The Happy Medium

Principles of Appropriate Prescribing Across the Aging Spectrum

Milta Oyola Little, DO, CMD
Disclosures

• Dr. Little has no relevant financial relationships to report.

• Dr. Little will not be discussing any unapproved or off-label uses of medications or products.
Objectives

At the end of the session, participants will...

1. Define polypharmacy and describe the impact of inappropriate prescribing on the frail elderly

2. Describe strategies to reduce or prevent inappropriate prescribing, including the use of drug-specific tools

3. Identify common chronic disease conditions associated with inappropriate prescribing and medication errors in older adults.
What is Polypharmacy?

More than 24 distinct definitions

“Extraordinary Prescribing”
  – A patient is taking more medications than necessary
  – Medications are prescribed for an inappropriate indication

“Inappropriate Prescribing”

What is Polypharmacy?

A. 85 y/o male with COPD, diabetes and CHF on 14 routine and 6 PRN medications

B. 72 y/o female with fibromyalgia, hypertension, depression and osteoarthritis on four medications who gets her prescriptions written and refilled by her PCP, rheumatologist, psychiatrist and orthopedist.

C. 90 y/o male with dementia on no medications prescribed routine omeprazole 80 mg twice a day and ranitidine 150 mg twice a day after an episode of vomiting (both of these medicine reduce acid in the stomach)

Too many meds
Too many prescribers
No indication
Prevalence of Inappropriate Prescribing

Inappropriate Prescribing

Adverse Drug Reactions
- 5% to 28% of acute geriatric hospital admissions
- 13% on 2 medications develop ADR
- 82% on 6 or more medications develop ADR

For every $1 spent on medications in nursing homes, $1.33 was spent on treating ADR
Inappropriate Prescribing and Aging

Older patients are two to three times more likely to experience adverse effects of drugs than younger patients.

> 6 meds associated with frailty

> 4 meds associated with falls

Polypharmacy → Mortality


Fig. 1. Kaplan-Meier survival curves for excessive polypharmacy (ten or more drugs), polypharmacy (six to nine drugs) and non-polypharmacy (five or fewer drugs) groups in (a) the first phase (n=601, aged ≥75 years) between 1998 and 2002 and (b) the second phase (n=339, aged ≥80 years) between 2003 and 2007.
GENERAL STRATEGIES TO DEPREScribing

...The top prescription is for your arthritis, but it may cause a heart attack. The second prescription should prevent a heart attack, but it could damage your liver. The third should prevent liver trouble, but it may destroy your spleen. The fourth protects the spleen but has been known to eat away the prostate. The fifth....
Deprescribing

“The act of systematically identifying and tapering, reducing or stopping medications that are not indicated (either because of previous misdiagnosis or evidence of no benefit or harm for a true diagnosis), or are causing, or have considerable potential to cause, adverse effects.”

I. A. Scott1,2 and D. G. Le Couteur3,4 Internal Medicine Journal 45 (2015)
Good Outcomes of Deprescribing

• Systematic deprescribing associated with...
  – Fall reduction
  – Improved cognitive and psychomotor function
  – Reduced mortality
  – Reduction in healthcare utilization (ED visits and readmissions)
  – WITHOUT increased risk of adverse outcome

Scott IA, et al. JAMA Intern Med. 2015;175(5):827-834
When to Deprescribe?

• Limited life expectancy, functional dependency, severity of cognitive impairment

• High-risk medication classes
  – Benzodiazepines, atypical antipsychotics, statins, TCAs, PPI

• New symptom or syndrome suggestive of ADR

• Preventive drugs when benefit maximized

Scott IA, et al. JAMA Intern Med. 2015;175(5):827-834
When to Deprescribe?

- Limited life expectancy
  - Many patients are given inappropriate preventative medications in advanced illness
  - Limited but preliminary evidence of increased life expectancy and quality of life with deprescribing

Barriers to Deprescribing

• High levels of clinical complexity
• Limited consultation time
• Fragmented care among multiple prescribers
• Incomplete information
• Ambiguous or changing care goals
• Uncertainty about the benefits and harms of continuing or discontinuing specific drugs
• Community and professional attitudes toward more rather than less use of drugs
• Fear of adverse drug withdrawal effects
• Pressure to prescribe evoked by recommendations in disease-specific clinical guidelines

Scott IA, et al. JAMA Intern Med. 2015;175(5):827-834
Using Guidelines

• Most guidelines are based on evidence that excludes frail or institutionalized older adults

