



Atrium Health

Doc, I think I am taking too many medications!

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Objectives

- 1) Discuss the dangers of polypharmacy
- 2) Review potentially inappropriate medications for older adults
- 3) Develop strategies for prioritizing medications and for "deprescribing" medications



Case: Mrs. W.

- Mrs. W is an 80 year-old female with a history of coronary artery disease, diabetes, chronic kidney disease, anemia, osteoarthritis, and gradually worsening Alzheimer's type dementia
- She is brought to the office by her husband (her primary caregiver)
- He manages her medications and ensures that she follows up with her primary care physician, cardiologist, orthopedic surgeon, and neurologist.
- She has been losing weight, poor appetite, worsening urinary incontinence, constipation, and chronic swelling of her legs
- She has been hospitalized twice in the past 3 months for exacerbations of her congestive heart failure
- She became very confused and agitated with each hospitalization



Case: Mrs. W. (continued)

- Mr. W feels overwhelmed as a caregiver
 - Disrupted sleep at night due to his wife's frequent urination and wandering
 - Increased need to assist her with dressing, bathing, toileting
- Hospitalizations have been very stressful for both of them
- Frequent follow up appointments with physicians are taxing, especially since Mrs. W's mobility is poor and she falls frequently
- Admits to making some mistakes with her medications (forgetting doses, running out of medications, confusing pill shape/colors)
- Daughter is now helping him fill a pill box each week
- Goal: avoid future hospitalizations and nursing home



Mrs. W's Medications

• Aspirin	• Omeprazole
• Furosemide	• Iron tablet
• Carvedilol	• Docusate sodium
• Lisinopril	• Senna
• Amlodipine	• Polyethylene Glycol
• Metformin	• Multivitamin
• Glargine insulin	• Calcium
• Glipizide	• Vitamin D
• Atorvastatin	• Fish oil
• Donepezil	• Ibuprofen
• Memantine	• Tylenol
• Zolpidem	• Diphenhydramine
• Quetiapine	• Alprazolam



Mrs. W.

- Recognizes her husband and daughter
- Feeds herself, although appetite is poor lately
- Frequently up at night and takes naps during day
- Intermittent confusion about time, place, and events; worse at night
- Denies pain, depressed mood, or other concerns today, except that she states:
"Doc, I think I am taking too many medications!"
(Her husband nods in agreement)



Brown Bag Check-Up

- Put all of your medication bottles in a brown bag
- Include both prescription and non-prescription (OTC) medications
- Bring the bag to the doctor's office or hospital
- Do this EVERY time you go to see the doctor



Adverse Drug Events (ADEs)

- Adverse symptoms
- Adverse clinical outcomes
 - Doctor visits or hospitalizations
 - Falls
 - Functional decline
 - Changes in cognition (delirium)
 - Death
- Poor adherence, poor quality of life
- Increased cost



Keep the Medication List Short: "Less is More"

- Greater number of medications = Higher risk of an Adverse Drug Event
- Question the need for new medications, stop meds if possible
- Prioritize treatments
 - Avoid under treating conditions (pain)
 - Weigh the benefits and risks of a new medication
 - Sedative hypnotic (sleep) medications
 - "Tight" control of parameters (blood pressure, blood sugars)
 - Goals of care

Drugs Aging 2003; 20 (1): 23–57.
Lancet 2000; 355: 865–872.

Ann Intern Med 1999;131:492–501.
J Gen Intern Med 2005; 20:116–122.



Do you need a new medication?

- Does every condition need a medication?
 - Is it a benign or self-limiting condition?
 - How does this condition bother the person?
 - Some conditions are inconvenient, but not life-threatening
 - Individualize treatment plans
- Consider non-drug alternatives for some conditions
 - Diet
 - Exercise
 - Lifestyle modification
- Use caution with over-the-counter (OTC) medications
 - Not necessarily safer than prescription drugs
 - Uncertain safety and efficacy of herbals and supplements



"Think Drugs" Before Making a New Diagnosis

- Consider adverse drug effect as the cause of new symptoms
- Remember that over-the-counter drugs, supplements, and herbals can cause adverse drug effects
- Consider discontinuing or dose-reducing medications rather than treating an adverse drug effect with another medication



Prescribing Cascade: Prescribing a New Drug to Treat an Adverse Drug Event

- Establish the correct diagnosis
- Consider drug-drug interactions (opposing effects)
- Plan: Try stopping or dose-reducing a medication

Arch Intern Med 2005;165:808–813.
BMJ 1997;315:1096–1099.
JAGS 2004; 52:2082–2087.



