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Act to Reduce Polypharmacy: Practical Use of the Updated Beer's Criteria

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Learning Objectives

At the completion of this activity, the participant will be able to:

1. Identify key guiding principles of medication use in older adults.
2. Summarize the changes and rationale behind the 2023 AGS Beers Criteria.
3. Analyze patient cases to identify inappropriate medications and understand their role in common prescribing cascades.
4. Devise practical solutions to reduce inappropriate medications and polypharmacy for providers, patients, or caregivers.

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Disclosures

The presenters have no relevant financial interest or other relationship with the manufacturer(s) of any commercial product(s) and/or provider(s) of commercial services that are discussed in this activity to disclose.

The off-label use of medication will not be discussed in this presentation.

Characteristics of Medication Use

- **Patient specific responses to medications become more complex as patients age**
  - Medication response based upon pharmacokinetics (absorption, distribution, metabolism, excretion) and pharmacodynamics can be altered due to physiologic changes[1]

Older individuals are at risk for inappropriate medication use due to Adverse Drug Reactions (ADRs), polypharmacy, prescribing cascades, missing appropriate therapy, medication nonadherence, and inappropriate prescribing.[1-6]

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Defining Polypharmacy

Basic

- The simultaneous use of multiple drugs to treat a single patient for one or more conditions, prescribed by many separate physicians and perhaps filled at more than one pharmacy
- DIFFERENT from polymedicine: multiple medications used to treat multiple diseases

Numeric

- No consensus
- Most common definition: 5 or more medications daily
- Definitions range from 2 or more from 11 or more

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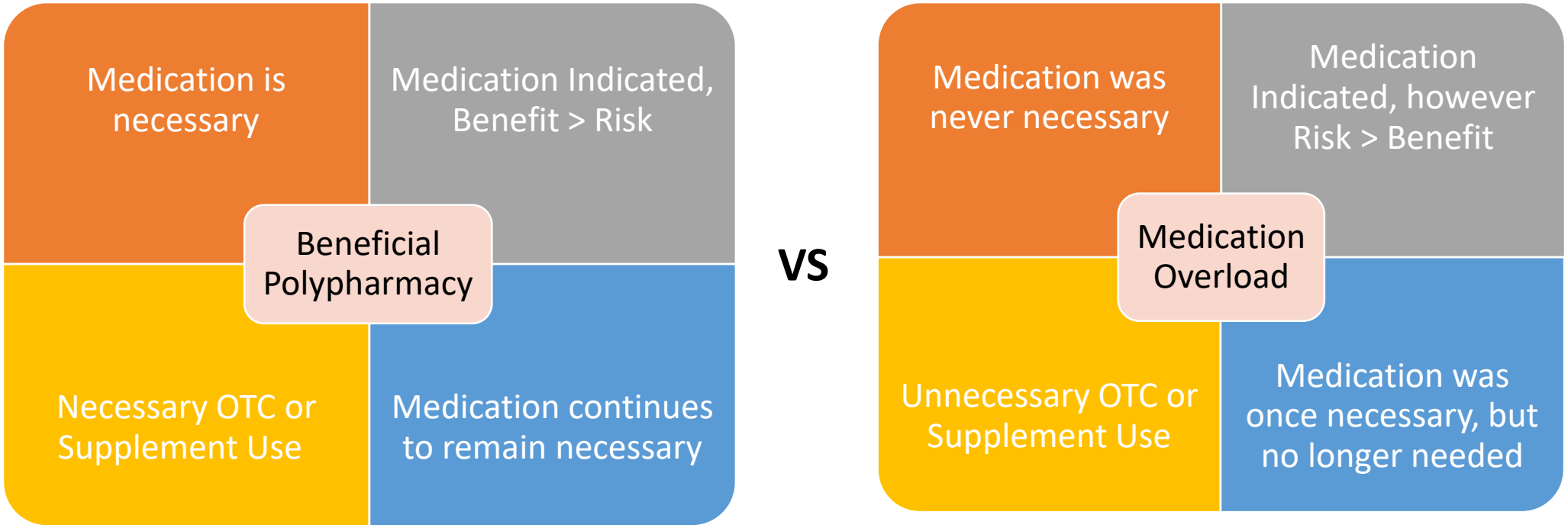
Visualizing Polypharmacy



Medication Overload: America's Other Drug Problem. How the drive to prescribe is harming older adults. April 2019. https://lowninstitute.org/wp-content/uploads/2019/08/medication-overload-lown-web.pdf

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Defining Prescribing Cascades

prescribing cascade

DEFINITION

"A prescribing cascade refers to the sequence of events in which an adverse drug event is misinterpreted as a new medical condition, leading to the addition of another, potentially unavoidable medication."

Sternberg SA, Guy-Alfandary S, Rochon PA. Prescribing cascades in older adults. CMAJ Feb 2021 193(6) E215 DOI: 10.1503/cmaj.201564

