



Smart Prescribing for Older Adults

Colleen Christmas, MD

Johns Hopkins University School of Medicine
Division of Geriatric Medicine and Gerontology

cchristm@jhmi.edu

@CchristmColleen

Disclosures

- None

Objectives

- Identify challenges of prescribing medications in older adults
- Review the prevalence and consequences of polypharmacy
- Describe a framework for safe medication prescribing in older adults

- A 55 yo daughter has taken her 80 yo dad into her home because of his Alzheimer Disease.
- She calls you because he becomes quite disruptive in the evenings, threatening her husband, scolding the kids.
- What would you recommend?

“Second-generation” or “atypical” antipsychotics?

- Antipsychotic drugs differ in many properties and can therefore not be categorized in first-generation and second-generation groupings.

Leucht. Lancet. 2013

Efficacy

- RCT patients with Alzheimers
Dementia plus agitation, aggression,
or psychosis
 - Quetiapine
 - Risperidone
 - Olanzapine
 - Placebo
- No differences in time to discontinue
treatment of CGIC score

Tardive dyskinesia

- 5.2% with second-generation antipsychotics versus 5.2% with first-generation antipsychotics ($P = 0.865$) in the elderly

Medical Letter June 2013

Increased mortality in dementia-related psychosis

Analyses of 17 placebo-controlled trials, largely in patients on “atypical” antipsychotic drugs, revealed 1.6-1.7 x the risk of death in patients treated with antipsychotics vs placebo.

- “For decades antipsychotic drugs were a niche product. Today, they’re the top-selling class of pharmaceuticals in America, generating annual revenue of about \$14.6 billion and surpassing sales of even blockbusters like heart-protective statins.”

- D. Wilson NYT 10/2/10

Challenge to good prescribing

- Reliable information is hard to find
 - And this is intentional
- “All promotional statements that a new drug has few, mild, or no side-effects should be ignored.”
 - Medical Letter 1962;4:6