Adverse Drug Events: Constipation, Urinary Incontinence, and Weight Loss

- Aspirin
- Furosemide
- Carvedilol
- Lisinopril
- **Amlodipine**
- Metformin
- Glargine insulin
- Glipizide
- Atorvastatin
- **Donepezil**
- Memantine
- Zolpidem
- Quetiapine
- Omeprazole
- **Iron tablet**
- **Docosate sodium**
- **Senna**
- **Polyethylene Glycol**
- Multivitamin
- **Calcium**
- Vitamin D
- Fish oil
- Ibuprofen
- Tylenol
- Diphenhydramine
- Alprazolam



“Start Low and Go Slow...”

- Start one medication at a time
- Start with a low dose and increase gradually
- Once daily is usually best
- Monitor for response and adverse effects
- Assess adherence with regimen



“...But, Go All The Way!”

- Be conservative, but don't miss the target!
- What is your goal? Are you achieving it?
- Can you keep increasing the dose or are you limited by side effects?
- Are you observing a clinical benefit at lower doses?
- Consider stopping if you can't “go all the way” and the benefit is not clear.



Beers Criteria: Potentially Inappropriate Medications for Older Adults

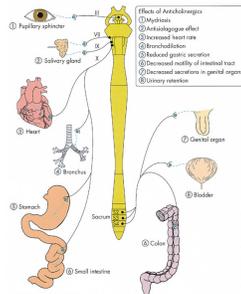
- Originally conceived by Dr. Mark Beers 
- Published in 1991, revised 1997, 2002, 2012, 2015, (2018).
- Consensus-based, but statistical association with adverse drug events
- Adopted for nursing home regulation.
- Does not account for the complexity of a patient's entire medication regimen.
- Not a “Do Not Prescribe List” (balance risks with potential benefits)

J Am Geriatr Soc 2015;63:2227–2246.



Beers Criteria: Anticholinergic Medications

- **Antihistamines (1st generation)**
 - Diphenhydramine (Benadryl, Unisom, Tylenol PM, Advil PM)
 - Hydroxyzine (Atarax, Vistaril)
 - Promethazine (Phenergan)
- **Antispasmodics**
 - Dicyclomine (Bentyl)
 - Hyoscyamine (Levsin)
 - Scopolamine (Transderm Scop)
- **Skeletal Muscle Relaxants**
 - Carisoprodol (Soma)
 - Cyclobenzaprine (Flexeril)
 - Methocarbamol (Robaxin)
- **Tricyclic Antidepressants**
 - Amitriptyline (Elavil)
 - Doxepin (Sinequan)



J Am Geriatr Soc 2015;63:2227–2246. (Table 2)

Beers Criteria: Benzodiazepines

- **Increased sensitivity for older adults**
 - Slowed metabolism, especially long-acting agents
 - Similar neurocognitive effects to alcohol
 - May cause a paradoxical reaction (increased agitation)
- **Increased risk of adverse clinical events**
 - Falls and fractures
 - Cognitive impairment
 - Delirium
- **Avoid if possible**
 - Appropriate if being used for seizures, alcohol withdrawal, severe anxiety, or perioperative anesthesia
 - If necessary, use lowest dose possible and shortest duration



J Am Geriatr Soc 2015;63:2227–2246. (Table 2)

Beers Criteria: Sleep Medications

- **Nonbenzodiazepine Hypnotics**
 - Eszopiclone (Lunesta)
 - Zolpidem (Ambien)
 - Zaleplon (Sonata)
- **Benzodiazepine-receptor agonists**
- **Adverse events similar to those of benzodiazepines**
- **Increased risk for delirium, falls fractures**

J Am Geriatr Soc 2015;63:2227-2246. (Table 2)