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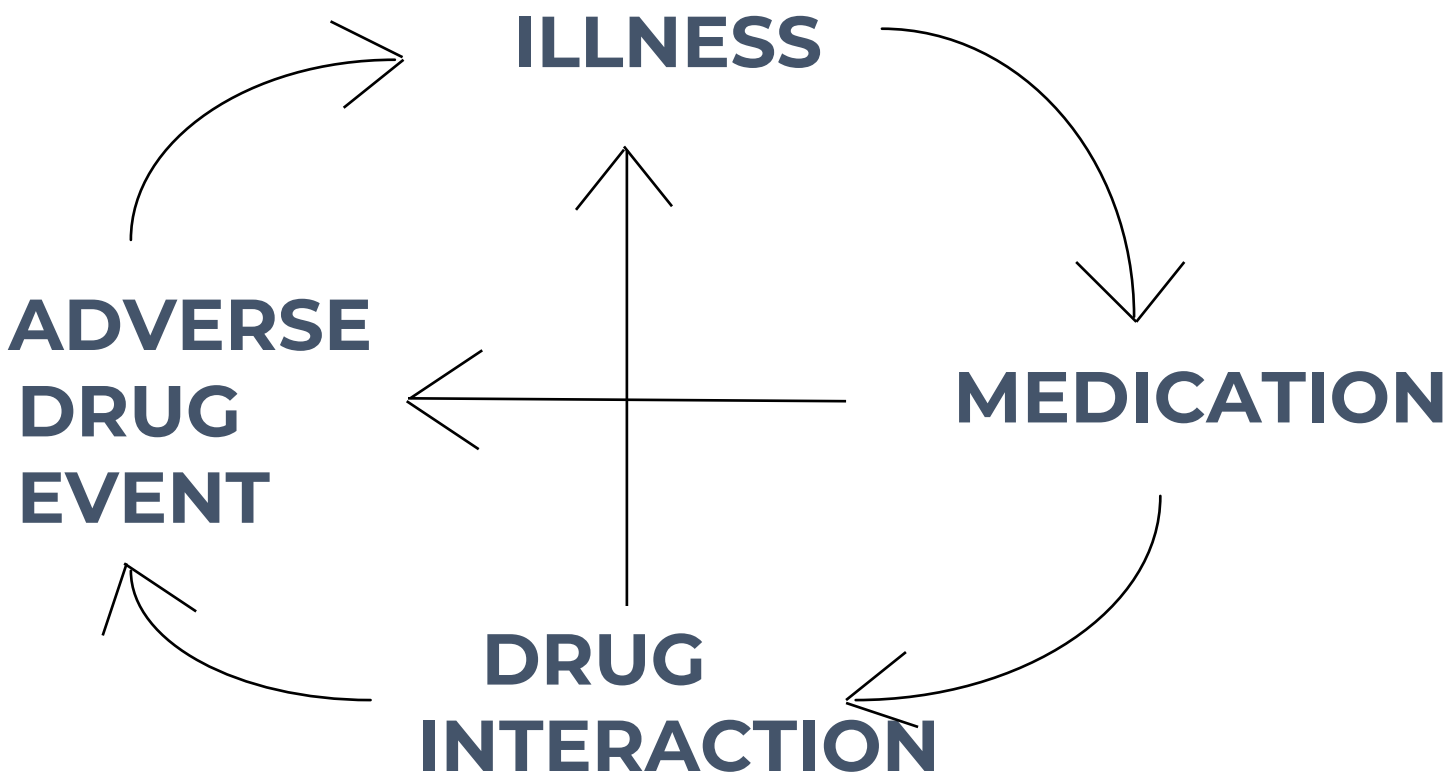
Visualizing Prescribing Cascades



Using current literature to identify potentially inappropriate medication use and common prescribing cascades

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DOI: 10.1111/jgs.18372

SPECIAL ARTICLES

Journal of the American Geriatrics Society

American Geriatrics Society 2023 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults

By the 2023 American Geriatrics Society Beers Criteria® Update Expert Panel

Correspondence
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Abstract
The American Geriatrics Society (AGS) Beers Criteria® (AGS Beers Criteria®) for Potentially Inappropriate Medication (PIM) Use in Older Adults is widely used by clinicians, educators, researchers, healthcare administrators, and regulators. Since 2011, the AGS has been the steward of the criteria and has produced

American Geriatrics Society (AGS) 2023 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults

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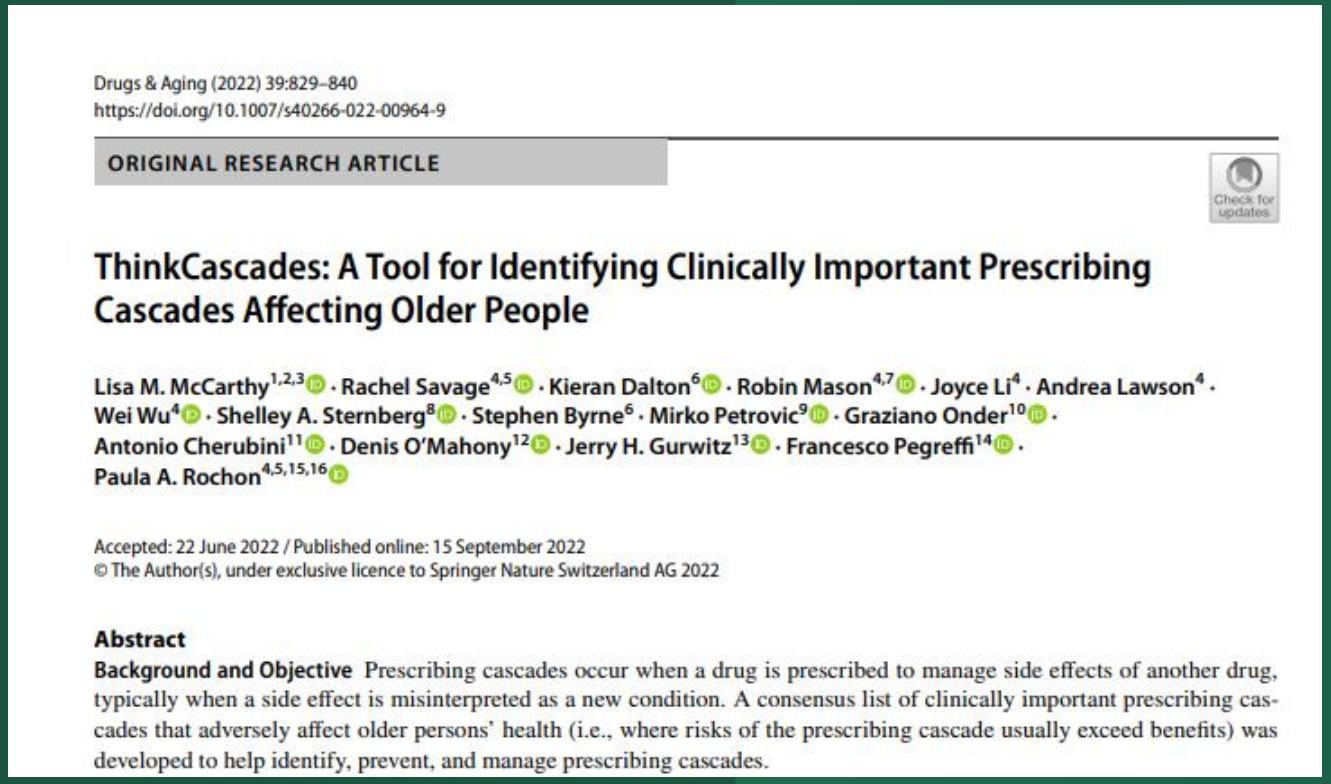
By the 2023 American Geriatrics Society Beers Criteria® Update Expert Panel. American Geriatrics Society 2023 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults. *J Am Geriatr Soc*. 2023; 71(7): 2052-2081. doi:10.1111/jgs.18372