Pharmacology and Aging

Physiologic Change

Consequence

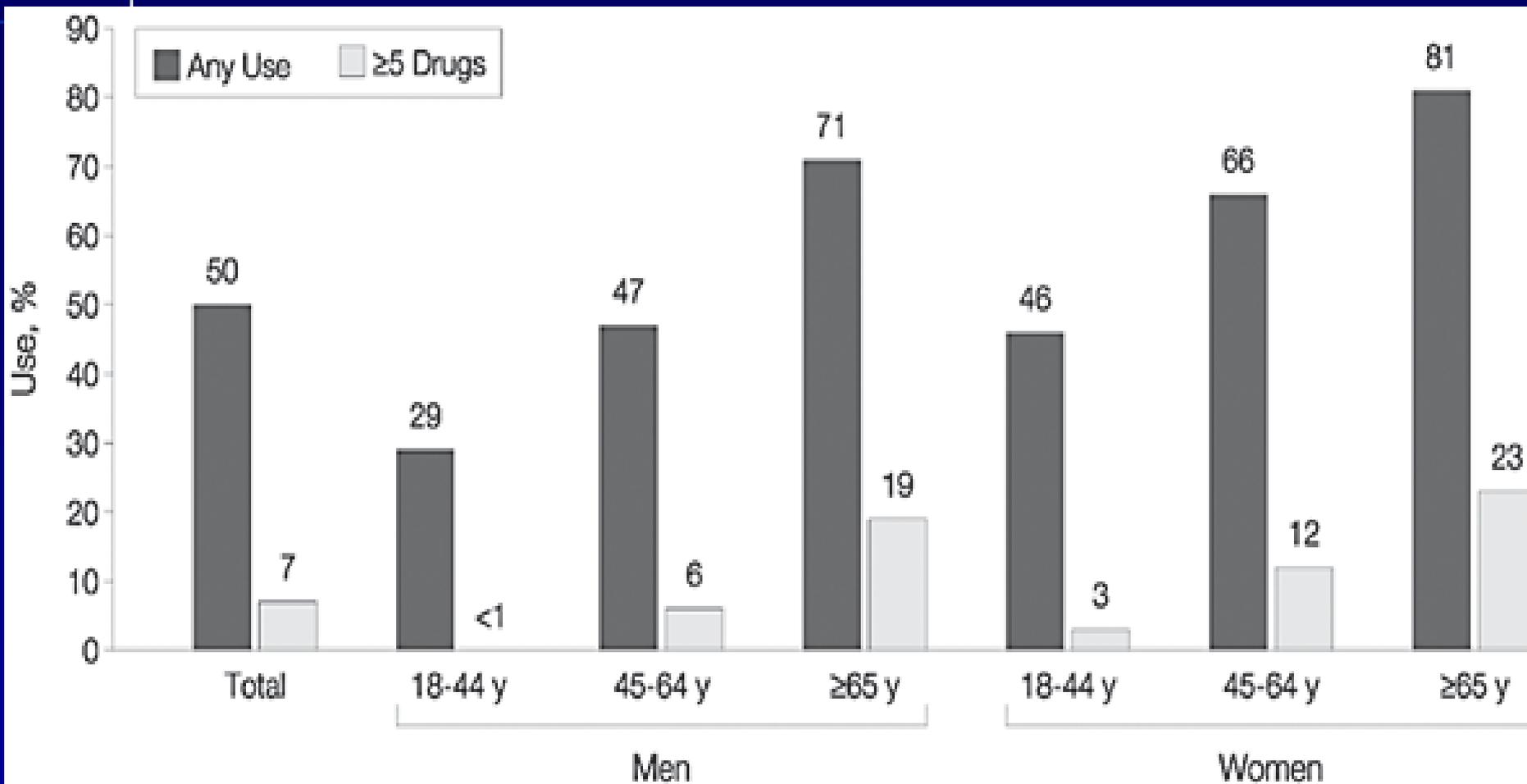
- | Physiologic Change | Consequence |
|---------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| ■ Reduction in liver mass and blood flow | ■ Reduced first pass metabolism affecting bioavailability of some drugs
■ Reduced clearance of drugs by the liver |
| ■ Increased total body fat and decreased lean body mass | ■ Increased half-life of lipophilic medications, e.g. benzodiazepines, anti-psychotics |
| ■ Decreased renal function with age | ■ Decreased clearance of drugs through kidney |

Polypharmacy

■ Definition

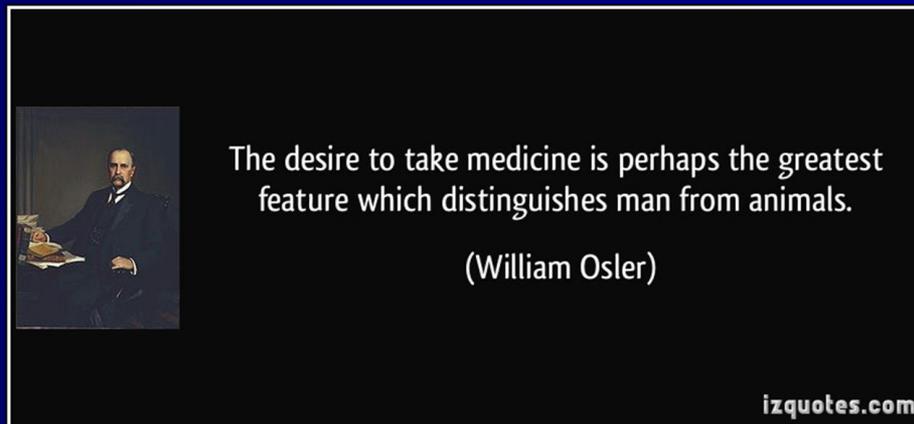
- The use of multiple medications at the same time
 - Exact number defining “polypharmacy” varies in literature, although ≥ 5 concurrent medications is commonly used
- Taking at least one medication that is not clinically indicated

Prescription Drug Use in Adults



Why do older adults use more medications?

