



Polypharmacy

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Disclosure Statement

I have no potential or actual conflicts of interest in relation to this program.

Objectives

- Define polypharmacy and its importance in the healthcare setting
- Consider potential consequences of polypharmacy and the impact on patients, their families, and the healthcare system
- Assess a patient/caregiver's ability to manage their own medication regimen
- Develop a collaborative plan to address polypharmacy

Introduction

- The prevalence of polypharmacy is approximately 40% in the United States
- Driven by rates of comorbidities, overprescribing, and insufficient monitoring
 - US in 2012: 26% of all adults and 61% adults over 65 years had two or more chronic conditions
- Extensive or sometimes complicated medication regimens can result in a variety of negative outcomes for the patient
- Room for intervention by various medical professions in combating this problem



Defining Polypharmacy

Polypharmacy

- The use of 5 or more prescription medications by a single patient
 - 40% elderly and 11% all adults taking 5+ medications at any given time
 - Of Medicare beneficiaries, 90% are taking at least 1 prescription medication and 46% were taking 5+ medications
- Using more drugs than medically necessary
 - Includes those that are not indicated, effective, considered a duplication of therapy, or are being used to treat side effects caused by other medications
 - Inappropriate use of at least one medication seen in nearly 50% of older adults



Consequences of Polypharmacy

Increased Cost



- The healthcare system as a whole
 - The US Center for Medicare and Medicaid Services estimated annual costs of polypharmacy over \$50 billion
- Patients
 - Taking 5 or more medications: 6.2% higher prescription drug expenditure than baseline
 - Potentially inappropriate medications, outpatient visits, and hospitalizations account for 30% increase in medical costs

Increased Risk for Adverse Events



- Each medication comes with its own risk, so when patients begin taking many medications or take medications for extended periods of time, this risk just increases.
- Estimated 4.3 million healthcare visits attributed to adverse drug events (ADE)
- Outpatients taking 5+ medications had 88% increased risk
 - 6% chance on 2 medications, 50% on 5 medications, and rises to 100% when 8+ medications are being used
- Common drug classes: anticoagulants, NSAIDs, CV medications, diuretics, antibiotics, anticonvulsants, benzodiazepines, and hypoglycemic agents

Potential Drug Interactions

- Drug interactions are another component of a complex drug regimen that needs to be taken into consideration, especially in the geriatric population where the effects can be amplified.
- A prospective cohort study done in older patients taking five or more medications reported an 80% likelihood of a potential hepatic CYP-mediated, drug-drug interaction
- As the number of medications increased, so does the probability of drug-drug interactions occur
 - 5 - 9 medications: 50% chance
 - 20+ medications: 100% chance



Lack of Research Behind Multiple Medication Use



- Lack of research conducted concerning polypharmacy is an often overlooked problem when it comes to studies being done
- In most studies, patients that have multiple comorbidities, disabilities, or extensive medication lists are excluded from research protocols
 - Leaves a very apparent gap in the applicability of a study's results to a patient that has multiple disease states or commonly excluded conditions
 - Lack of applicability can also be carried over to patients that are on many medications
- Clinicians are then put in a difficult spot because they have to make judgement calls about the benefits and risks of beginning a new treatment in a patient that doesn't match the study's protocol

Medication Non-adherence



- When a patient has a growing list of medications, the concern for non-adherence is heightened
- The World Health Organization (WHO) defines adherence as the extent to which a person's behavior - taking medication, following diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a healthcare provider
- Non-adherence: when a patient does not or only partially follow treatment arrangements previously agreed with the doctor

Medication Non-Adherence

- 35% when taking 4+ medications
- Daily administration
 - Once daily: 79%
 - Twice a day: 69%
 - Three times a day: 65%
 - Four times a day: 51%
- Linked to 125,000 deaths annually
- Increased healthcare cost of \$117 billion