• Most guidelines are based on evidence that excludes people with multimorbidity

• Many recommendations in guidelines are based on expert opinion with moderate to weak evidence
General Principles to Reducing Polypharmacy

- The Happy Medium
- Life expectancy
- Quality of Life
- Drug-drug and drug-disease interactions
  
  Up to 82% of patients on 6 or more medicines experience a drug interaction

<table>
<thead>
<tr>
<th>Table. The Deprescribing Protocol</th>
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<tbody>
<tr>
<td><strong>Key Step</strong></td>
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<tr>
<td>1. Ascertain all drugs the patient is currently taking and the reasons for each one</td>
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<tr>
<td>2. Consider overall risk of drug-induced harm in individual patients in determining the required intensity of deprescribing intervention</td>
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<tr>
<td>3. Assess each drug for its eligibility to be discontinued: • No valid indication • Part of a prescribing cascade • Actual or potential harm of a drug clearly outweighs any potential benefit • Disease and/or symptom control drug is ineffective or symptoms have completely resolved • Preventive drug is unlikely to confer any patient-important benefit over the patient’s remaining lifespan • Drugs are imposing unacceptable treatment burden</td>
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<tr>
<td>4. Prioritize drugs for discontinuation</td>
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<tr>
<td>5. Implement and monitor drug discontinuation regimen</td>
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</tbody>
</table>
Figure. Algorithm for Deciding Order and Mode in Which Drug Use Could Be Discontinued

1. **No benefit**
   - Significant toxicity OR no indication OR obvious contraindication OR cascade prescribing?
     - Yes → Withdrawal symptoms or disease recurrence likely if drug therapy discontinued?
     - No → Continue drug therapy

2. **Harm outweighs benefit**
   - Adverse effects outweigh symptomatic effect or potential future benefits?
     - Yes → Withdrawal symptoms or disease recurrence likely if drug therapy discontinued?
     - No → Continue drug therapy

3. **Symptom or disease drugs**
   - Symptoms stable or nonexistent?
     - Yes → Taper dose and monitor for adverse drug withdrawal effects
     - No → Continue drug therapy

4. **Preventive drugs**
   - Potential benefit unlikely to be realized because of limited life expectancy?
     - Yes → Taper dose and monitor for adverse drug withdrawal effects
     - No → Continue drug therapy

**Yes** → Taper dose and monitor for adverse drug withdrawal effects

**No** → Continue drug therapy

Scott IA, et al. JAMA Intern Med. 2015;175(5):827-834
Case: Frail Older Adult

97 year old man.

A medication review was requested due to multiple falls. Orthostatic blood pressure monitoring is incomplete. His systolic BP ranges from under 100 to 140. He is receiving 12 routine medications. His daughter doesn’t want any medication stopped.

SEE CASE INCLUDED IN FOLDER
Role of the Interprofessional Team

• Identify a diagnosis for every medication
• Be mindful of the “prescribing cascade”
• Partner with clinical pharmacists
• Consider computerized decision aids
• Use a specific tool to monitor and reconcile medications regularly

Planton J. J Gerontol Nurs 2012; 36(1): 8-12
Meyer, T.J. J Gen Int Med 1991; 6, 133-136
Haque, R. Ann Long-Term Care 2009;17(6): 26-30
Drug-Specific Tools

• BEERS

• STOPP/START

• ARMOR

• Medication Discrepancy Tool

• Medication Appropriateness Index
Table 2. 2015 American Geriatrics Society Beers Criteria for Potentially Inappropriate Medication Use in Older Adults

<table>
<thead>
<tr>
<th>Organ System, Therapeutic Category, Drugs</th>
<th>Rationale</th>
<th>Recommendation</th>
<th>Quality of Evidence</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
</table>

Table 3. 2015 American Geriatrics Society Beers Criteria for Potentially Inappropriate Medication Use in Older Adults Due to Drug–Disease or Drug– Syndrome Interactions That May Exacerbate the Disease or Syndrome

<table>
<thead>
<tr>
<th>Disease or Syndrome</th>
<th>Drug(s)</th>
<th>Rationale</th>
<th>Recommendation</th>
<th>Quality of Evidence</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
</table>

Table 4. 2015 American Geriatrics Society Beers Criteria for Potentially Inappropriate Medications to Be Used with Caution in Older Adults