- Guidelines don't work well for the elderly
- Higher number of comorbid conditions
 - 20% of Medicare beneficiaries have 5 or more chronic conditions and 50% receive 5 or more medications
- We docs have some very, very bad habits



Kaufman D. JAMA 2002;287:337-44.

Tinetti M. N Engl J Med. 2004;351:2870-74.

Guidelines

Table 3. Treatment Regimen Based on Clinical Practice Guidelines for a Hypothetical 79-Year-Old Woman With Hypertension, Diabetes Mellitus, Osteoporosis, Osteoarthritis, and COPD*

Time	Medications†	Other
7:00 AM	Ipratropium metered dose inhaler 70 mg/wk of alendronate	Check feet Sit upright for 30 min on day when alendronate is taken Check blood sugar
8:00 AM	500 mg of calcium and 200 IU of vitamin D 12.5 mg of hydrochlorothiazide 40 mg of lisinopril 10 mg of glyburide 81 mg of aspirin 850 mg of metformin 250 mg of naproxen 20 mg of omeprazole	Eat breakfast 2.4 g/d of sodium 90 mmol/d of potassium Low intake of dietary saturated fat and cholesterol Adequate intake of magnesium and calcium Medical nutrition therapy for diabetes‡ DASH‡
12:00 PM		Eat lunch 2.4 g/d of sodium 90 mmol/d of potassium Low intake of dietary saturated fat and cholesterol Adequate intake of magnesium and calcium Medical nutrition therapy for diabetes‡ DASH‡
1:00 PM	Ipratropium metered dose inhaler 500 mg of calcium and 200 IU of vitamin D	
7:00 PM	Ipratropium metered dose inhaler 850 mg of metformin 500 mg of calcium and 200 IU of vitamin D 40 mg of lovastatin 250 mg of naproxen	Eat dinner 2.4 g/d of sodium 90 mmol/d of potassium Low intake of dietary saturated fat and cholesterol Adequate intake of magnesium and calcium Medical nutrition therapy for diabetes‡ DASH‡
11:00 PM	Ipratropium metered dose inhaler	
As needed	Albuterol metered dose inhaler	

Boyd CM et al.,
JAMA 2005.

The Prescribing Cascade

- An adverse effect of a medication is mistaken for a new diagnosis and treated with an additional medication
 - Example:
 - Prescribing oxybutynin for urinary incontinence caused by cholinesterase inhibitors used for dementia (i.e. donepezil)

Consequences of Polypharmacy

■ Adverse Drug Reactions

- Risk increases with number of medications
 - 13% risk with the use of 2 medications
 - 58% risk with 5 medications
 - 82% risk with 7 or more medications
- Approximately 12% of hospital admissions in older adults are related to ADRs
- 4th most common death cause in US hospitals

Adverse Drug Reactions

- Delirium

- Opioids, Benzodiazapines, Anticholinergics

- Falls

- Medication use is one of the most modifiable risk factors for falls
- Medications associated with increased risk of falls include any psychotropic drug, benzodiazepines, antipsychotics, antidepressants

- Weight Loss

Consequences of Polypharmacy

- Drug interactions
- Medication nonadherence
 - Higher rate with increased number of meds
- Increased health care costs
- Underuse of appropriate medications

Prescribing Principles for Older Adults

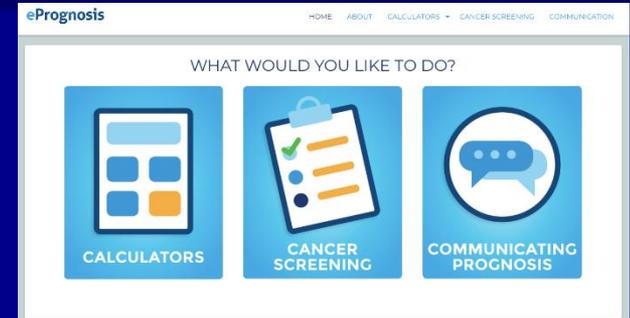
- Understand patient's goals
- Consider timeframes
- Consider magnitude of benefit to allow prioritization and tailoring of treatment

