

## Polypharmacy & Medication Deprescribing

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### *Objectives:*

1. Describe the difference between a side effect, adverse drug reaction, and adverse event.
2. Describe general types of adverse drug reactions.
3. Describe procedures for identifying adverse drug reactions.
4. Describe interventions to help minimize polypharmacy and adverse drug events.

## + POLYPHARMACY

A week's worth of medication for a 92-year old patient, before and after deprescribing.



Photo reprinted with permission from Dr. David Alldred

## + Use of Medications in Older Adults

- Adverse Drug Event- Undesirable health outcome associated with drug therapy due to an adverse drug reaction, an adverse drug withdrawal event, or therapeutic failure.
- Adverse Drug Reaction: An appreciably harmful or unpleasant reaction resulting from an intervention related to the use of a medicinal product, which predicts hazard from future administration and warrants prevention or specific treatment, alteration of the dosage regimen, or withdrawal product.
- Adverse Drug Withdrawal Event: A clinical set of symptoms or signs that are related to the removal of a drug.

## + Use of Medications in Older Adults

- **Inappropriate Medication:** Use of a medication whose potential risks outweigh its potential benefits or that does not agree with accepted medical standards.
- **Therapeutic Failure:** Adverse health event due to failure to accomplish the goals of treatment resulting from inadequate or inappropriate drug therapy and not related to the natural progression of disease.
- **Polypharmacy:** the simultaneous use of multiple drugs to treat a single ailment or condition

## + Defining Polypharmacy

### Basic

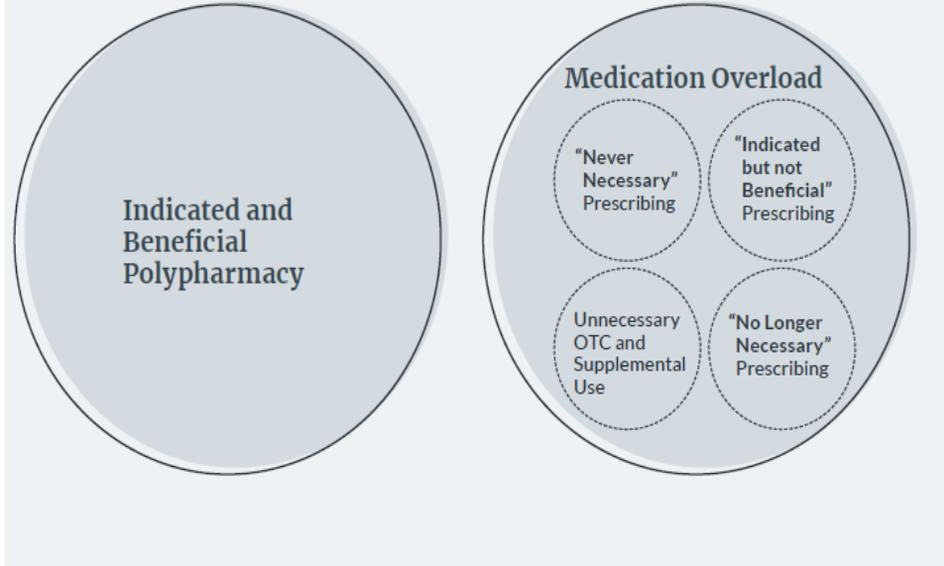
- The simultaneous use of multiple drugs to treat a single patient for one or more conditions, prescribed by many separate physicians and perhaps filled at more than one pharmacy
- **DIFFERENT** from polymedicine: multiple medications used to treat multiple diseases

### Numeric

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



## Polypharmacy



## Introduction

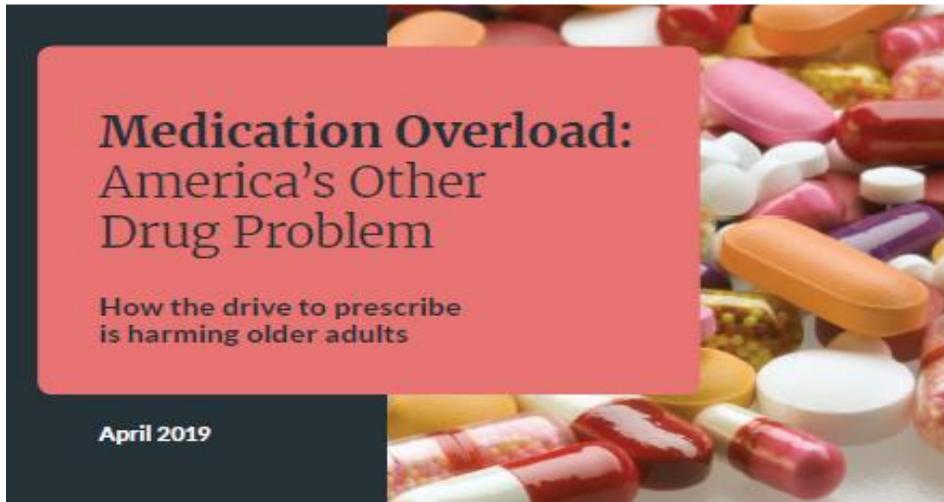
- Medications may be prescribed to prevent the onset of disease, treat symptoms or complications of chronic illness, or cure diseases. Older adults also frequently self-mediate with OTC medications and herbal supplements.
- Over 1/3 of those over age 75 take 5 or more Rx medications and over half take OTC/herbals that are frequently not reported to health professionals (unless asked). Over 40% of older LTC residents take nine or more medications.
- Medications are beneficial for many conditions and diseases, but medication-related problems can occur. Suboptimal therapy can occur due to potentially unnecessary medications, inappropriate medications, and/or underuse of medications. Adverse Drug Reactions can also occur due to medications.