<table>
<thead>
<tr>
<th>Drug(s)</th>
<th>Rationale</th>
<th>Recommendation</th>
<th>Quality of Evidence</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspirin for primary prevention of cardiac events</td>
<td>Lack of evidence of benefit versus risk in adults aged ≥80</td>
<td>Use with caution in adults aged ≥80</td>
<td>Low</td>
<td>Strong</td>
</tr>
<tr>
<td>Dabigatran</td>
<td>Increased risk of gastrointestinal bleeding compared with warfarin and reported rates with other target-specific oral anticoagulants in adults aged ≥75; lack of evidence of efficacy and safety in individuals with CrCl &lt;30 mL/min</td>
<td>Use with caution in adults aged ≥75 and in patients with CrCl &lt;30 mL/min</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Prasugrel</td>
<td>Increased risk of bleeding in older adults; benefit in highest-risk older adults (e.g., those with prior myocardial infarction or diabetes)</td>
<td>Use with caution in adults aged ≥75</td>
<td>Moderate</td>
<td>Weak</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Object Drug and Class</th>
<th>Interacting Drug and Class</th>
<th>Risk Rationale</th>
<th>Recommendation</th>
<th>Quality of Evidence</th>
<th>Strength of Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACEIs</td>
<td>Amiloride or triamterene</td>
<td>Increased risk of Hyperkalemia</td>
<td>Avoid routine use; reserve for patients with demonstrated hypokalemia while taking an ACEI</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Anticholinergic</td>
<td>Anticholinergic</td>
<td>Increased risk of Cognitive decline</td>
<td>Avoid, minimize number of anticholinergic drugs (Table 7)</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Antidepressants (i.e., TCAs and SSRIs)</td>
<td>≥2 other CNS-active drugs</td>
<td>Increased risk of Falls</td>
<td>Avoid total of ≥3 CNS-active drugs; minimize number of CNS-active drugs</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Antipsychotics</td>
<td>≥2 other CNS-active drugs</td>
<td>Increased risk of Falls</td>
<td>Avoid total of ≥3 CNS-active drugs; minimize number of CNS-active drugs</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Benzodiazepines and nonbenzodiazepine, benzodiazepine receptor agonist hypnotics</td>
<td>≥2 other CNS-active drugs</td>
<td>Increased risk of Falls and fractures</td>
<td>Avoid total of ≥3 CNS-active drugs; minimize number of CNS-active drugs</td>
<td>High</td>
<td>Strong</td>
</tr>
<tr>
<td>Corticosteroids, oral or parenteral</td>
<td>NSAIDs</td>
<td>Increased risk of Peptic ulcer disease or gastrointestinal bleeding</td>
<td>Avoid; if not possible, provide gastrointestinal protection</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Lithium</td>
<td>ACEIs</td>
<td>Increased risk of Lithium toxicity</td>
<td>Avoid, monitor lithium concentrations</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Lithium</td>
<td>Loop diuretics</td>
<td>Increased risk of Lithium toxicity</td>
<td>Avoid, monitor lithium concentrations</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Opioid receptor agonist analgesics</td>
<td>≥2 other CNS-active drugs</td>
<td>Increased risk of Falls</td>
<td>Avoid total of ≥3 CNS-active drugs; minimize number of CNS active drugs</td>
<td>High</td>
<td>Strong</td>
</tr>
<tr>
<td>Peripheral Alpha-1 blockers</td>
<td>Loop diuretics</td>
<td>Increased risk of Urinary incontinence in older women</td>
<td>Avoid in older women, unless conditions warrant both drugs</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Theophylline</td>
<td>Cimetidine</td>
<td>Increased risk of Theophylline toxicity</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Warfarin</td>
<td>Amiodarone</td>
<td>Increased risk of Bleeding</td>
<td>Avoid when possible; monitor international normalized ratio closely</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td></td>
<td>NSAIDs</td>
<td>Increased risk of Bleeding</td>
<td>Avoid when possible; if used together, monitor for bleeding closely</td>
<td>High</td>
<td>Strong</td>
</tr>
<tr>
<td>Medication Class and Medication</td>
<td>Creatinine Clearance, mL/min, at Which Action Required</td>
<td>Rationale</td>
<td>Recommendation</td>
<td>Quality of Evidence</td>
<td>Strength of Recommendation</td>
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<td><strong>Cardiovascular or hemostasis</strong></td>
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<tr>
<td>Amiloride</td>
<td>&lt;30</td>
<td>Increased potassium, and decreased sodium</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Apixaban</td>
<td>&lt;25</td>
<td>Increased risk of bleeding</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
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<tr>
<td>Dabigatran</td>
<td>&lt;30</td>
<td>Increased risk of bleeding</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
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<tr>
<td>Edoxaban</td>
<td>30-50</td>
<td>Increased risk of bleeding</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Edoxaban</td>
<td>&lt;30 or &gt;95</td>
<td>Increased risk of bleeding</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Enoxaparin</td>
<td>&lt;30</td>
<td>Increased risk of bleeding</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Fondaparinux</td>
<td>&lt;30</td>
<td>Increased risk of bleeding</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
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<tr>
<td>Rivaroxaban</td>
<td>30-50</td>
<td>Increased risk of bleeding</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Rivaroxaban</td>
<td>&lt;30</td>
<td>Increased risk of bleeding</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
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<tr>
<td>Spironolactone</td>
<td>&lt;30</td>
<td>Increased potassium</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
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<tr>
<td>Triamterene</td>
<td>&lt;30</td>
<td>Increased potassium, and decreased sodium</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Strong</td>
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<tr>
<td><strong>Central nervous system and analgesics</strong></td>
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<tr>
<td>Duloxetine</td>
<td>&lt;30</td>
<td>Increased Gastrointestinal adverse effects (nausea, diarrhea)</td>
<td>Avoid</td>
<td>Moderate</td>