ThinkCascades: A Tool for Identifying Clinically Important Prescribing Cascades Affecting Older People



Drugs & Aging (2022) 39:829–840
https://doi.org/10.1007/s40266-022-00964-9

ORIGINAL RESEARCH ARTICLE

ThinkCascades: A Tool for Identifying Clinically Important Prescribing Cascades Affecting Older People

Lisa M. McCarthy[1,2,3] · Rachel Savage[4,5] · Kieran Dalton[6] · Robin Mason[4,7] · Joyce Li[4] · Andrea Lawson[4] · Wei Wu[4] · Shelley A. Sternberg[8] · Stephen Byrne[6] · Mirko Petrovic[9] · Graziano Onder[10] · Antonio Cherubini[11] · Denis O'Mahony[12] · Jerry H. Gurwitz[13] · Francesco Pegreffi[14] · Paula A. Rochon[4,5,15,16]

Accepted: 22 June 2022 / Published online: 15 September 2022

Abstract

Background and Objective Prescribing cascades occur when a drug is prescribed to manage side effects of another drug, typically when a side effect is misinterpreted as a new condition. A consensus list of clinically important prescribing cascades that adversely affect older persons' health (i.e., where risks of the prescribing cascade usually exceed benefits) was developed to help identify, prevent, and manage prescribing cascades.

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McCarthy LM, Savage R, Dalton K, et al. ThinkCascades: A Tool for Identifying Clinically Important Prescribing Cascades Affecting Older People. *Drugs Aging*. 2022;39(10):829-840. doi:10.1007/s40266-022-00964-9

American Geriatrics Society (AGS) 2023 updated AGS Beers Criteria® for potentially inappropriate medication use in older adults

An evidence based guide for practicing clinicians to identify potentially inappropriate medication (PIM) use in patients 65 years and older in ambulatory, acute, and institutional settings[6]

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The Beers Criteria: An Evolution[6-7]

1991
Criteria First Published by Dr. Mark Beers
Frail elderly in nursing homes

1997
All adults 65 years and older; frailty level and place of residence not specified

2003
- 48 potentially inappropriate medications
- Stratified by adverse reaction potential (high or low)

2012
- Supported by American Geriatrics Society (AGS)
- 3 categories
  - Potentially inappropriate medications to avoid in older adults
  - Potentially inappropriate medications to avoid in older adults with certain diseases
  - Medications to be used with caution

2015
- List of potentially harmful drug-drug interactions
- Doses reductions based on renal function
- Alternative for medications to be avoided

2019
Intended to use in adults 65 or older in ambulatory, acute, and institutional (excludes hospice and palliative)

2023
Many updates!!

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Potentially Inappropriate Medications (PIMS)

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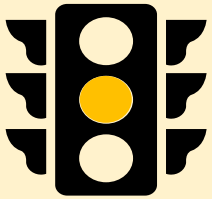
- Provides an explicit list of potentially inappropriate medications
  - Potentially → under specific situations such as certain disease states, conditions, or care settings
  - NOT intended to be used in a punitive manner, these are recommendations not absolute contraindications
  - Circumstances such as barriers to therapy (cost, etc.) or failure of a safer alternative may warrant use of these medications



Think: Yellow Warning Light
Not: Red Stop Light

By the 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. *J Am Geriatr Soc*. 2023; 71(7): 2052-2081. doi:10.1111/jgs.18372

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New Table in 2023 AGS Beers Criteria ®

- Table 11-Principles for how patients, clinicians, health systems, and payors should use the AGS Beers Criteria®
  - "Medications in the AGS Beers Criteria® are potentially inappropriate, not definitely inappropriate."
  - "Read the rationale and recommendations statements for each criterion. The caveats and guidance listed there are important."
  - "Understand why medications are included in the AGS Beers Criteria® and adjust your approach to those medications accordingly."
  - "Optimal application of the AGS Beers Criteria® involves identifying PIMs and, when appropriate, offering safer nonpharmacologic and pharmacologic therapies."
  - "The AGS Beers Criteria® should be a starting point for a comprehensive process of identifying and improving medication appropriateness and safety."
  - "Access to medications included in the AGS Beers Criteria® should not be excessively restricted by prior authorization and/or health plan coverage policies."
  - "The AGS Beers Criteria® are not equally applicable to all countries (because of cross-national differences in drug availability)."

By the 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. *J Am Geriatr Soc*. 2023; 71(7): 2052-2081. doi:10.1111/jgs.18372

Methodology used to update the 2023 AGS Beers Criteria ®

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- Comprehensive literature review of data published between June 1, 2017 and 2022 for guidance of recommendations
- Medications were removed if they are no longer sold in the US, if potential for harm is not unique to older people, or were considered low-usage. See Table 8 for additional information.
  - Low-usage <4000 U.S. Medicare beneficiaries aged 65 years or older receiving the drug in 2020 based on data from Medicare Part D Public Use Files

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Organization of the 2023 AGS Beers Criteria®

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5 Medication Categories/Table Titles:

1. Medications considered as potentially inappropriate (Table 2)
2. Medications potentially inappropriate in patients with certain diseases or syndromes (Table 3)
3. Medications to be used with caution (Table 4)
4. Potentially inappropriate drug-drug interactions (Table 5)
5. Medications whose dosages should be adjusted based on renal function (Table 6)

Quality of Evidence:

- High-Quality
- Moderate-Quality
- Low-Quality

Strength of Recommendation:

- Strong
- Weak

By the 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. *J Am Geriatr Soc*. 2023; 71(7): 2052-2081. doi:10.1111/jgs.18372

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Test Your Knowledge Case Applications

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Case Scenario One

A 68-year-old female with non valvular atrial fibrillation is being seen in clinic today for an annual wellness exam. Upon review of her medications, you see she is taking dabigatran 150 mg by mouth twice daily. Her CrCl is 65 mL/min. Based upon the updated 2023 AGS® Beers Criteria, what recommendation would you make?