Prescribing Principles for Older Adults

- Understand patient's goals
 - Longevity, function, what gives life meaning
 - “What is a typical day like for you?”
 - “In whatever amount of time you have left on Earth, what do you hope for in that time ahead?”
- Consider timeframes
- Consider magnitude of benefit to allow prioritization and tailoring of treatment

Prescribing Principles for Older Adults

- Understand patient's goals
- Consider timeframes
 - Patient
 - Life expectancy www.eprognosis.org
 - Worry about short term versus long term
 - Treatment
 - Time to benefit
 - Time to harm
- Consider magnitude of benefit to allow prioritization and tailoring of treatment



Examples of time to benefit versus harm

Preventive intervention	Time to benefit	Time to harm
Bisphosphonates for osteoporosis	1-2 years	Immediate
BP control, primary prevention	1-2 years	Immediate and potentially serious
Intensive glycemic control in DM 2	10 years if at all	Immediate and potentially fatal

Lee SJ, Kim CM. JAGS 2018

Prescribing Principles for Older Adults

- Understand patient's goals
- Consider timeframes
- Consider magnitude of benefit to allow prioritization and tailoring of treatment
 - Absolute risk reduction (Often hard to find this info!)
 - Is there a non-drug way to get the same benefit
 - START/STOPP criteria or Beers List as short cut
 - Prioritize: big impact, short time, low risk, c/w goals
 - Allows you to consider totality of treatments and consider treatment burden and tolerance of treatment complexity
 - Med review EVERY VISIT

Beers Criteria

- Potentially inappropriate medications include medications that:
 - Have limited effectiveness in older adults
 - Are associated with poor outcomes
 - Have safer alternatives available

From THE AMERICAN GERIATRICS SOCIETY

A POCKET GUIDE TO THE 2019 AGS BEERS CRITERIA®

This guide has been developed as a tool to assist healthcare providers in improving medication safety in older adults. The role of this guide is to *inform* clinical decision-making, research, training, quality measures and regulations concerning the prescribing of medications for older adults to improve safety and quality of care. It is based on *The 2019 AGS Beers Criteria® for Potentially Inappropriate Medication Use in Older Adults*.

Originally conceived of in 1991 by the late Mark Beers, MD, a geriatrician, the Beers Criteria catalogues medications that cause side effects in older adults due to the physiologic changes of aging. In 2011, the AGS sponsored its first update of the criteria, assembling a team of experts and using an enhanced, evidence-based methodology. Since 2011, the AGS has been the steward of the criteria and has produced updates using an evidence-based methodology and rating each Criterion (quality of evidence and strength of evidence) using the American College of Physicians' Guideline Grading System, which is based on the GRADE scheme developed by Guyatt et al.

The full document, along with accompanying resources, can be found in its entirety online at geriatricsonline.org.

INTENDED USE

The goal of this guide is to improve care of older adults by reducing their exposure to Potentially Inappropriate Medications (PIMs).

- This should be viewed as a guideline for identifying medications for which the risks of their use in older adults outweigh the benefits.
- These criteria are not meant to be applied in a punitive manner.
- This list is not meant to supersede clinical judgment or an individual patient's values and needs. Prescribing and managing disease conditions should be individualized and involve shared decision-making.
- These criteria also underscore the importance of using a team approach to prescribing and the use of non-pharmacological approaches and of having economic and organizational incentives for this type of model.
- A companion piece that addresses the best way for patients, providers, and health systems to use (and not use) the AGS Beers Criteria® was also developed. The document can be found on geriatricsonline.org.