<td>Weak</td>
</tr>
<tr>
<td>Gabapentin</td>
<td>&lt;60</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
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<tr>
<td>Levetiracetam</td>
<td>&lt;80</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
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<tr>
<td>Pregabalin</td>
<td>&lt;60</td>
<td>CNS adverse effects</td>
<td>Reduce dose</td>
<td>Moderate</td>
<td>Strong</td>
</tr>
<tr>
<td>Tramadol</td>
<td>&lt;30</td>
<td>CNS adverse effects</td>
<td>Immediate release: reduce dose Extended release: avoid</td>
<td>Low</td>
<td>Weak</td>
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<td>Table 7. Drugs with Strong Anticholinergic Properties</td>
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<td><strong>Antihistamines</strong></td>
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<td>Brompheniramine</td>
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<td>Carbinoxamine</td>
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<td>Chlorpheniramine</td>
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<td>Clemastine</td>
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<td>Cyproheptadine</td>
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<tr>
<td>Dextromethorphan</td>
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<tr>
<td>Dextrochlorpheniramine</td>
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<td>Dimenhydrinate (oral)</td>
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<tr>
<td>Diphenhydramine</td>
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<td>Doxylamine</td>
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<tr>
<td>Hydroxyzine</td>
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<td>Meclizine</td>
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<td>Triprolidine</td>
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<td><strong>Antidepressants</strong></td>
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<tr>
<td>Amitriptyline</td>
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<td>Amoxapine</td>
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<td>Clomipramine</td>
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<td>Desipramine</td>
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<td>Doxepin (&gt;6 mg)</td>
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<td>Imipramine</td>
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<td>Nortriptyline</td>
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<td>Paroxetine</td>
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<td>Protriptyline</td>
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<td>Trimipramine</td>
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<tr>
<td><strong>Antimuscarinics (urinary incontinence)</strong></td>
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<tr>
<td>Darifenacin</td>
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<td>Fesoterodine</td>
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<td>Flavoxate</td>
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<td>Oxybutynin</td>
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<td>Solifenacin</td>
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<td>Tolterodine</td>
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<td>Trospium</td>
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<td><strong>Antipsasmodics</strong></td>
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<tr>
<td>Atropine (excludes ophthalmic)</td>
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<tr>
<td>Belladonna</td>
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<td>Alkaloids</td>
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<tr>
<td>Clidinium-chlordiazepoxide</td>
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<tr>
<td>Dicyclomine</td>
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<tr>
<td>Homatropine (excludes ophthalmic)</td>
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<tr>
<td>Hyoscyamine</td>
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<td>Propantheline</td>
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<tr>
<td>Scopolamine (excludes ophthalmic)</td>
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<tr>
<td><strong>Antispasmodics</strong></td>
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<tr>
<td><strong>Antiemetic</strong></td>
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<tr>
<td>Prochlorperazine</td>
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<tr>
<td>Promethazine</td>
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<tr>
<td></td>
<td>Key Principles to Guide Optimal Use of the American Geriatrics Society (AGS) 2015 Beers Criteria</td>
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<td>---</td>
<td>-----------------------------------------------------------------------------------------------</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Medications in the AGS 2015 Beers Criteria are potentially inappropriate, not definitely inappropriate.</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2</td>
<td>Read the rationale and recommendations statements for each criterion. The caveats and guidance listed there are important.</td>
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</tr>
<tr>
<td>3</td>
<td>Understand why medications are included in the AGS 2015 Beers Criteria and adjust your approach to those medications accordingly.</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>4</td>
<td>Optimal application of the AGS 2015 Beers Criteria involves identifying potentially inappropriate medications and where appropriate offering safer nonpharmacological and pharmacological therapies.</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5</td>
<td>The AGS 2015 Beers Criteria should be a starting point for a comprehensive process of identifying and improving medication appropriateness and safety.</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Access to medications included in the AGS 2015 Beers Criteria should not be excessively restricted by prior authorization and/or health plan coverage policies.</td>
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<tr>
<td>7</td>
<td>The AGS 2015 Beers Criteria are not equally applicable to all countries.</td>
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</tr>
</tbody>
</table>