A. Continue dabigatran 150 mg by mouth twice daily.
B. Discontinue dabigatran 150 mg by mouth twice daily, begin warfarin 2.5 mg by mouth daily.
C. Discontinue dabigatran 150 mg by mouth twice daily, begin apixaban 5 mg by mouth twice daily
D. Discontinue dabigatran 150 mg by mouth twice daily, begin rivaroxaban 20 mg by mouth once daily.

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Case Scenario Two

TS is a 67 year old male with no known drug allergies.

Diagnosis	Medication(s)
HTN/Edema	Furosemide 80mg BID, KCl 20Meq q day, Lisinopril 20mg q day, Metoprolol XL 200mg q day
Peripheral Neuropathy	Lidocaine Patch on/off (12/2023), Hydrocodone/APAP 5/325 1 q 6hr prn, Tramadol 50mg bid, Acetaminophen 650mg q 8hr prn
Depression	Citalopram 40mg q day (12/2023), Acetaminophen/diphenhydramine PM 2 tabs HS (2/2024)
Gout	Allopurinol 100mg q day
Glaucoma	Latanoprost 1 gtt os bid, Artificial tears 1 gtt ou bid
Diabetes Type 2	Glyburide 10mg Q day
BPH	Tamsulosin 0.4mg HS (1/2023)
Constipation	MOM 30ml PO q 8 hrs prn, Polyethylene glycol 17gm every other day, Senna 1 tab BID

Case Scenario Two, Cont.

- Citalopram and Lidocaine patches were both started 4 months prior to today's visit. Lidocaine has been of marginal benefit in this patient and the patient requires prn Hydrocodone/APAP 2 times/day on average and no prn APAP. Citalopram has been of minimal benefit for depression. Patient has trouble voiding for last 6 months. Hgb = 13.3 g/dL, creat. 1.5 mg/dL, and K+= 4.5 mmol/L, CrCl=55 ml/min (calculated), HgA1C= 6.1%. Blood sugars range in AM 55-115 mg/dL to PM 234-376 mg/dL the last 2 weeks.
- **Identify 2 top-priority recommendations to this patient's prescriber on how to help this patient, by considering problems with their current drug therapy. Discuss your initial thoughts with someone sitting near you today.**

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2023 AGS Beers Criteria®
New Medications/Criteria Added

2023 Updates: Additions

Table 2: Potentially inappropriate independent of diagnosis or condition

- Warfarin

Table 2: 2023 American Geriatrics Society Beers Criteria® for potentially inappropriate medication use in older adults				
Drug(s)	Rationale	Recommendation	Quality	Strength
Warfarin for the treatment of nonvalvular atrial fibrillation or venous thromboembolism (VTE)	Compared with DOACs, warfarin has higher risks of major bleeding (particularly intracranial bleeding) and similar or lower effectiveness for the treatment of nonvalvular atrial fibrillation and VTE. **DOACs are thus the preferred choice for anticoagulation for most people with these conditions.**	Avoid starting warfarin as initial therapy for the treatment of nonvalvular atrial fibrillation or VTE unless alternative options (i.e., DOACs) are contraindicated or there are substantial barriers to their use. For older adults who have been using warfarin long-term, it may be reasonable to continue this medication, particularly among those with well-controlled INRs (i.e., >70% time in the therapeutic range) and no adverse effects.	High	Strong

By the 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. *J Am Geriatr Soc*. 2023; 71(7): 2052-2081. doi:10.1111/jgs.18372

2023 Updates: Additions

Table 3: Potentially inappropriate considering disease and syndromes

- Dextromethorphan-quinidine – *Heart Failure*

Table 3: 2023 American Geriatrics Society Beers Criteria® potentially inappropriate medication use in older adults due to drug–disease or drug–syndrome interactions that may exacerbate the disease or syndrome.					
Disease or Syndrome	Drug(s)	Rationale	Recommendation	Quality	Strength
Cardiovascular Heart Failure	Dextromethorphan-quinidine	Concerns about QT prolongation	Avoid: Dextromethorphan-quinidine	Low	Strong

- Opioids – *Delirium*

Table 3: 2023 American Geriatrics Society Beers Criteria® potentially inappropriate medication use in older adults due to drug–disease or drug–syndrome interactions that may exacerbate the disease or syndrome.					
Disease or Syndrome	Drug(s)	Rationale	Recommendation	Quality	Strength
Central Nervous System Delirium	Opioids	Emerging data highlights an association between opioid administration and delirium. For older adults with pain, use a balanced approach, including the use of validated pain assessment tools and multimodal strategies that include nondrug approaches to minimize opioid use	Avoid, except in situations listed under the rationale statement	Moderate	Strong

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2023 Updates: Additions

Table 3: Potentially inappropriate considering disease and syndromes

- Anticholinergics - *History of falls or fractures*

Table 3: 2023 American Geriatrics Society Beers Criteria® potentially inappropriate medication use in older adults due to drug–disease or drug–syndrome interactions that may exacerbate the disease or syndrome.					
Disease or Syndrome	Drug(s)	Rationale	Recommendation	Quality	Strength
Cardiovascular History of falls or fractures	Anticholinergics (Listed in Table 7)	May cause ataxia, impaired psychomotor function, syncope, or additional falls	Avoid unless safer alternatives are not available	High	Strong