The criteria are not applicable in all circumstances (i.e. patients receiving palliative and hospice care). If a provider is not able to find an alternative and chooses to continue to use a drug on this list in an individual patient, designation of the medication as potentially inappropriate can serve as a reminder for close monitoring so that adverse drug effects can be incorporated into the electronic health record and prevented or detected early.

AGS THE AMERICAN GERIATRICS SOCIETY
Geriatrics Health Professionals.
Leading change. Improving care for older adults.

American Geriatrics Society Updated Beers Criteria for Potentially Inappropriate Medication Use in Older Adults. *J Am Geriatr Soc.* 2019

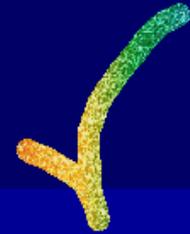
Beers Criteria - Examples

- Anticholinergics (e.g. Benadryl)
 - Reduced clearance with increased age
 - Increased risk of confusion, constipation
- Benzodiazepines
 - Increased risk of cognitive impairment, delirium, falls, fractures, and motor vehicle accidents
- Glyburide
 - Increased risk of prolonged hypoglycemia

AGS – Top Medications to Avoid

- NSAIDs
- Digoxin in doses greater than 0.125 mg
- Certain diabetes drugs
 - Sulfonylureas, especially long acting
- Muscle relaxants
- Certain meds for anxiety/insomnia
 - Benzodiazepines, sleeping pills (including OTC)
- Anticholinergic drugs
- Antipsychotics (unless patient has psychosis)
- Estrogen pills and patches

Medication Review



- Is there an indication for the drug?
- Is the medication effective for the condition?
- Is the dosage correct?
- Are the directions correct and practical?
- Are there clinically significant drug-drug or drug-disease interactions?
- Is there unnecessary duplication with other drug(s)?
- Is the duration of therapy acceptable?
- Is this drug the least expensive alternative compared to others of equal utility?

Let's practice:

79yo woman w Htn, DM2, OP, OA, COPD

- Ipratropium MDI
- Alendronate
- Calcium
- Vitamin D
- HCTZ
- Lisinopril
- Glyburide
- Metformin
- Naproxen
- Omeprazole
- Lovastatin
- Albuterol prn
- Goals: Function, Independence
- Timeframe: 5-ish years
- Prioritization and tailoring

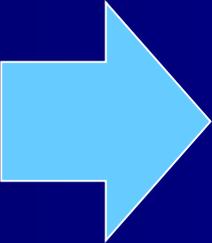
Let's practice:

79yo woman w Htn, DM2, OP, OA,
COPD

- Ipratropium MDI- mild disease
- Alendronate- "20 y"
- Calcium- Diet
- Vitamin D –Level 22
- HCTZ- +orthostatic
- Lisinopril- protect kidneys
- Glyburide- Beers List
- Metformin- A1C goal, time to benefit
- Naproxen- Beers List
- Omeprazole- Cascade
- Lovastatin- LDL 27, weak, Primary prevention
- Albuterol- helps

Let's practice:

79yo woman w Htn, DM2, OP, OA, COPD

- Ipratropium MDI
 - Alendronate
 - Calcium
 - Vitamin D
 - HCTZ
 - Lisinopril
 - Glyburide
 - Metformin
 - Naproxen
 - Omeprazole
 - Lovastatin
 - Albuterol MDI
- 
- Ergocalciferol 50K/week
 - Albuterol MDI prn
 - **Metformin**

 - Exercise, home safety, calcium in diet but otherwise live a little

Take Home Points

- Elderly consume more, tolerate less, often can't afford, frequently harmed by drugs
- Be especially cautious about
 - New drugs (\$, not studied in "real" patients)
 - Multiple drugs, guideline based care
 - Temptation to treat side effects with drugs
 - Certain drugs
- An approach to prescribing includes consideration of patient goals, timeframe & magnitude of benefits and burdens, and prioritizing value of treatments