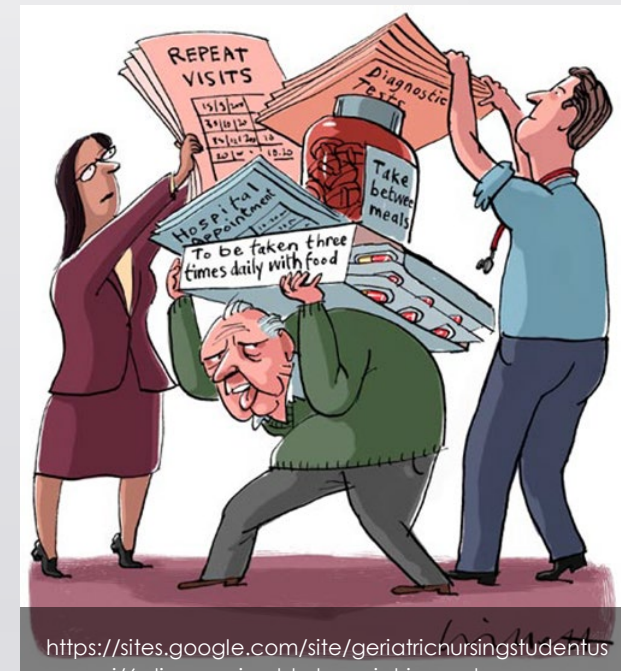
<https://www.pharmaceutical-journal.com/news-and-analysis/features/non-adherence-medicines-weakest-link/20204378.article>

Medication Non-adherence

- The complexity of a regimen can negatively affect a patient's ability to remember when and how to take each medication
- Associated with disease progression, failure of treatment, adverse drug reactions, and hospitalizations, all of which could be life-threatening or more severe in the elderly.

Development/Worsening of Geriatric Syndromes

- Falls
- Urinary incontinence
- Nutritional status
- Functional Capacity
- Cognitive Impairment



Falls

- Study in older adult outpatients
 - As medication number increased, fall risk index score increased and duration of one-leg standing test decreased
- Prospective Cohort study
 - Use of 4+ medications was associated with increased risk of falling and risk of recurrent falls
- Study of institutionalized older adults
 - Risk of experiencing a fall within previous 30 days was increased by 7% for each additional medication

Urinary Incontinence

- A variety of drugs can be associated with urinary incontinence
 - As the number of drugs in a regimen increase, so does this risk
- In a retrospective study of elderly patients
 - Taking up to 18 medications (unlikely having urological effect)
 - 62% patients receiving up to 4 drugs, for other medical problems, that could potentially affect the lower urinary tract

Nutritional Status

- Polypharmacy reported to affect a patient's nutritional status
 - Prospective cohort study
 - 50% of patients taking 10+ medications were malnourished or at risk of malnourishment
 - Survey of elderly
 - Reduced intake of fiber, fat-soluble and B vitamins, and minerals
 - Increased intake of cholesterol, glucose, and sodium



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Ability to Manage Own Regimen

Decline in Functional Capacity

Polypharmacy attributed to the decline of functional capacity in older patients.

- Impacts ability to participate in instrumental activities of daily living
 - Women's Health and Aging Study found that use of 5+ medications are associated with a reduced ability to perform IADLs
- Hinders their physical functioning as a whole
 - Decreased ability to manage own medication regimen

Cognitive Impairment



- Cognitive Impairment (ex. Delirium and dementia) has shown association with polypharmacy
 - Elderly patients with memory issues may have difficulty understanding regimens as number of medications increases
- Patients with low education levels and low health literacy tend to be prescribed more medications
 - Ex. inability to read/understand directions
- Misunderstanding of medications and patient specificity
 - Taking OTC medications that they shouldn't (ex. NSAIDs in CKD)