## + Unnecessary Medications

- Multiple studies have shown older adults to be at risk of unnecessary medications due to lack of indication, lack of efficacy, and therapeutic duplication. Having an increased number of medications (polypharmacy) tends to increase the number of unnecessary medications.
- Interventions to reduce unnecessary drug use include incorporating a pharmacist into a care team, pharmacist-led medication reviews, academic detailing, feedback reporting, and physician medication review.
- Polypharmacy- Consequences: Non-adherence, Unnecessary drugs, ADRs, Medication errors, Drug Interactions, Increased health care costs, Prescribing Cascade

## + Polypharmacy Contributing Factors

- Age:  $\geq 65$  years (~53%-67% take more than 5 medications)
- $\geq 6$  comorbid chronic conditions
- OTC and supplement use
- Long Term Care



- <https://lowinstitute.org/projects/medication-overload-how-the-drive-to-prescribe-is-harming-older-americans/>



## Polypharmacy Contributing Factors

- Prescribing is kind
- Prescribing is a quick fix
- DTC Advertising
- Patients are “primed” for Prescriptions
- Guidelines focus on disease states- not as much about patients age, health, disease trajectory, or overall drug burden
- Industry influence- not as many places funding studies to stop medications

## + Polypharmacy Contributing Factors

- Lack of teamwork
- Care Transitions
- Poor EMR Design
- Prescribing Cascade
- Lack of awareness
- Lack of time and information
- Fear of causing harm or discomfort

## + Polypharmacy Dangers

- Accounts for nearly 30% of hospitalizations
- Fifth leading cause of death in US
- Falls and Fractures
- Unnecessary medications to treat side effects
- Complicated dosing and timing
  - Missed doses → uncontrolled disease, failed treatment
  - Accidental overdose → drug reactions
- Adverse Drug Events
  - Metabolic changes
  - Decreased clearance
- Prescribing Cascade: misinterpreted as a new medical condition
- Drug interaction
  - 50% chance when taking 5-9 medications
  - 100% chance when taking  $\geq 20$  medications
- Increase Health Care Costs

## + Polypharmacy dangers

- The risk of an adverse drug event increases by 7–10% with each medication.
- Older adults taking  $\geq 5$  medications are at least 88% more likely to seek outpatient care for an adverse drug event compared to those taking just 1 or 2 medications.
- In 2018, there were more than 280,000 hospitalizations of older people in the U.S. because of an ADE, at a cost of \$3.8 billion.
- Older patients taking  $\geq 6$  drugs in the hospital are more than 2 times as likely to experience delirium compared to patients taking fewer drugs. Older people taking  $> 10$  drugs are nearly 2.5 times more likely than those taking  $< 5$  drugs to experience impaired cognition.
- For older adults, taking  $\geq 4$  drugs is associated with an 18% greater risk of falls. Taking  $\geq 10$  drugs is associated with a 50% higher risk of falls.
- For older adults, taking 6 to 9 medications is associated with a 59% greater chance of death compared to taking no medications. Taking  $\geq 10$  medications is associated with a 96% greater chance of death.

## +

- For every \$1.00 spent on drugs for nursing home patients, \$1.33 is spent on treating the problems these drugs cause. (\$4 billion/year)

Gurwitz, JH, et al. The incidence of adverse drug events in two large academic long term care facilities. *AmJMed* 2005;118:251-8.

## + Interventions

### Strategies

- MTM
- Medication Reconciliation
- Counseling
- Match medications with conditions and goals of therapy
- Carefully consider medications to discontinue or substitute
- Assess therapy appropriateness
- Continuously assess efficacy

### Tools

- Drug Burden Index
  - Cumulative exposure of anticholinergic and sedative medications on physical and cognitive functions in geriatrics
- Beers Criteria
- The Screening Tool of Older Person's Prescriptions (STOPP)
- Screening Tool to Alert doctors to the Right Treatment (START)
- Fit FOR The Aged (FORTA)
- Algorithms
- Mnemonics

## Medications Most Likely to Cause Harm

Three classes of drugs contribute to 60 percent of emergency room visits for adverse drug reactions among older adults.<sup>17</sup>

### Blood Thinners

Blood thinners such as aspirin or warfarin can cause severe bleeding, which can be life-threatening.