Beers Criteria: Antipsychotic Medications

- FDA "Black Box" warning: increased risk of death, mostly due to cardiovascular events (eg. heart failure, sudden death) and infections (eg. pneumonia)
- Avoid using for behavioral problems associated with dementia
 - Try non-pharmacologic interventions
 - Reserve for behaviors that threaten harm to self or others
- **Typical (First Generation, Conventional)**
 - Haloperidol (Haldol)
 - Prochlorperazine (Compazine)
- **Atypical (Second Generation)**
 - Risperidone (Risperdal)
 - Quetiapine (Seroquel)
 - Olanzapine (Zyprexa)
 - Ziprasidone (Geodon)
 - Aripiprazole (Abilify)
- **Adverse Effects**
 - Arrhythmias (QT prolongation)
 - Abnormal Movements (Parkinsonism, tardive dyskinesia)



J Am Geriatr Soc 2015;63:2227-2246. (Table 2)



Reflux (Heartburn) Medications

- **Proton pump inhibitors** (omeprazole, esomeprazole, pantoprazole)
 - Some available without a prescription
 - Long-term use only under guidance of physician
 - Concern for long-term risks
 - Bone fractures
 - Pneumonia
 - Low magnesium levels, vitamin B12 deficiency
 - Infectious diarrhea (Clostridium difficile colitis)
- **Alternatives**
 - Antacids (calcium carbonate)
 - H2 blockers (famotidine, ranitidine)



J Am Geriatr Soc 2015;63:2227-2246. (Table 2)



Beers Criteria: NSAID Pain Medications

- Nonsteroidal Anti-inflammatory Drugs (NSAIDs)
(Ibuprofen, Naproxen, Meloxicam, Sulindac, Etodolac, etc.)
- Increased risk of gastrointestinal bleeding (increased risk with longer duration of use)
- May raise blood pressure (especially if underlying high blood pressure)
- Adverse effect on kidney function, especially for persons with underlying kidney disease
- Avoid chronic use, unless other alternatives are not effective

J Am Geriatr Soc 2015;63:2227-2246. (Table 2)



Mrs. W's Medications: Applying Beers Criteria

• Aspirin	• Omeprazole
• Furosemide	• Iron tablet
• Carvedilol	• Docusate sodium
• Lisinopril	• Senna
• Amlodipine	• Polyethylene Glycol
• Metformin	• Multivitamin
• Glargine insulin	• Calcium
• Glipizide	• Vitamin D
• Atorvastatin	• Fish oil
• Donepezil	• Ibuprofen
• Memantine	• Tylenol
• Zolpidem	• Diphenhydramine
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J Am Geriatr Soc 2015;63:2227-2246. (Table 2)



Stopping Medications: "Deprescribing"

"Systematic process of identifying and discontinuing drugs in instances in which existing or potential harms outweigh existing or potential benefits within the context of an individual patient's care goals, current level of functioning, life expectancy, values, and preferences."

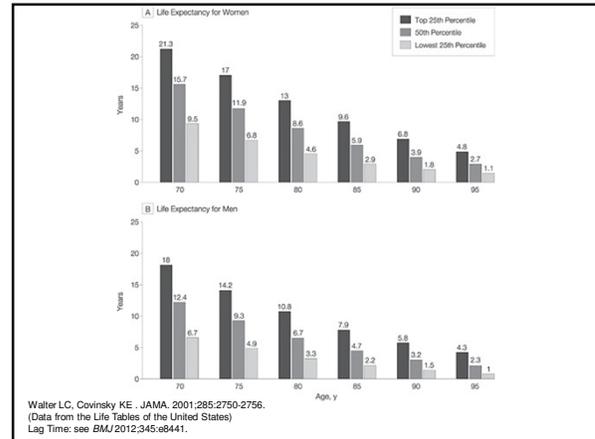
JAMA Intern Med. 2015;175(5):827-834



“Deprescribing”

- 1) What are the current indications for each drug?
- 2) Is the patient actually taking the drug?
- 3) Does the likely benefit of the drug outweigh its potential for harm?
 - High-risk medications (see Beers Criteria)
 - Time to benefit for preventive medications (consider overall prognosis and estimated life expectancy)
- 4) What are the goals of care?

JAMA Intern Med. 2015;175(5):827-834



Time to Benefit for Older Adults

Time to Benefit (Years)	Preventive Intervention
1–2	Primary prevention, hypertension
2–5	Primary prevention with statins
10	Aspirin for cardiovascular disease
10	Intensive glycemic (blood sugar) control in diabetes
10	Colorectal cancer screening
10	Breast cancer screening

J Am Geriatr Soc 2018;66:229–234.