Screening Tool of Older Persons Prescriptions

STOPP
✔ The following prescriptions are potentially inappropriate in persons aged ≥ 65 years of age
✔ By system: CV, CNS/psychotropic, GI, Resp, MSK, GU, Endo, falls, analgesic, duplicate drug classes

Screening Tool to Alert to Right Treatment

START
✔ These medications should be considered for people ≥ 65 years of age with the following conditions, where no contra-indications to prescription exists
✔ By system: CV, Resp, CNS, GI, MSK, endo

### ARMOR: Nursing Home Med Rec

<table>
<thead>
<tr>
<th>A</th>
<th>Assess</th>
<th>Beers criteria, β-blockers, Pain medications, Antidepressants, Antipsychotics, Other psychotropics, Vitamins and supplements</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>Review</td>
<td>Drug–disease interactions, Drug–drug interactions, Adverse drug reactions</td>
</tr>
<tr>
<td>M</td>
<td>Minimize</td>
<td>Number of medications according to functional status rather than evidence-based medicine</td>
</tr>
<tr>
<td>O</td>
<td>Optimize</td>
<td>For renal/hepatic clearance, PT/PTT, β-blockers, pacemaker function, anticonvulsants, pain medications, and hypoglycemics; gradual dose reduction for antidepressants</td>
</tr>
<tr>
<td>R</td>
<td>Reassess</td>
<td>Functional/cognitive status in 1 week and as needed, Clinical status and medication compliance</td>
</tr>
</tbody>
</table>

1. # Meds
2. Specific drug classes
MEDICATION DISCREPANCY TOOL (MDT)

MDT is designed to facilitate reconciliation of medication regimen across settings and prescribers.

Medication Discrepancy Event Description: Complete one form for each discrepancy.

✓ Causes and Contributing Factors :: Check all that apply

Patient Level
1. □ Adverse Drug Reaction aside effects
2. □ Intentional non-adherence

System Level
9. □ Prescribed with known allergies/intolerances
10. □ Conflicting information from different informational sources
    For example, discharge instructions indicate one thing and pill bottle says another.
11. □ Confusion between brand & generic names
12. □ Discharge instructions
    Taking multiple drugs with the same action without any rationale.
14. □ Incorrect dosage
15. □ Incorrect quantity
16. □ Incorrect label
17. □ Cognitive impairment not recognized

✓ Resolution :: check all that apply

☐ Discussed potential benefits and harm that may result from non-adherence
☐ Encouraged patient to call PCP/specialist about problem
☐ Encouraged patient to schedule an appointment with PCP/specialist to discuss problem at next visit
☐ Encouraged patient to talk to pharmacist about problem
☐ Addressed performance/knowledge deficit
☐ Provided resource information to facilitate adherence
☐ Other _____
# Medication Appropriateness Index