### Diabetes Medications

Diabetes medications such as insulin or gliclazide can cause low blood sugar in older adults, increasing risk for falls, fractures, confusion, seizures, and hospitalization.

### Opioids

Opioids prescribed to treat pain in older adults can be habit-forming and can lead to sedation, falls, cognitive impairment, and motor vehicle accidents.

Other classes of drugs have been shown to increase the potential for harmful side effects.

### Sedative Hypnotics

Sedative hypnotics such as benzodiazepines (anti-anxiety medications) and many sleep medications, as well as antidepressants, increase the risk of falls, fracture, cognitive impairment, and other adverse effects.<sup>18,19</sup>

### Over-the-Counter Drugs

Many commonly used over-the-counter drugs, including bladder medications and antihistamines have anticholinergic properties. These medications can cause hallucinations, confusion, tachycardia, dry eyes, and other adverse effects, which become more pronounced at higher doses and in combination with each other.<sup>20,21</sup>

### Blood Pressure Medication

Blood pressure medications, especially when used at high doses or in combination, can lower blood pressure too much and lead to falls, cognitive impairment, and other adverse effects.<sup>22</sup>

### Antipsychotic Drugs

Antipsychotic drugs can lead to delirium, cognitive impairment, drug-induced movement disorders, and metabolic disturbances.<sup>23</sup>

## + Medication Appropriateness Index

- Questions:

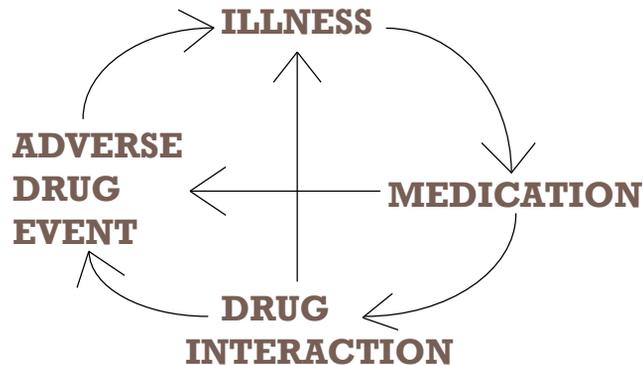
1. Is there an indication for the medication?
2. Is the medication effective for the condition?
3. Is the dosage correct?
4. Are the directions correct?
5. Are the directions practical?
6. Are there clinically significant drug-drug interactions?
7. Are there clinically significant drug-disease/condition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

## + MASTER (2011)

- **M** minimize drugs used
- **A** alternatives should always be considered, especially non-drug therapies
- **S** start low and go slow
- **T** titrate therapy, adjusting dose based on individual response
- **E** educate the patient and family member with clear, written instructions
- **R** review regularly

## + New Paradigm for Geriatric Prescribing

- Old: “Start Low, Go Slow”
  - New: “Stop Most, Reduce Dose”
- 
- Avoid the “Prescribing Cascade”





## Disorders Precipitated or Exacerbated by Drugs

■ Asthma:	Beta Blockers (systemic, ocular)
■ CHF:	NSAIDs, thiazolidinediones (glitazones)
■ Diabetes:	Furosemide, Thiazides, Steroids
■ Essential Tremor:	Beta Agonists, Lithium
■ Gout:	Loop & Thiazide Diuretics
■ Edema:	amlodipine, gabapentin, NSAIDs
■ Dementia:	Anticholinergics, Benzodiazepines
■ HTN:	NSAIDS
■ Parkinsonism:	Antipsychotics, metoclopramide
■ PUD:	NSAIDs
■ PVD:	Beta Blockers
■ Urinary Retention:	Anticholinergics



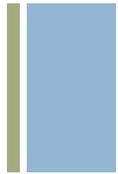
## Common Manifestations of Adverse Drug Reactions in the Elderly That May Be Incorrectly Interpreted as Signs of Aging

■ Confusion	■ Forgetfulness
■ Depression	■ Tremor
■ Lack of appetite	■ Constipation
■ Weakness	■ Dizziness
■ Lethargy	■ Diarrhea
■ Ataxia	■ Urinary retention



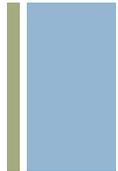
## Reducing polypharmacy

- Improve information at the point of care
- Foster communication and coordination of care
- Shared Decision making
- Empower patients and families
- Consider non-pharmacologic approaches
- Avoid prescribing prior to diagnosis
- Avoid starting 2 drugs at the same time
- Reach therapeutic dose before switching or adding drugs
- Routine prescription checkups



## Reducing polypharmacy

- Determine therapeutic endpoints and plan for assessment
- Anticipate side effects
- Consider risk vs. benefit
- Avoid prescribing to treat side effects of another drug
- Use 1 medication to treat 2 conditions
- Consider drug-drug and drug-disease interactions
- Use simplest regimen possible
- Adjust doses for renal and hepatic impairment
- Avoid therapeutic duplication
- Use least expensive alternative



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