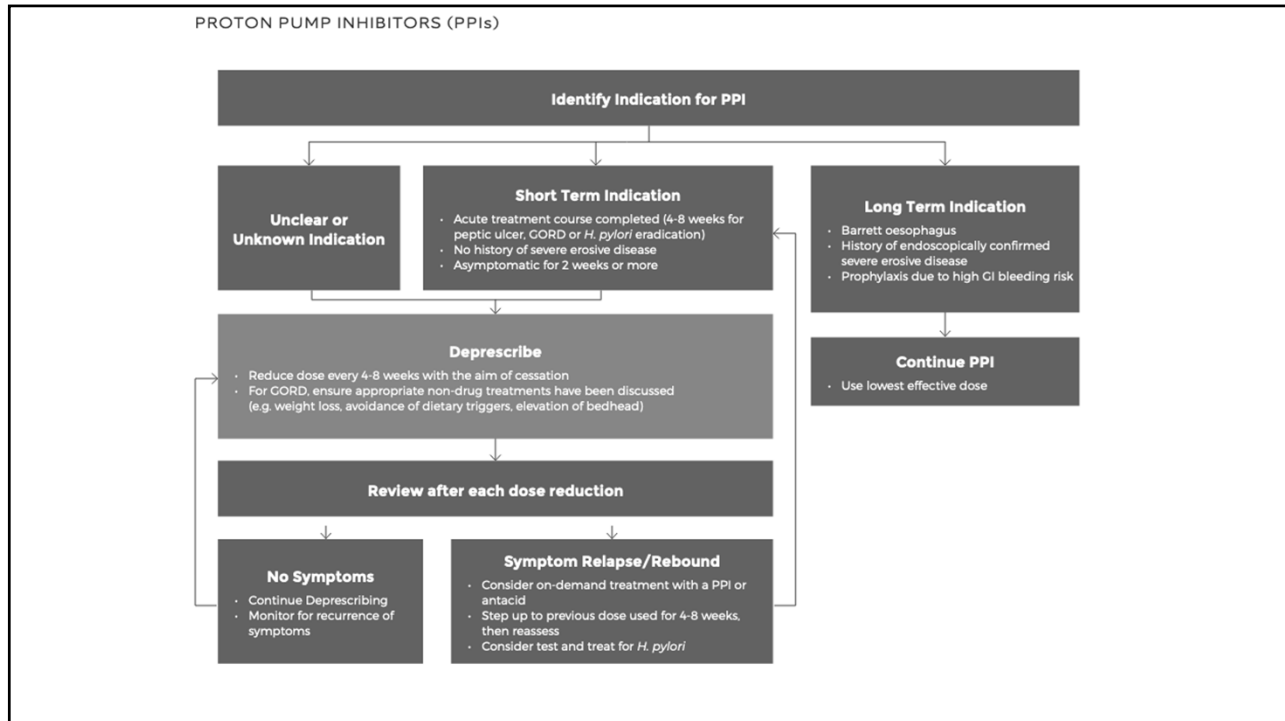
Australia's Primary Health Tasmania Guidelines

Medication management – deprescribing

Download File:

- Deprescribing fact sheet
- A guide to deprescribing allopurinol
- A guide to deprescribing anticholinergics
- A guide to deprescribing anticoagulants
- A guide to deprescribing antiepileptic drugs (AEDs)
- A guide to deprescribing antihyperglycaemics
- A guide to deprescribing antihypertensives
- A guide to deprescribing antiplatelets
- A guide to deprescribing antipsychotics
- A guide to deprescribing benzodiazepines
- A guide to deprescribing bisphosphonates
- A guide to deprescribing cholinesterase inhibitors
- A guide to deprescribing gabapentinoids
- A guide to deprescribing glaucoma eye drops
- A guide to deprescribing inhaled corticosteroids
- A guide to deprescribing long-acting nitrates
- A guide to deprescribing non-steroidal anti-inflammatory drugs (NSAIDs)
- A guide to deprescribing opioids
- A guide to deprescribing proton pump inhibitors (PPIs)
- A guide to deprescribing statins
- A guide to deprescribing vitamin D and calcium
- Consumer resource: Managing Your Medications brochure
- Consumer resource: Managing Your Medications card