Goals of Care

- Prolongation of life (Longevity)
- Maintenance of Function
- Maximization of Comfort



Gillick, MR et al. J Am Geriatr Soc 1999;47:227-230.
Gillick, MR. Ann Intern Med 1995;123:621-624.
Gillick MR. J Palliat Med 2004;7:357-361.



“Deprescribing” Should Be Considered

- New symptom or clinical syndrome suggestive of ADE
- Advanced disease, terminal illness, extreme frailty
- High-risk medications or combinations of medications
- Preventive drugs for scenarios associated with no increased risk despite stopping drug
 - Stopping alendronate after 5 years of treatment
 - Stopping statins for primary prevention
- Patient/family willing to participate in shared decision

JAMA Intern Med. 2015;175(5):827-834



Mrs. W’s Medications: Deprescribing

- **Aspirin**
- Furosemide
- Carvedilol
- Lisinopril
- ~~Amlodipine~~
- **Metformin**
- **Glargine insulin**
- **Glipizide**
- **Atorvastatin**
- ~~Donepezil~~
- **Memantine**
- ~~Zolpidem~~
- ~~Quetiapine~~
- ~~Omeprazole~~
- ~~Iron tablet~~
- ~~Docusate sodium~~
- ~~Senna~~
- Polyethylene Glycol
- **Multivitamin**
- ~~Calcium~~
- **Vitamin D**
- **Fish oil**
- ~~Ibuprofen~~
- Tylenol
- ~~Diphenhydramine~~
- ~~Alprazolam~~



Mrs. W's New Medication List

- Aspirin
- **Furosemide**
- **Carvedilol ?**
- **Lisinopril ?**
- Amlodipine
- Metformin
- Glargine insulin
- Glipizide
- Atorvastatin
- Donepezil
- Memantine
- Zolpidem
- Quetiapine
- Omeprazole
- Iron tablet
- Docusate sodium
- Senna
- **Polyethylene Glycol ?**
- Multivitamin
- Calcium
- Vitamin D
- Fish oil
- Ibuprofen
- **Tylenol**
- Diphenhydramine
- Alprazolam



Conclusion

- 1) The longer the medication list, the higher the risk of an adverse drug event.
- 2) Use caution when starting new medications: Do you need a medication or is this new problem an adverse effect from another medication?
- 3) Medication lists should be reviewed for potentially inappropriate medications (Beers Criteria) and the balance of risks and benefits for those medications should be addressed.
- 4) Implement strategies to prioritize medications and "deprescribe" those medications with higher risk than benefit, long "time to benefit" for persons with limited life expectancy, or inconsistent with overall goals of care.



Resources

Health in Aging Foundation <http://www.healthinagingfoundation.org>

Choosing Wisely Campaign (consumer site)
<http://www.choosingwisely.org/patient-resources>



Healthinaging.org

Trusted Information. Better Care.

Expert information from Healthcare Professionals Who Specialize in the Care of Older Adults

Avoiding Overmedication and Harmful Drug Reactions

As you grow older, you are more likely to develop long-term health conditions that require taking multiple medications. Many older people also take over-the-counter (OTC) medications, vitamins, or supplements. As a result, older adults have a higher risk of overmedication and unwanted drug reactions (adverse drug events).

According to the Centers for Disease Control and Prevention (CDC), adverse drug events result in over 700,000 visits to hospital emergency rooms each year. Many adverse drug events can be prevented.

To lower the chances of overmedication and drug reactions, the American Geriatrics Society's Foundation for Health in Aging recommends the following tips for safe use of medications.



Healthinaging.org

Trusted Information. Better Care.

Expert information from Healthcare Professionals Who Specialize in the Care of Older Adults

Ten Medications Older Adults Should Avoid or Use with Caution

Because older adults often experience chronic health conditions that require treatment with multiple medications, there is a greater likelihood of experiencing unwanted drug side effects. Older people can also be more sensitive to certain medications. To help you make better informed decisions about your medications, and to lower your chances of overmedication and serious drug reactions, the American Geriatrics Society Foundation for Health in Aging recommends that older people be cautious about using the following types of medications, including some that can be purchased without a prescription (over-the-counter).

- If you are taking any of these medications, talk to your healthcare provider or pharmacist.
- Do not stop taking any medication without first talking to your healthcare provider.