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2023 Updates: Additions

Table 4: Use with caution

- Ticagrelor

Table 4: 2023 American Geriatrics Society Beers Criteria® for potentially inappropriate medications: drugs to be used with caution in older adults				
Drug(s)	Rationale	Recommendation	Quality	Strength
Ticagrelor	**Increase the risk of major bleeding in older adults compared with clopidogrel, especially among those 75 years old and older** However, this risk may be offset by cardiovascular benefits in select patients	Use with caution, particularly in adults 75 years old and older	Moderate	Strong

- Sodium-glucose co-transporter-2 (SGLT2) inhibitors

Table 4: 2023 American Geriatrics Society Beers Criteria® for potentially inappropriate medications: drugs to be used with caution in older adults				
Drug(s)	Rationale	Recommendation	Quality	Strength
SGLT2 Inhibitors: Canigliflozin Dapagliflozin Emplaglifozin Ertuglifozin	Older adults may be at increased risk of urogenital infections, particularly women in the first month of treatment An increased risk of euglycemic diabetic ketoacidosis has also been seen in older adults	Use with caution Monitor patients for urogenital infections and ketoacidosis	Moderate	Weak

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2023 Updates: Additions

Table 5: Clinically important drug-drug interactions

- Warfarin + SSRIs

Table 5: 2023 American Geriatrics Society Beers Criteria® for potentially clinically important drug–drug interactions that should be avoided in older adults.					
Object drug or class	Interacting drug or class	Risk rationale	Recommendation	Quality	Strength
Warfarin	SSRIs	Increased risk of bleeding	Avoid when possible; If used together, monitor INR closely.	Moderate	Strong

- Lithium + ARBs and ARNIs

Table 5: 2023 American Geriatrics Society Beers Criteria® for potentially clinically important drug–drug interactions that should be avoided in older adults.					
Object drug or class	Interacting drug or class	Risk rationale	Recommendation	Quality	Strength
Lithium	ARBs ARNIs	Increased risk of lithium toxicity	Avoid; Monitor lithium concentrations	Moderate	Strong

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2023 Updates: Additions

Table 5: Clinically important drug-drug interactions

- Skeletal Muscle Relaxants + ≥2 of listed CNS active drugs

Table 5: 2023 American Geriatrics Society Beers Criteria® for potentially clinically important drug–drug interactions that should be avoided in older adults.					
Object drug or class	Interacting drug or class	Risk rationale	Recommendation	Quality	Strength
Skeletal Muscle Relaxants	Antiepileptics Antidepressants (TCAs, SSRIs, and SNRIs) Antipsychotics Benzodiazepines Nonbenzodiazepine benzodiazepine receptor agonist hypnotics (i.e., "Z-drugs") Opioids Skeletal muscle relaxants	Increased risk of falls and of fracture with the concurrent use of ≥3 CNS-active agents	Avoid concurrent use of ≥3 CNS-active drugs (among types as listed at left); minimize the number of CNS-active drugs.	High	Strong

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2023 Updates: Additions

Table 6: Avoid or reduce dose with reduced kidney function

- Baclofen

Table 6: 2023 American Geriatrics Society Beers Criteria® for medications that should be avoided or have their dosage reduced with varying levels of kidney function in older adults					
Drug	CrCl (mL/min) at which action is required	Rationale	Recommendation	Quality	Strength
Central Nervous System and Analgesics Baclofen	eGFR <60	Increased risk of encephalopathy requiring hospitalization in older adults with eGFR	Avoid baclofen in older adults with impaired kidney function (eGFR <60 mL/min) When baclofen cannot be avoided, use the lowest effective dose and monitor for signs of CNS toxicity, including altered mental status.	Moderate	Strong

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2023 AGS Beers Criteria® Medications/Criteria Modified

Selected examples provided.

See Table 10 in the 2023 AGS Beers Criteria® for complete list.

2023 Updates: Modifications

- Moved from “Use with Caution” to “PIMs”
  - Aspirin & Rivaroxaban

Table 2: 2023 American Geriatrics Society Beers Criteria® for potentially inappropriate medication use in older adults				
Drug(s)	Rationale	Recommendation	Quality	Strength
Aspirin for primary prevention of cardiovascular disease	Risk of major bleeding from aspirin increases markedly in older age. Studies suggest a lack of net benefit and potential for net harm when initiated for primary prevention in older adults. There is less evidence about stopping aspirin among long-term users, although similar principles for initiation may apply.	Avoid initiating aspirin for primary prevention of cardiovascular disease. Consider deprescribing aspirin in older adults already taking it for primary prevention.	High	Strong
Rivaroxaban for long-term treatment of nonvalvular atrial fibrillation or venous thromboembolism (VTE)	At doses used for long-term treatment of VTE or nonvalvular atrial fibrillation, rivaroxaban appears to have a higher risk of major bleeding and GI bleeding in older adults than other DOACs, particularly apixaban	Avoid for long-term treatment of atrial fibrillation or VTE in favor of safer anticoagulant alternatives	Moderate	Strong

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2023 Updates: Selected Modifications

Table 2: Potentially inappropriate independent of diagnosis or condition

- Sulfonylureas
  - Expanded criterion from long-acting sulfonylureas to all sulfonylureas given data supporting adverse outcomes for all sulfonylureas

Table 2: 2023 American Geriatrics Society Beers Criteria® for potentially inappropriate medication use in older adults				
Drug(s)	Rationale	Recommendation	Quality	Strength
Sulfonylureas **(all short- and long- acting)** Gliclazide Glimepiride Glipizide Glyburide	Sulfonylureas have a higher risk of cardiovascular events, all-cause mortality, and hypoglycemia than alternative agents. Sulfonylureas may increase the risk of cardiovascular death and ischemic stroke. Among sulfonylureas, 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).	Hypoglycemia: High CV events and all-cause mortality: Moderate CV death and ischemic stroke: Low	Strong

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2023 Updates: Modifications

Table 2: Potentially inappropriate independent of diagnosis or condition

- Proton Pump Inhibitors
  - Noted additional adverse outcomes in the rationale statement given supporting data