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Anticholinergic Burden Calculator

www.acbcalc.com

ACB calculator

[Support Us](#)
[Home](#)
[About ACB](#)
[Medicines Scorecard](#)

Benadryl™ 🗑️

Score: 3

Medicine: Diphenhydramine

Brands: Benadryl™, Nytol™, Sleepeaze™

Oxybutynin 🗑️

Score: 3

Medicine: Oxybutynin

Brands: Ditropan™

Amtriptyline 🗑️

Score: 3

Medicine: Amtriptyline

Brands: Elavil™

[+ Add new medicine](#)
[Reset](#)

Total ACB Score: 9 High Risk

Your patient has scored ≥3 and is therefore at a higher risk of confusion, falls and death.

Please review their medications and, if possible, discuss this with the patient and/or relatives/carers. Please consider if any of these medications could be switched to a lower-risk alternative.

For help choosing medicines to reduce anticholinergic burden, click [here](#)

Many of the medications that we commonly prescribe have anticholinergic properties. In patients over 65 years of age these can cause adverse events, such as confusion, dizziness and falls. These have been shown to increase patient mortality.

You can use this calculator to work out the Anticholinergic Burden for your patients; a score of 3+ is associated with an increased cognitive impairment and mortality.

Whilst there are multiple different scoring systems, the German Anticholinergic Burden score⁷ and the Anticholinergic Cognitive Burden Scale⁸ have been demonstrated to show most validity and reliability⁹. Therefore, we have used a combination of these 2 scales when creating the ACB calculator. When discrepancies arose, we opted to include the higher value in the interest of safety.

Find more information on Anticholinergic Burden or help choosing medicines to reduce anticholinergic burden

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Anticholinergic Burden Calculator

www.acbcalc.com

Some options for reducing the score:

Chlorphenamine	Nasal sprays, Loratidine, Fexofenadine
Oxybutynin	Non-pharmacological alternatives (eg pelvic floor exercises), Mirabegron Remember - Oxybutynin is a small structure that easily crosses the Blood-brain barrier. Solifenacin, Trospium, and Tolteradine do not cross so easily.
Amitriptyline (for depression)	Lifestyle options, SSRIs (citalopram, sertraline) or SNRIs (Duloxetine, Venlafaxine)
Amitriptyline (for pain)	Conservative options such as stretching, hot water bottles, Gabapentin, Duloxetine
Tramadol	Physiotherapy, massage, stretching, heat/ice, Paracetamol

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Medication Appropriateness Index				
Patient ID# _____	Evaluator _____	Date _____		
Drug Code _____	Drug _____			
To assess the appropriateness of the drug, please answer the following questions and circle the applicable rating:				
1. Is there an indication for the drug?	A _____ Indicated	B _____	C _____ Not Indicated	Z _____ DK
Comments:				
2. Is the medication effective for the condition?	A _____ Effective	B _____	C _____ Ineffective	Z _____ DK
Comments:				
3. Is the dosage correct?	A _____ Correct	B _____	C+ or C- _____ Incorrect	Z _____ DK
Comments:				
4. Are the directions correct?	A _____ Correct	B _____	C _____ Incorrect	Z _____ DK
Comments:				
5. Are the directions practical?	A _____ Practical	B _____	C _____ Impractical	Z _____ DK
Comments:				
6. Are there clinically significant drug-drug interactions?	A _____ Insignificant	B _____	C _____ Significant	Z _____ DK
Comments:				
7. Are there clinically significant drug-disease/condition interactions?	A _____ Insignificant	B _____	C _____ Significant	Z _____ DK
Comments:				
8. Is there unnecessary duplication with other drug(s)?	A _____ Necessary	B _____	C _____ Unnecessary	Z _____ DK
Comments:				
9. Is the duration of therapy acceptable?	A _____ Acceptable	B _____	C _____ Not acceptable	Z _____ DK
Comments:				
10. Is this drug the least expensive alternative compared to others of equal utility?	A _____ Least expensive	B _____	C _____ Most expensive	Z _____ DK
Comments:				

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Languages: English (EN) ▾

MEDSTOPPER

BETA

Starting medications is like the bliss of marriage and stopping them is like the agony of divorce. - Doug Danforth

HOME ABOUT FAQs RESOURCES CONTACT

MedStopper is a deprescribing resource for healthcare professionals and their patients.