(Also available in Spanish)



What to Do and What to Ask Your Healthcare Provider if a Medication You Take is Listed in the Beers Criteria for Potentially Inappropriate Medications to Use in Older Adults

Q: If a drug is on the Beers Criteria's list of "potentially inappropriate medications or classes of medications to be avoided in older adults," does this mean people who are 65 or older should never take it?

A: No. If a drug is listed as a medication that is potentially inappropriate for, or to be avoided in, older people, this does not mean that the drug is unsafe for all adults 65 or older.

It means that these drugs are potentially – or possibly – inappropriate for older people because:

- They pose high risks of side effects in older adults.
- They may have limited effectiveness in older patients.
- Alternative treatments are available. These may be alternative medications or non-drug treatments such as massage, or gentle exercise.

If a drug is on the list, healthcare providers should be particularly careful when prescribing it for older patients. After careful consideration of the medication's benefits and risks for a given patient, however, a healthcare professional may decide that a particular drug on the list is the best choice for that patient.



Ten Medication Safety Tips

- 1) Keep current list of all your medicines (prescription, OTC, vitamins, supplements); keep it updated and bring it to all appointments
- 2) Take your medicines as directed; don't stop because you feel better
- 3) Do not use old or expired medicines
- 4) Store your medicines in one location (cool and dry place)
- 5) Use only one pharmacy



Ten Medication Safety Tips

- 6) Ask your pharmacist or doctor before taking OTC medicines
- 7) Read all of your medicine labels before taking each medicine
- 8) Do not take someone else's medication or share your medicines with other people
- 9) Use a pill box to remember to take your medications
- 10) Ask questions when you are given a new prescription



Label: Drug Facts

- **Active Ingredient(s):** Chemical compound in the medicine that works with your body to bring relief.
- **Uses:** This section tells you the ONLY symptoms the medicine is approved to treat.
- **Warnings:** This section tells you what to avoid and who should not use this.
- **Directions:** Daily dosage and frequency.
- **Other Information:** Tells you additional information such as proper storage.
- **Inactive Ingredients:** A chemical compound that has no effect on your body.

Drug Facts							
Active ingredient(s) (in each tablet) Chlorpheniramine maleate 2 mg	Purpose Antihistamine						
Uses Relieves these symptoms due to hay fever or other upper respiratory allergen: sneezing, runny nose, itchy, watery eyes, itchy throat.							
Warnings Ask a doctor before use if you have: <ul style="list-style-type: none"> ■ glaucoma ■ breathing problem such as emphysema or chronic bronchitis ■ trouble emptying the bladder Ask a doctor or pharmacist before use if you are taking tranquilizers or sedatives.							
When using this product <ul style="list-style-type: none"> ■ Do not get drowsy. ■ Avoid alcoholic drinks. ■ Alcohol, sedatives, and tranquilizers may increase drowsiness. ■ Do not drink when driving a motor vehicle or operating machinery. ■ Irritability may occur, especially in children. If pregnant or breast-feeding, ask a health professional before use. Keep out of reach of children. In case of overdose, get medical help or contact a Poison Control Center right away.							
Directions <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">adults and children 12 years and over</td> <td>take 2 tablets every 4 to 6 hours, not more than 12 tablets in 24 hours.</td> </tr> <tr> <td>children 6 years to under 12 years</td> <td>take 1 tablet every 4 to 6 hours, not more than 6 tablets in 24 hours.</td> </tr> <tr> <td>children under 6 years</td> <td>ask a doctor.</td> </tr> </table>		adults and children 12 years and over	take 2 tablets every 4 to 6 hours, not more than 12 tablets in 24 hours.	children 6 years to under 12 years	take 1 tablet every 4 to 6 hours, not more than 6 tablets in 24 hours.	children under 6 years	ask a doctor.
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children 6 years to under 12 years	take 1 tablet every 4 to 6 hours, not more than 6 tablets in 24 hours.						
children under 6 years	ask a doctor.						
Other information Store at 20-25° (68-77° F). Protect from excessive moisture.							
Inactive ingredients CMC yellow no. 10, lactose, magnesium stearate, microcrystalline cellulose, pregelatinized starch.							

Medication Use Safety Training for Seniors™
<http://www.mustforseniors.org/>