Table 2: 2023 American Geriatrics Society Beers Criteria® for potentially inappropriate medication use in older adults				
Drug(s)	Rationale	Recommendation	Quality	Strength
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., because of failure of drug discontinuation trial or H2-receptor antagonists).	*C. difficile*, bone loss, and fractures: High **Pneumonia and GI malignancies: Moderate**	Strong

By the 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. *J Am Geriatr Soc*. 2023; 71(7): 2052-2081. doi:10.1111/jgs.18372

2023 Updates: Modification

Table 4: Potentially inappropriate medications: drugs to be used with caution in older adults

- "Dabigatran for long term treatment of nonvalvular atrial fibrillation or venous thromboembolism (VTE)"
  - GI bleeding risk greater with dabigatran than warfarin
  - GI bleeding and major bleeding risk greater with dabigatran than apixaban

Quality of Evidence	Strength of Recommendation
Moderate	Strong

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Test Your Knowledge Case Applications

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Case Scenario One

A 68-year-old female with non valvular atrial fibrillation is being seen in clinic today for an annual wellness exam. Upon review of her medications, you see she is taking dabigatran 150 mg by mouth twice daily. Her CrCl is 65 mL/min. Based upon the updated 2023 AGS® Beers Criteria, what recommendation would you make?

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B. Discontinue dabigatran 150 mg by mouth twice daily, begin warfarin 2.5 mg by mouth daily.
C. Discontinue dabigatran 150 mg by mouth twice daily, begin apixaban 5 mg by mouth twice daily
D. Discontinue dabigatran 150 mg by mouth twice daily, begin rivaroxaban 20 mg by mouth once daily.

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D. Discontinue dabigatran 150 mg by mouth twice daily, begin rivaroxaban 20 mg by mouth once daily.

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Case Scenario Two

TS is a 67 year old male with no known drug allergies.

Diagnosis	Medication(s)
HTN/Edema	Furosemide 80mg BID, KCl 20Meq q day, Lisinopril 20mg q day, Metoprolol XL 200mg q day
Peripheral Neuropathy	Lidocaine Patch on/off (12/2023), Hydrocodone/APAP 5/325 1 q 6hr prn, Tramadol 50mg bid, Acetaminophen 650mg q 8hr prn
Depression	Citalopram 40mg q day (12/2023), Acetaminophen/diphenhydramine PM 2 tabs HS (2/2024)
Gout	Allopurinol 100mg q day
Glaucoma	Latanoprost 1 gtt os bid, Artificial tears 1 gtt ou bid
Diabetes Type 2	Glyburide 10mg Q day
BPH	Tamsulosin 0.4mg HS (1/2023)
Constipation	MOM 30ml PO q 8 hrs prn, Polyethylene glycol 17gm every other day, Senna 1 tab BID

Case Scenario Two, Cont.

- Citalopram and Lidocaine patches were both started 4 months prior to today's visit. Lidocaine has been of marginal benefit in this patient and the patient requires prn Hydrocodone/APAP 2 times/day on average and no prn APAP. Citalopram has been of minimal benefit for depression. Patient has trouble voiding for last 6 months. Hgb = 13.3 g/dL, creat. 1.5 mg/dL, and K+= 4.5 mmol/L, CrCl=55 ml/min (calculated), HgA1C= 6.1%. Blood sugars range in AM 55-115 mg/dL to PM 234-376 mg/dL the last 2 weeks.
- **Identify 2 top-priority recommendations to this patient's prescriber on how to help this patient, by considering problems with their current drug therapy. Discuss your initial thoughts with someone sitting near you today.**

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Case Scenario Two, Cont.

- Small and Large Group Case Discussion
  - Is this patient experiencing polypharmacy?
  - What are the potential drug therapy problems identified in this patient?
  - What would be your top priority recommendations for this patient's provider?

ThinkCascades: A Tool for Identifying Clinically Important Prescribing Cascades Affecting Older People.

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ThinkCascades Results: Cardiovascular System

First Medication Prescribed	Observed Side Effect	Medication Prescribed to Treat Adverse Effect of First Medication
Calcium Channel Blocker	Peripheral Edema	Diuretic
Diuretic	Urinary incontinence	Overactive bladder medication

What does the 2023 AGS Beers Criteria® say about these medications…

McCarthy LM, Savage R, Dalton K, et al. ThinkCascades: A Tool for Identifying Clinically Important Prescribing Cascades Affecting Older People. *Drugs Aging*. 2022;39(10):829-840. doi:10.1007/s40266-022-00964-9; Micromedex, accessed August 2023

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ThinkCascades Results: Central Nervous System

First Medication Prescribed	Observed Side Effect	Medication Prescribed to Treat Adverse Effect of First Medication
Antipsychotic	Extrapyramidal symptoms	Antiparkinsonian Agent
Benzodiazepine	Cognitive Impairment	Cholinesterase Inhibitor or memantine
Benzodiazepine	Paradoxical agitation or agitation secondary to withdrawal	Antipsychotic
SSRI/SNRI	Insomnia	Sleep agent (benzodiazepines, benzodiazepine receptor agonists, sedating antidepressant, melatonin)

What does the 2023 AGS Beers Criteria® say about these medications…

McCarthy LM, Savage R, Dalton K, et al. ThinkCascades: A Tool for Identifying Clinically Important Prescribing Cascades Affecting Older People. *Drugs Aging*. 2022;39(10):829-840. doi:10.1007/s40266-022-00964-9; Micromedex, accessed August 2023

ThinkCascades Results: Musculoskeletal System

First Medication Prescribed	Observed Side Effect	Medication Prescribed to Treat Adverse Effect of First Medication
NSAID	Hypertension	Antihypertensive

What does the 2023 AGS Beers Criteria® say about these medications…

McCarthy LM, Savage R, Dalton K, et al. ThinkCascades: A Tool for Identifying Clinically Important Prescribing Cascades Affecting Older People. *Drugs Aging*. 2022;39(10):829-840. doi:10.1007/s40266-022-00964-9; Micromedex, accessed August 2023

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ThinkCascades Results: Urogenital System