- 1 Frail elderly?
- 2 Generic or Brand Name:
- 3 Select Condition Treated: ▾

Generic Name	Brand Name	Condition Treated	Add to MedStopper

◀ Previous Next ▶
▾

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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
■	alprazolam (Xanax) / 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.	rebound insomnia, tremor, anxiety, as well as more serious, rare manifestations including hallucinations, seizures, and	Details
■	oxybut (Ditrop Incontinence)	☺	☹	☹	withdrawal symptoms occur, go back to approximately 75% of the previously tolerated dose.		None
■	ibuprofen (Motrin, Advil) / NSAID / general pain/osteoarthritis	☺	☹	☹	Tapering not required		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

Beers Criteria:
Avoid benzodiazepines for treatment of insomnia, agitation, or delirium

STOPP Criteria:
Avoid long term (>1month) use and avoid if fallen in last 3 months

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Active Learning Question #3: Case

- 86 y/o female referred for concern for falls while on multiple medications
- H/o injurious falls - significant rib fracture, vertebral compression fractures
- On oxycontin for > 5 years for significant osteoporosis. Is most bothered by bilateral foot pain d/t peripheral neuropathy.
- On zolpidem for insomnia. Reports zolpidem is not preventing night-time wakefulness and has become less helpful for falling asleep. Is amenable to titrating down on zolpidem.
- Treated with clonazepam for chronic tremor. Resistant to altering clonazepam given irritability and shaking of hands/head when skips a dose.

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Medications

albuterol inhaler
 amiodarone 300mg daily
 amlodipine 10mg daily
 aspirin 81mg daily
 atorvastatin 20mg daily
 betamethasone cream
 calcium carbonate + cholecalciferol (600/800mg tab)
 clonazepam 1mg BID
 docusate PRN
 esomeprazole 40mg daily
 furosemide 20mg daily
 levothyroxine 100mcg daily
 metoprolol succinate 50mg daily
 nitroglycerin 0.4mg SL tab
 oxycontin 20mg BID
 zolpidem 10mg qHS
 vitamin B6-B12 complex

What resources can we use to help identify deprescribing algorithms and recommendations for alternative options?

Which meds would you tackle first?

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Medications

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 levothyroxine 100mcg daily
 metoprolol succinate 50mg daily
 nitroglycerin 0.4mg SL tab
~~oxycontin 20mg BID~~
~~zolpidem 10mg qHS~~
 vitamin B6-B12 complex

Duloxetine

Lidocaine

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Fall risk and CNS depressants:

- **Pain:**
 - **Tapering recommendations**
 - Oxycontin – decrease by 10mg/day every 10 days
 - 10mg AM + 20mg PM x 10 days
 - 10mg BID x 10 days
 - 10mg HS x 10 days
 - Stop
 - **Duloxetine:** initiate 30 mg for one month and then increase as tolerated to 60 mg daily (repeat BMP to ensure CrCl > 30mL/min given CKD Stage II)
 - Apply **lidocaine** to feet 4x/day
- **Sleep:**
 - **Zolpidem:** 7.5mg HS x 14 days → 5mg HS x 14 days → 2.5mg HS x 14 days → discontinue
 - Sleep hygiene: provided tips and National Sleep Foundation website

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7. Anticholinergic Burden Calculator. www.acbcalc.com
8. Medication Appropriateness Index. Health Quality & Safety Commission. www.hqsc.govt.nz/assets/Our-work/System-safety/Reducing-harm/Medicines/Publications-resources/Use-of-the-Medication-Appropriateness-Index.pdf
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