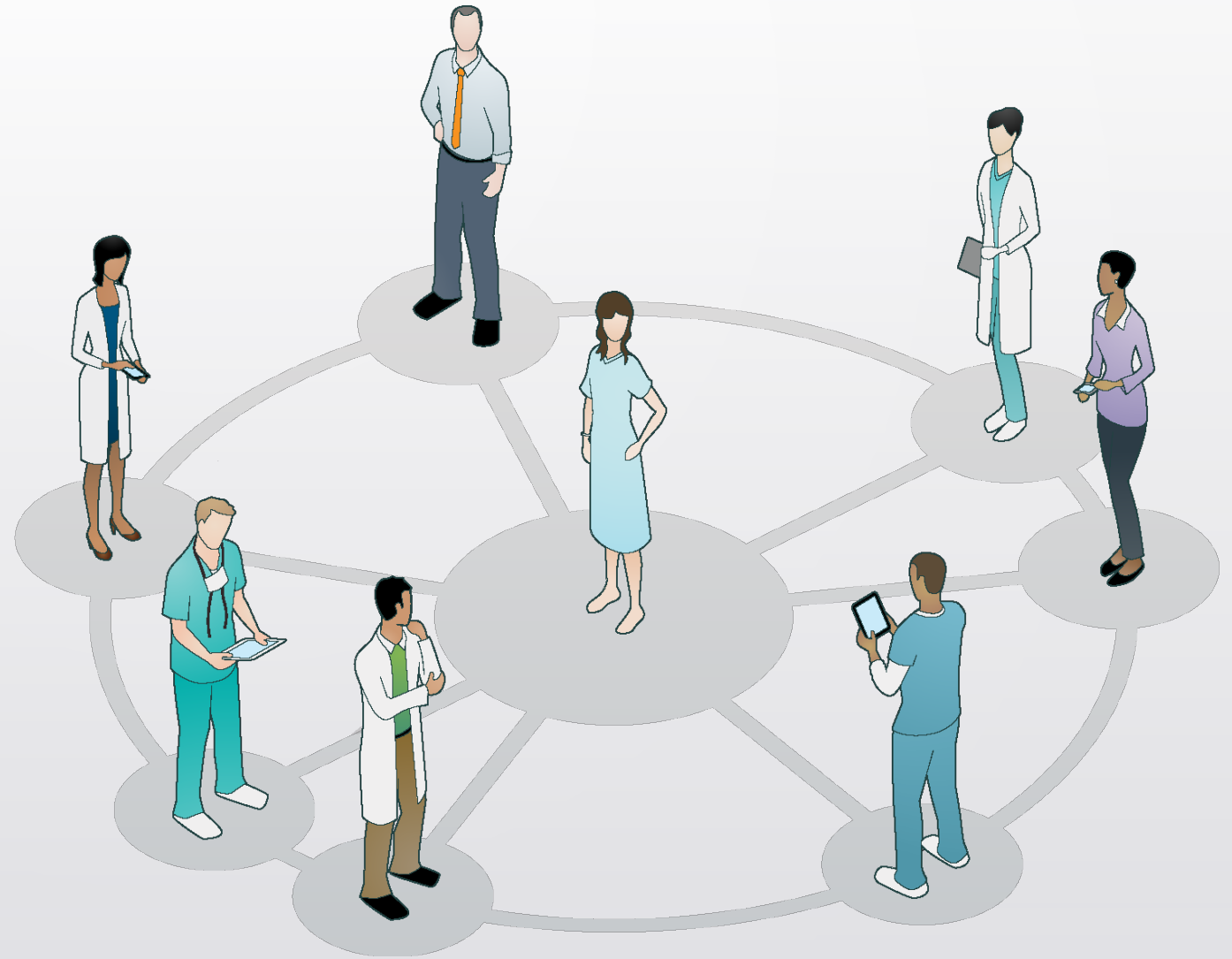
Physical Limitations

- Inability to get to pharmacy or access to medications
 - Under-controlled disease states
- Physical disabilities that limit administrations of medications
 - Carpal tunnel or arthritis limiting ability to inject insulin or open medication bottles
 - Difficulty swallowing medications
- Cognitive impairments
- Visual impairments
 - Increased risk for administering wrong medication or misreading instructions