First Medication Prescribed	Observed Side Effect	Medication Prescribed to Treat Adverse Effect of First Medication
Urinary Anticholinergics	Cognitive impairment	Cholinesterase inhibitor or memantine
Alpha-1 Receptor Blocker	Orthostatic Hypotension, dizziness	Vestibular sedative (e.g. betahistine, antihistamines, benzodiazepines)

What does the 2023 AGS Beers Criteria® say about these medications…

McCarthy LM, Savage R, Dalton K, et al. ThinkCascades: A Tool for Identifying Clinically Important Prescribing Cascades Affecting Older People. *Drugs Aging*. 2022;39(10):829-840. doi:10.1007/s40266-022-00964-9; Micromedex, accessed August 2023

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Prescribing Cascade Clinical Scenario One

- A 72-year-old female currently lives independently in the community in her home and is an active volunteer and substitute high school English teacher. As part of her visit today, her medications are reviewed for appropriateness. Today she reports her knees are bothering her quite a bit and she's been having difficulty sleeping which is limiting her ability to be as active as she'd like.

- PMH
  - HTN, diagnosed May 2013
  - Dyslipidemia, diagnosed May 2008
  - Osteoarthritis in both knees

Prescribing Cascade Clinical Scenario One

Vital Signs and Lab Values

BP 132/82 mmHg (sitting, L arm) BP 128/76 (standing, L arm), P 81 bpm, RR 15, T 98.2◦F, Wt. 72.7 kg, Ht 5’6”

BMP (today)	Na	138 mEq/L
	K	4.1 mEq/L
	Cl	104 mEq/L
	CO2	27 mEq/L
	Glu	96 mg/dL
	Calcium, serum	9.1 mg/dL
	BUN	16 g/dL
	SCr	1.0 mg/dL

TSH (today): 2.1 mU/L

Fasting Lipid Panel (today) TC: 202 mg/dL, HDL 35 mg/dL, LDL 102 mg/dL, TG 160 mg/dL

Current Medications

- Hydrochlorothiazide 25 mg by mouth daily
- Lisinopril 20 mg by mouth daily
- Atorvastatin 40 mg by mouth daily
- APAP 500 mg po as needed for knee pain

Prescriber Recommends

- Ibuprofen 400 mg by mouth three times daily for osteoarthritis of knee
- Temazepam 7.5 mg by mouth once daily for sleep

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Do you agree with these recommendations?

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Prescribing Cascade Clinical Scenario Two

- A 73-year-old female presents for follow-up. It's been 6 months since she last saw her provider, who is currently out of the office on personal leave. She currently lives independently in the community in her home and is an active volunteer and substitute high school English teacher, although she's not sure she'll keep substituting. She states, "my memory isn't what it used to be." Today she reports her knees have been feeling better and she's sleeping better. She had her blood pressure checked at the Senior Center Screening event last week and it 152/90 mmHg. She checked it a home yesterday and it was 150/88 mmHg.

- PMH
  - HTN, diagnosed May 2003, inadequately treated until 2013
  - Dyslipidemia, diagnosed May 2008
  - Osteoarthritis in both knees
  - Insomnia

Prescribing Cascade Clinical Scenario Two

Vital Signs and Lab Values

BP 154/82 mmHg (sitting, L arm) BP 148/78 (standing, L arm), P 82 bpm, RR 15, T 98.2◦F, Wt. 71 kg, Ht 5’6”

BMP (today)	Na	138 mEq/L
	K	4.2 mEq/L
	Cl	104 mEq/L
	CO2	27 mEq/L
	Glu	98 mg/dL
	Calcium, serum	9.1 mg/dL
	BUN	17 g/dL
	SCr	1.0 mg/dL

Current Medications

- Hydrochlorothiazide 25 mg by mouth daily
- Lisinopril 20 mg by mouth daily
- Atorvastatin 40 mg by mouth daily
- APAP 500 mg po as needed
- Ibuprofen 400 mg by mouth three times daily
- Temazepam 7.5 mg by mouth once daily

Prescriber Recommends

- Amlodipine 5 mg by mouth once daily for high blood pressure

Do you recognize the potential prescribing cascades?

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Prescribing Cascade Clinical Scenario Three

- A 73-year-old female presents for follow-up. It's been 6 months since she was last seen. Today, her daughter is with her. She currently lives independently in the community in her home, but her children have become increasingly concerned. She seems to have gotten more forgetful in the past year and they wonder if she might be developing early stages of Alzheimer's. Her daughter also reports that both of her mom's ankles have been slightly swollen as well. Her blood pressure checks at the Senior Center have all been "good" according to the patient's daughter.

- PMH
  - HTN, diagnosed May 2003, inadequately treated until 2013
  - Dyslipidemia, diagnosed May 2008
  - Osteoarthritis in both knees
  - Insomnia

Prescribing Cascade Clinical Scenario Three

Vital Signs and Lab Values

BP 134/82 mmHg (sitting, L arm) BP 130/78 (standing, L arm), P 82 bpm, RR 15, T 98.2◦F, Wt. 71 kg, Ht 5'6", 1+ bilateral pitting edema on ankles noted on physical exam.

BMP (today)	Na	138 mEq/L
	K	4.1 mEq/L
	Cl	103 mEq/L
	CO2	27 mEq/L
	Glu	97 mg/dL
	Calcium, serum	9.1 mg/dL
	BUN	17 g/dL
	SCr	1.1 mg/dL

Current Medications

- Hydrochlorothiazide 25 mg by mouth daily
- Lisinopril 20 mg by mouth daily
- Amlodipine 5 mg by mouth once daily
- Atorvastatin 40 mg by mouth daily
- APAP 500 mg po as needed
- Ibuprofen 400 mg by mouth three times daily
- Temazepam 7.5 mg by mouth once daily

Prescriber Recommends

- Elevate feet and limit salt in diet. Consider compression stocking and diuretic use in future.
- Recommend referral for evaluation of memory concerns

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Do you recognize the potential prescribing cascades?

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Deprescribing is challenging too!

The 2023 AGS Beers Criteria acknowledges many challenges associated with deprescribing.