| 1. Is there an indication for the drug? Comments: | 1 | 2 | 3 | 9 DK† |
| 2. Is the medication effective for the condition? Comments: | 1 | 2 | 3 | 9 DK |
| 3. Is the dosage correct? Comments: | 1 | 2 | 3 | 9 DK |
| 4. Are the directions correct? Comments: | 1 | 2 | 3 | 9 DK |
| 5. Are the directions practical? Comments: | 1 | 2 | 3 | 9 DK |
| 6. Are there clinically significant drug-drug interactions? Comments: | 1 | 2 | 3 | 9 DK |
| 7. Are there clinically significant drug-disease/condition interactions? Comments: | 1 | 2 | 3 | 9 DK |
| 8. Is there unnecessary duplication with other drug(s)? Comments: | 1 | 2 | 3 | 9 DK |
| 9. Is the duration of therapy acceptable? Comments: | 1 | 2 | 3 | 9 DK |
| 10. Is this drug the least expensive alternative compared to others of equal utility? Comments: | 1 | 2 | 3 | 9 DK |

*Complete instructions in the use of the scale are available upon request.
†Don't know.

Pill Pruner for Inpatient Deprescribing

1. This is a guide, not an order.
2. Applies to the frail elderly only.
3. Some pills may need to be gradually withdrawn over weeks eg benzodiazepines, TCAs, SSRIs, PPIs. Therefore start the reduction AND communicate ongoing plan to GP.
4. Consider dose adjustments: renal function declines with age, irrespective of fitness.
5. Preventative drugs: does the patient want life quantity or quality?
6. Acute illness: sometimes drugs need to be withdrawn temporarily and reintroduced by the GP after recovery.
7. Make sure your discharge letter is accurate. Changes to medications must be properly explained in the dedicated paragraph. If you think a drug event contributed to the admission, say so in the diagnosis list.

Figure 1: The Pill Pruner (front and back). Asterisks marking 6, 7, 10 and 13 on the drug list refer to the requirement for gradual drug withdrawal (note 3).

<table>
<thead>
<tr>
<th>Pill Pruner</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Loop diuretics: only for patients with heart failure [not venous insufficiency]</td>
</tr>
<tr>
<td>2. Thiazides: not in patients with hyponatraemia, gout or venous insufficiency</td>
</tr>
<tr>
<td>3. Calcium antagonists: not in patients with heart failure/constipation/postural hypotension</td>
</tr>
<tr>
<td>4. Alpha-blockers/Labetolol: not in patients with postural hypotension/falls/turns</td>
</tr>
<tr>
<td>5. Anti-platelet drugs: not in patients with GI bleeding, or funny turns without focal neurology</td>
</tr>
<tr>
<td>6. Tricyclic antidepressants*: not in patients with confusion, constipation, postural hypotension, urinary retention</td>
</tr>
<tr>
<td>7. Benzodiazepines*: not in patients with confusion, falls</td>
</tr>
<tr>
<td>8. Anticholinergics: not in patients with confusion, falls, constipation</td>
</tr>
<tr>
<td>9. Antihistamines: not in patients with confusion, falls</td>
</tr>
<tr>
<td>10. SSRIs*: not in patients with confusion, hyponatremia, falls</td>
</tr>
<tr>
<td>11. Antipsychotics: not in patients with parkinsonism, epilepsy, falls</td>
</tr>
<tr>
<td>12. NSAIDS: not! Avoid if at all possible</td>
</tr>
<tr>
<td>13. Proton pump inhibitors*: not unless clear history of reflux, ulcers see “3” overleaf</td>
</tr>
</tbody>
</table>
TARGETING SPECIFIC DRUG CLASSES

Applying the Principle of the Happy Medium
Clinical Vignette: Mr. Casino

- 76 y/o male admitted to SNF s/p parieto-occipital CVA
  - Aortic aneurism
  - HTN
  - Pre-DM
  - CAD
  - PVD
  - Renal artery stenosis
  - CVA
  - Dementia
  - GERD
  - Weight loss
  - A-fib/SSS s/p pacer

![Diagram showing blood pressure and heart rate readings: 145/110, 12.3/96, 9.6/35.7]
Mr. Casino

- Esomeprazole 40 mg daily
- Dicyclomine 10 mg BID
- Sucralfate 1 GM QID
- Famotidine 20 mg BID
- Warfarin 5 mg daily
- Aspirin 81 mg daily
- Levetiracetam 500 mg BID
- Atorvastatin 20 mg daily
- Nitrofurantoin 100 mg BID for 7 days
- Doxazosin 1 mg daily
- Lisinopril 20 mg daily
- Metoprolol tartrate 25 mg BID
- Clonidine 0.1 mg BID
- PRN:
  - Zopidem 5 mg at HS
  - Hydrocodone/APAP 5/324 mg q 8hrs