Caregiver Burden

- Some patients require a family member or other individual(s) to help manage their medications.
- Patients with polypharmacy have increased risk for caregiver burden
- Complex regimens may lead to inappropriate medication administration or lack of understanding
 - More medications creates higher difficulty for caregivers to manage medications
 - Adherence increases if caregiver is actively involved in care
 - Important for medical professionals to include both patient and caregiver in discussion regarding treatment

Role of the Healthcare Team



Medication Reconciliation

- Collecting a comprehensive list of all the patient's medications
 - Prescription, OTC, Herbals/supplements
- Commonly performed by nurse or pharmacist
- Helps to retrieve an accurate depiction of a patient's medication regimen
 - Helps to identify discrepancies across all providers involved in a patient's care
- Performing a medication reconciliation at every patient visit will help to identify any duplications, drug interactions, etc.

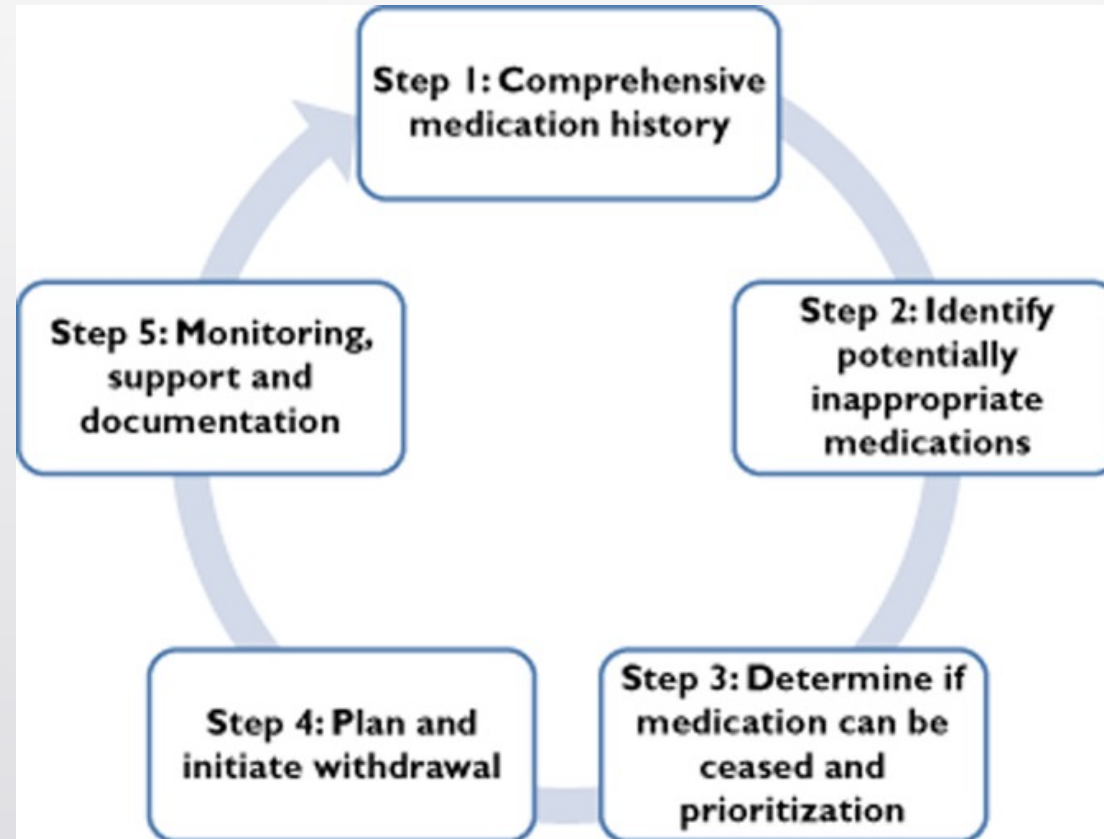


Deprescribing

- Reducing or discontinuing medications that are unnecessary
 - Decrease adverse drug reactions
 - Improve cognition
 - Decrease falls
 - Increase medication adherence
 - Increase quality of life



