# Polypharmacy in the Elderly

**Background**

1. Definition
   - Use of multiple medications by a patient, usually ≥5 drugs; excessive polypharmacy is defined as ≥10 drugs
2. Also defined as use of more medications than clinically indicated[2]

**Pathophysiology**

1. Pathology of disease
   - Polypharmacy is not a distinct disease entity
2. Incidence, prevalence
   - Incidence ranges from 5-78%, differs based on definitions used[5]
   - 80% take an average of 2.9 prescription medications each week[4]
   - 40% of persons ≥65 years of age use 5 or more medications[3]
   - 12% of persons ≥65 years of age use 10 or more[3]
3. Risk factors:
   - Demographics
     - Increased age, white race, higher levels of education
   - Health status
     - Poorer health, depression, hypertension, anemia, asthma, angina, diverticulosis, osteoarthritis, gout, diabetes mellitus, use of >9 medications
   - Access to care
     - Number of health care visits, supplemental insurance, multiple providers[5]
4. Morbidity / mortality
   - Risk of receiving incorrect medication[6]
   - Increased risk of adverse drug reaction (ADR)[6,9]
     - 5%-35% of outpatients[2]
     - May account for up to 12% of geriatric hospital admissions[2]
   - Reported to increase risk of geriatric syndromes[2]

**Diagnostics**

1. History
   - Gather a thorough medical history, including prescription and over-the-counter medications, and supplements/herbal remedies
   - Utilize Beers' criteria in assessing medication usage
     - Beers' list:
       - http://www.dcri.duke.edu/ccge/curtis/beers.html
   - Assess medication adherence
   - Verify necessity of medication
2. Physical exam
   - No physical finding specific for polypharmacy
   - Consider polypharmacy or adverse drug reaction high in differential of a patient with mental status changes
3. Diagnostic testing
   - Generally none, but may consider tailoring for certain medications

**Therapeutics**

1. Acute treatment
    - No specific acute treatment
    - Practice prescribing using Beers' List as a guideline[5]
2. Long-term care
    - Frequently review medication regimen
    - Ensure unnecessary duplication of medications
    - Frequently assess adherence with medication regimen[5]
    - "Start low and go slow" with medication dosing in the elderly[7]
3. Recommendation (GRADE C)

**Follow-Up**

1. Return to office
    - Continue routine follow-ups
    - Re-assess need for medication at each visit

**Prevention**

1. Follow "10 Steps to Reducing Polypharmacy"[8]
    - Have patients "brown bag" all medications at each office visit, and keep an accurate record of all medications, including over-the-counter medications and herbs
    - Get into habit of identifying all drugs by generic name and drug class
    - Make certain the drug being prescribed has a clinical indication
    - Know side-effect profile of drugs being prescribed
    - Understand how pharmacokinetics and pharmacodynamics of aging increase the risk of adverse drug events
    - Stop any drug without known benefit
    - Stop any drug without a clinical indication
    - Attempt to substitute a less toxic drug
    - Be aware of the prescribing cascade:
        - Treating an adverse drug reaction as an illness with another drug
    - As much as possible, use the motto:
        - "one disease, one drug, once-a-day."

**Patient Education**

1. Educate patients as to the necessity of certain medications and to the risks associated with both necessary and unnecessary medications
2. Remind patients of the importance of strict adherence with medication regimen
3. Encourage patients to notify physician if they feel the need to change the prescribed medication regimen

**References**


1. Haider SI, Johnell K,Weitoft GR, Thorslund M, Fastbom J. The Influence of Educational Level on Polypharmacy and Inappropriate Drug Use: A Register-Based Study of More Than 600,000 Older People. J Am Geriatr Soc 2009;57:62–69.
2. Hajjar ER, Cafiero AC, Hanlon JT. Polypharmacy in Elderly Patients. AmJ Geriatr Pharmacotherapy 2007;5:345-351

3. Avorn, J. Polypharmacy: A New Paradigm for Quality Drug Therapy in the Elderly? Arch Intern Med 2004; 164:1957-1959.
4. American Society of Health-System Pharmacists. Snapshot of medication use in the U.S. ASHP Research Report December, 2000.
5. Fulton MM, Allen, ER. Polypharmacy in the Elderly: A Literature Review. JAANP 2005; 17:123-132.
6. Cannon KT, Choi MM, Zuniga MA. Potentially inappropriate medication use in elderly patients receiving home health care: A retrospective data analysis. Am J Geriatr Pharmacother. 2006; 4:134-143.
7. Williams CM. Using Medications Appropriately in Older Adults. Amer Fam Phys 2002; 66:1917-1924.
8. Carlson JE. Perils of polypharmacy: 10 steps to prudent prescribing. Geriatrics 1996; 51:26-30, 35.
9. Linjakumpu T, Hartikainen S, Klaukka T, Veijola J, Kivelä SL, Isoaho R. Use of medications and polypharmacy are increasing among the elderly. J of Clin Epid. 2002; 55:809-817.

**Authors: Greg Swartzentuber, MD, & Richard Rayner, MD,** *Penn State Hershey Medical Center*

**Editor: Melissa Stiles, MD,** *Fox Valley FMR, University of WI*