VS: 125/68 68 20 123#
**Recommendation 1**

In the general population aged ≥60 years, initiate pharmacologic treatment to lower blood pressure (BP) at systolic blood pressure (SBP) ≥150 mm Hg or diastolic blood pressure (DBP) ≥90 mm Hg and treat to a goal SBP <150 mm Hg and goal DBP <90 mm Hg. (Strong Recommendation – Grade A)

**Corollary Recommendation**

In the general population aged ≥60 years, if pharmacologic treatment for high BP results in lower achieved SBP (eg, <140 mm Hg) and treatment is well tolerated and without adverse effects on health or quality of life, treatment does not need to be adjusted. (Expert Opinion – Grade E)
<table>
<thead>
<tr>
<th>Guideline</th>
<th>Population</th>
<th>Goal BP, mm Hg</th>
<th>Initial Drug Treatment Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014 Hypertension guideline</td>
<td>General ≥60 y</td>
<td>&lt;150/90</td>
<td>Nonblack: thiazide-type diuretic, ACEi, ARB, or CCB; black: thiazide-type diuretic or CCB</td>
</tr>
<tr>
<td></td>
<td>General &lt;60 y</td>
<td>&lt;140/90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Diabetes</td>
<td>&lt;140/90</td>
<td></td>
</tr>
<tr>
<td></td>
<td>CKD</td>
<td>&lt;140/90</td>
<td>ACEI or ARB</td>
</tr>
</tbody>
</table>

- **First line**
  - Thiazides
    - Hyponatremia, hypokalemia, hypercalcemia, incontinence
  - ACEi/ARB
    - Diabetes, heart failure, post-MI, CKD, sarcopenina.
    - Hyperkalemia, AKI, angioedema, cough (ACEi)
  - CCB
    - Constipation, edema, and heart failure.

- **Others**
  - Beta-Blockers:
    - heart failure, postmyocardial infarction, atrial arrhythmia
    - poorly tolerated in older people
  - Alpha-blockers ONLY if benign prostatic hypertrophy.

James, PA, et al. JAMA 2014; 311(5):507-520
Little MO. Med Clin N Am 2011; 95 (3):525-537
What About the SPRINT Trial?

1. Does it apply to my patient?
   - **Excluded** patients with DM, previous CVA, ESRD, prior CV procedure, symptomatic CHF in past 6 months, dementia, NH residents
   - 5/6 patients currently treated for HTN don’t meet study criteria

2. How were the blood pressures measured?
   - Mean of 3 BP readings at an office visit while the patient was seated and after 5 minutes of quiet rest;
   - Using an automated measurement system
   - Some variation between clinical sites

3. How do the statistical results translate clinically?
   - Per 1000 patients: 16 benefit, 22 harmed, 962 neither
   - The likelihood of absolute benefit is 1.6%
   - A serious increase in ADEs in the aggressively Rx’d group (2.5% to 4.7%)

HTN Trials Relevant to Frail Elderly

• PARTAGE nursing home study
  – SBP < 130 on ≥ 2 antihypertensives had twofold greater risk of 2-year mortality
  – Low BP in those NOT on anti-HTN was NOT associated with higher mortality


• β-blockers post acute MI in NH
  – Decreased 90-day mortality
  – Increased functional decline

Mr. Casino

- Esomeprazole 40 mg daily
- Dicyclomine 10 mg BID
- Sucralfate 1 GM QID
- Famotidine 20 mg BID
- Warfarin 5 mg daily
- Aspirin 81 mg daily
- Levetiracetam 500 mg BID
- Atorvastatin 20 mg daily
- Nitrofurantoin 100 mg BID for 7 days

- Doxazosin 1 mg daily
- Lisinopril 20 mg daily
- Metoprolol tartrate 25 mg BID
- Clonidine 0.1 mg BID
- PRN:
  - Zopidem 5 mg at HS
  - Hydrocodone/APAP 5/324 mg q 8hrs

VS: 125/68  68  20  123#
Should I start, continue or stop the cholesterol-lowering medications?
Cholesterol Guidelines

• Based on RCTs and Meta-analyses: reduction of atherosclerotic cardiovascular disease (ASCVD)

• NO RCT evidence to support titrating drugs to achieve target LDL–C or non-HDL-C levels

• YES RCT evidence that additional drugs (e.g. niacin) to lower non-HDL–C did not further reduce ASCVD outcomes

4 Statin Benefit Groups:

1. Individuals with clinical ASCVD
2. Individuals with primary elevations of LDL–C ≥190 mg/dL
3. Individuals 40 to 75 years of age with diabetes and LDL–C 70 to 189 mg/dL without clinical ASCVD
4. Individuals without clinical ASCVD or diabetes who are 40 to 75 years of age with LDL–C 70 to 189 mg/dL and have an estimated 10-year ASCVD risk of 7.5% or higher.