Patient centered deprescribing process



Pharmacist Involvement



- Pharmacists can perform medication reconciliations
 - Reduces burden on nurses
 - Background in pharmacology and drug interactions
 - Familiarity with drug formulations available
 - Evaluate **appropriateness** of each medication
 - Age, weight, indication, duplication, adverse effects
 - BEERS Criteria
- Literature review showed that pharmacist involvement in medication review reduces number of medications and number of doses per day
 - 17.6 - 52.2% reduction in average number of prescriptions
 - 21.5 - 29.8% decrease in number of daily doses

Pharmacist Involvement



- Pharmacists are highly accessible
 - Most ambulatory care pharmacists include medication reconciliation in their duties
 - Comprehensive Medication Reviews (CMRs) are performed by many community pharmacists
- Pharmacy interns can also perform medication reviews under pharmacist supervision
- Reminder: polypharmacy is not always bad; some patients need multiple medications for multiple morbidities
 - Evaluate **appropriateness** of medications



The Pharmacists' Patient Care Process



Tools to help manage polypharmacy

- Pill boxes
 - One of the most common tools



- Pill packing
 - Pre-packaged sealed pill boxes filled by the pharmacy

Tools to help manage polypharmacy

- Pill cards/Comprehensive medication lists
 - Commonly used, helps if provider or pharmacist reviews to ensure accuracy
- Medication synchronization
 - Service offered by most pharmacies to sync medication refills and limit trips to pharmacy
 - Reduces risk of missing a medication refill



Patient Case

ES is a 65 year old male recently hospitalized for increased swelling in his legs. He sees a primary care physician, cardiologist, endocrinologist, nephrologist, and urologist for care.

He has concerns regarding his medications, saying “I just take way too many meds right now. I know there has to be a way to cut my list down. It seems like I get prescribed something new with every doctor visit and I’m pretty sure I put more pills into my system than food.”

He lives alone and does not drive. He has difficulty getting around, often using a wheelchair. His daughter will stop by about once a week to help out around the house and fill his pill box but is very limited to due her busy schedule with her two kids and two jobs.

Patient Case

Past medical history:

- Atrial fibrillation
- Anemia in CKD
- Benign Prostatic Hyperplasia (BPH)
- Congestive Heart Failure
- Type 2 diabetes mellitus
- Dyslipidemia
- Advanced CKD requiring hemodialysis
- Obesity
- Gout

Patient Case

Current Medications on pharmacist review:

- Allopurinol 100 mg daily
- Amiodarone 200 mg daily
- Aspirin 81 mg daily
- Atorvastatin 40 mg daily
- Carvedilol 3.125 mg twice daily
- Folic acid 1 mg daily
- Advil as needed
- Furosemide 80 mg daily
- Lantus 22 units daily
- Vitamin D 2000 units daily
- Loratadine 10 mg daily
- Novolog 24 units with meals
- Oxycodone-APAP 5-325 mg q4-6h prn
- Sevelamer carbonate 800 mg daily
- Metoprolol tartrate 25 mg twice daily
- Spironolactone 50 mg daily
- Tamsulosin 0.4 mg daily
- Humalog 20 units with meals
- Warfarin 2.5 mg daily

Summary

- Polypharmacy is a major concern, especially among elderly patients. Although there are many definitions of polypharmacy, it is important to assess the **appropriateness** of a patient's medications.
- It affects many patients and their caregivers and can result in a variety of negative consequences including adverse drug reactions, drug interactions, increased cost, and nonadherence.
- A patient's ability to manage their own regimen and application of current research studies to those with multiple ailments are also areas of concern in this population.

Summary

- Pharmacists are able to help combat this problem by being accessible, offering services to make things easier on patients, and conducting thorough medication reviews regularly.
- Finally, caregivers need to be provided with resources that ease their stress and allow them to most effectively assist those in need.

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Questions?

Thank you for your time today!