What is deprescribing?

- It’s more than just telling a patient to stop taking a medication
- “a comprehensive definition of deprescribing should include: 1) an organized process of medication removal or dose reduction; 2) oversight of the deprescribing process by an appropriate member of the health care team; 3) a goal of improving 1 or more specific outcomes; 4) consideration of an individual’s overall physiological status, stage of life, and goals of care.” (Krishnaswami, et al., page 2)

By the 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. *J Am Geriatr Soc*. 2023; 71(7): 2052-2081. doi:10.1111/jgs.18372

Krishnaswami, A., et al. Deprescribing in Older Adults With Cardiovascular Disease. J Am Coll Cardiol. 2019 May, 73 (20) 2584-2595. doi: 10.1016/j.jacc.2019.03.467

In which situations should it be considered?

- Adverse drug reactions
- Polypharmacy
- Prescribing cascades
- End of life/palliative care
- Change in risk vs. benefit since originally prescribed

Krishnaswami, A., et al. Deprescribing in Older Adults With Cardiovascular Disease. J Am Coll Cardiol. 2019 May, 73 (20) 2584-2595. doi: 10.1016/j.jacc.2019.03.467

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Primary care clinician and community pharmacist perceptions of deprescribing

- Huffmyer, MJ, Keck, JW, Harrington, NG, et al. Primary care clinician and community pharmacist perceptions of deprescribing. *J Am Geriatr Soc*. 2021; 69: 1686–1689. https://doi.org/10.1111/jgs.17092
- Methods
  - Primary care providers (n= 58) and community pharmacists (n=248) in Kentucky were electronically surveyed between December 2019 through February 2020.
    - "Survey questions addressed deprescribing experiences, beliefs, attitudes, influencing factors, barriers, and facilitators" (Huffmyer, et al. 1686)

Results

Clinician Barriers	Pharmacist Barriers
“Patient attitudes toward the medications they take” (69%)	“Difficulty to communicate directly with other healthcare providers (e.g. subspecialists) about deprescribing recommendations” (56%)
“Insufficient time available to spend with patients and communicate deprescribing recommendations” (58.6%)	“Insufficient time available to spend with patients and communicate deprescribing recommendations” (49.6%)
“Difficulty to communicate directly with other healthcare providers (e.g. subspecialists) about deprescribing recommendations” (46.6%)	“Lack of trust between healthcare providers and pharmacists” (31.9%)

Both pharmacists and clinicians agreed that “Lack of education and training related to deprescribing activities” (21% and 20.7%) as well as “Lack of access to information in electronic health records” (26% and 20.7%) are barriers.

Huffmyer, MJ, Keck, JW, Harrington, NG, et al. Primary care clinician and community pharmacist perceptions of deprescribing. *J Am Geriatr Soc*. 2021; 69: 1686– 1689. https://doi.org/10.1111/jgs.17092

Results

Clinician Facilitators	Pharmacist Facilitators
"Adequate time to spend with patients to discuss deprescribing recommendations" (50%)	"Ability to communicate directly with healthcare providers about deprescribing recommendations" (50%)
"Trust between healthcare providers and patients" (48.3%)	"Adequate time to spend with patients to discuss deprescribing recommendations" (46%)
"Patient attitude toward the medications they take" (46.6%)	"Trust between healthcare providers and pharmacists" (34.7%)

Both pharmacists and clinicians agreed that "Training and experience with deprescribing" (27.4% and 37.9%) as well as "Clinical guideline updates that support deprescribing recommendations" (25.4% and 34.5%) are facilitators.

Huffmyer, MJ, Keck, JW, Harrington, NG, et al. Primary care clinician and community pharmacist perceptions of deprescribing. *J Am Geriatr Soc*. 2021; 69: 1686– 1689. https://doi.org/10.1111/jgs.17092

What instruments are available to guide deprescribing decisions?

- Example Implicit instruments
  - SMOG (Screening Medications in the Older Drug User)
  - MAI (Medication Appropriateness Index)
  - ARMOR (Assess, Review, Minimize, Optimize, Reassess)
  - TIMER (Tool to Improve Medications in the Elderly via Review)
  - ACOVE-3 (Assessing Care of Vulnerable Elders-3)
  - GPGPA (Good Palliative-Geriatric Practice Algorithm)
  - AOU (Assessment of Underutilization)

Bulloch, MN & Olin, JL. Instruments for evaluating medication use and prescribing in older adults. JAPhA. 2014 54 (5) 530-537. doi: 10.1331/JAPhA.2014.13244

Krishnaswami, A., et al. Deprescribing in Older Adults With Cardiovascular Disease. J Am Coll Cardiol. 2019 May, 73 (20) 2584-2595. doi: 10.1016/j.jacc.2019.03.467

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What instruments are available to guide deprescribing decisions?

- Explicit instruments
  - AGS Beers criteria
  - STOPP (Screening Tool of Older Persons' Potentially Inappropriate Prescriptions) criteria
  - STOPPFrail (STOPP in Frail Adults with Limited Life Expectancy)

Bulloch, MN & Olin, JL. Instruments for evaluating medication use and prescribing in older adults. JAPhA. 2014 54 (5) 530-537. doi: 10.1331/JAPhA.2014.13244

Krishnaswami, A., et al. Deprescribing in Older Adults With Cardiovascular Disease. J Am Coll Cardiol. 2019 May, 73 (20) 2584-2595. doi: 10.1016/j.jacc.2019.03.467

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What additional resources are available online to guide deprescribing decisions?

- Example online resources that include links to many available resources for healthcare providers
  - National Institute on Aging: US Deprescribing Research Network Resources for Clinicians
    - https://deprescribingresearch.org/resources-2/resources-for-clinicians/
  - Canadian Deprescribing Network
    - https://www.deprescribingnetwork.ca/professionals

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11. Bulloch, MN & Olin, JL. Instruments for evaluating medication use and prescribing in older adults. JAPhA. 2014 54 (5) 530-537. doi: 10.1331/JAPhA.2014.13244

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Thank you!

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