Cholesterol Guidelines: Application to Elderly?

<table>
<thead>
<tr>
<th>High-Intensity Statin Therapy</th>
<th>Moderate-Intensity Statin Therapy</th>
<th>Low-Intensity Statin Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily dose lowers LDL–C on average, by approximately 50%</td>
<td>Daily dose lowers LDL–C on average, by approximately 30% to &lt;50%</td>
<td>Daily dose lowers LDL–C on average, by &lt;30%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Atorvastatin 10 (20) mg</th>
<th>Rosuvastatin (5) 10 mg</th>
<th>Simvastatin 20–40 mg†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pravastatin 40 (80) mg</td>
<td>Lovastatin 40 mg</td>
<td></td>
</tr>
<tr>
<td>Fluvastatin XL 80 mg</td>
<td>Fluvastatin 40 mg bid</td>
<td></td>
</tr>
<tr>
<td>Pitavastatin 2–4 mg</td>
<td>Simvastatin 10 mg</td>
<td></td>
</tr>
<tr>
<td>Pravastatin 10–20 mg</td>
<td>Lovastatin 20 mg</td>
<td></td>
</tr>
<tr>
<td>Fluvastatin 20–40 mg</td>
<td>Pitavastatin 1 mg</td>
<td></td>
</tr>
</tbody>
</table>

- Few > 75 included in trials
  - Continue for secondary prevention if tolerating
  - Probably no benefit for primary prevention
  - Do not need to routinely measure CK

Statins and Limited Life Expectancy

Stopping statins in patients with 1 year or less life expectancy...

- No change in mortality
- Improved QOL
- Substantial cost savings

PROTON PUMP INHIBITORS
Chronic PPI Use - Complications

- Malabsorption of key minerals / vitamins
  - Calcium
  - Magnesium
  - B12 and Iron → anemia

- Osteoporosis and Fractures

- Pneumonia

- C. diff

- CKD

- MI

- Dementia

- Mortality

Most Docs Make Wrong Choices in Stopping PPIs
— Fear of adverse events leads clinicians down an erroneous and dangerous path

Case: Frail Older Adult

97 year old man. A medication review was requested due to multiple falls. Orthostatic blood pressure monitoring is incomplete. His systolic BP ranges from under 100 to 140. He is receiving 12 routine medications. His daughter doesn’t want any medication stopped.

SEE CASE INCLUDED IN FOLDER
The Difficult Case, i.e. when he wants them all

- Mr. S.M. 87 y/o male with HTN, moderate Alzheimer’s, OA, anemia, HLD, GERD seen in geriatric consult clinic
- Meds:
  - Aspirin 325 mg daily
  - Lisinopril 20 mg daily
  - Atorvastatin 20 mg daily
  - Multivitamin daily
  - Vitamin B complex daily
  - Omeprazole 20 mg BID
  - Donepezil 10 mg BID
  - Amlodipine 10 mg daily
  - Ibuprofen 200 mg TID
  - Fish oil 1000 mg BID
  - Alprazolam 0.5 mg BID PRN
- VS: 110/58 68 18
  - LDL 72
  - HDL 33
  - Hgb 10.3
- Has been on these “for years” and is unwilling to stop any of them.
The Difficult Case, i.e. when he wants them all

- Think beyond drugs
- Practice more strategic prescribing
- Maintain heightened vigilance regarding adverse effects
- Exercise caution and skepticism regarding new drugs
- Work with patients for a shared agenda
- Consider long-term, broader impacts

SAIL and TIDE

**SAIL:** Keep meds as **Simple** as possible, remember **Adverse effects**, identify the **Indication** for each medication, **List** each drug and dose

**TIDE:** Schedule **Time** during each visit to discuss medications, have awareness of **Individual** response to medications, avoid potential **Drug/drug/disease** interactions, **Educate** the patient
Questions?

YOU can make a difference!