Topic 13: *Polypharmacy of Older Adults*

Competencies

1. Describe the demographics of medication usage in older adults.
2. Identify physiologic changes of aging and their effects on drug absorption, distribution, and clearance.
3. Describe adverse reactions to medications commonly occurring in older persons.
4. Identify iatrogenic problems associated with multigeriatric syndromes and their medications regimens.
5. Discuss strategies for enhancing medication compliance/adherence.
6. Develop an understanding of the complex cost issues related to medications for older adults.
7. Discuss effects of tricyclic antidepressant drugs on older persons.

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Content Outline

1. **Describe the demographics of medication usage in older adults.**
   - Polypharmacy is the use of more than one chemical agent to effect a therapeutic endpoint.
   - Older adults are consumers of 25% to 30% of all prescription medications, and 40% of all nonprescription medications.
   - Older adults comprise 12% of the U.S. population, yet receive 32% of all prescription drugs dispensed.
   - Older adults use the greatest number of nonprescription over the counter (OTC) medications.
   - Older adults spend an estimated $3 billion annually on medications.
   - Ambulatory older adults use 2 to 4 prescription drugs regularly.
   - Long-term care residents use 2 to 10 prescription drugs regularly.
   - Misuse of drugs is the fifth leading cause of death in older adults.
   - Polypharmacy can predispose anyone to taking medications incorrectly (i.e., wrong dose, wrong time, and wrong purpose).
2. **Identify physiologic changes of aging and their affects on drug absorption, distribution, and clearance.**
   - Normal physiologic changes that affect absorption include delayed gastric emptying, decreased gastric acidity, and decreased splanchic blood flow.

- Absorption is not significantly altered with age, but may be delayed, postponing onset of action and peak effect of medications.
- Normal physiologic changes that affect drug distribution include a higher percentage of fat compared to lean body mass, a decrease in total body water, and decreased plasma albumin concentration.
- Changes in body composition affect the serum concentrations of water-soluble drugs and changes in fat mass affect fat-soluble medications.
- Normal physiologic changes that affect drug clearance include altered liver metabolism of certain drugs and decreased renal excretion of drugs.

3. Describe adverse reactions to medications commonly found in older persons.

- Many medications that are taken by older adults have potentially dangerous side effects.
- Changes in pharmacokinetics may adversely affect cognitive status in the elderly.
- Falls as a result of orthostatic hypotension may occur.
- Inappropriate dosages are more likely in the elderly and can be associated with confusion and disorientation.
- Hepatic toxicity may result from medications and/or drug-drug interactions.
- Renal toxicity may result from medications and/or drug-drug interactions.

- Drug dosing based on a patient's creatinine clearance can reduce possible side effects including renal failure.

$$\frac{(\text{Ideal Body Weight})(140 - \text{Age})}{72 \times \text{Serum Creatinine}} = \text{Creatinine clearance.*}$$

*If female, multiply this by 0.85.

4. **Identify iatrogenic problems associated with multigeriatric syndromes and their medications regimens.**
   - Drugs with anticholinergic side effects can cause confusion, orthostatic hypotension, dry mouth, blurred vision, and urinary retention.
   - Tricyclics, which are sedating, may cause confusion and unstable gait.
   - Antiemetics such as phenothiazine may cause confusion, orthostatic hypotension, blurred vision, falls, dry mouth, and urinary retention.
   - Digoxin can be a controversial medication with the elderly due to toxicity that may occur even with normal serum concentrations.
   - H2 blockers require dose reduction in older adults to prevent confusion.
   - Long-acting benzodiazepines may have half-lives prolonged as much as four days and cause central nervous system toxicity.
   - Older adults are more sensitive to narcotics. Doses need to be started low, with careful attention to preventing constipation. *Motto:* Start Low; Go Slow

5. **Discuss strategies for enhancing medication compliance/ adherence.**
   - Older persons taking multiple medications on a daily basis with complex regimens might require social/nursing support.
   - Risk factors for noncompliance include changes in cognition, living alone without social supports, insufficient funds to purchase medications, depression, and declining function.
   - Strategies for improving medication compliance include careful attention to client education including written instructions; sensitivity to factors in the environment, such as, lack of money to purchase medications, counseling the client to take the medication as ordered even though she or he is "feeling good."
   - Pill sharing among the elderly should be discouraged.
   - Assess other remedies (natural homeopathic, herbal, and cultural) that elderly persons may also be using.
   - Support systems such as medication event monitoring systems (MEMS), pill boxes, and prepoured medications, friendly calls, and pill counts might improve compliance.

6. **Develop an understanding of the complex cost issues related to medications for older adults.**
   - How do older persons in the community pay for their medications?
   - Assess the amount that older persons in the community pay out-of-pocket for medications each month.
   - Identify strategies used by older adults to minimize expenses (cut medications in half, borrow money from

friends, and discontinue certain medications because they feel good).
- Identify classes of medications covered by Medicare, Medicaid, insurance, or HMO/managed care organizations.

7. **Discuss effects of tricyclic antidepressant drugs on older persons.**
   - Tricyclic antidepressants are known to cause adverse cholinergic effects in older adults.
   - Caution in use and dosage is required in people being treated for glaucoma and cardiac conduction disturbances.
   - Hypotension, tachycardia, and arrhythmia are potential adverse side effects.
   - In some cases, tricyclic antidepressants may cause sedation, fatigue, anxiety, confusion, insomnia, impaired cognitive function, seizures; extrapyramidal symptoms are possible; moderate to marked sedation can occur (tolerance to these effects is common).

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Case Study

Ms. S is an 86-year-old who lives in a third-floor walk-up apartment. She is currently being treated for her hypertension, diabetes, and congestive heart failure. She is on the following medications:

Digoxin, .25mg qd
Lasix, 40mg qd
Inderal, 40mg BID
Metamucil, 1 Tbsp. qd
Glyburide, 5mg qd
Maalox (over-the-counter) for "indigestion"

She tells you that she just can't keep up with her medications anymore and has decided that she will only take her medicines once a day (most of her meds are qd). Further, she tells you that they are extremely expensive and that, toward the end of month, she usually takes her medicines every other day.

Experiential Activities/ Clinical Experiences

1. Discuss what steps you might take to work with Ms. S in order to improve her chances of taking her medications more effectively. What further information do you need before developing a plan with Ms. S?
2. Discuss the interdisciplinary approach in the case of Ms. S.
3. *Pharmacy Review:* Go to a local drug store/pharmacy and ask for copies of handouts that the pharmacist gives to older individuals with their medications (required by law). Review the handouts and discuss whether or not they are easy to understand, whether you believe they are useful for the older individual.
4. *Assessment:* Identify an older person in the community, review the number of prescription and nonprescription drugs, and other remedies the person is regularly taking. Assess the person's knowledge about side effects and possible adverse reactions.
5. *Financial Review:* Identify an older adult in any health-care setting with five or more medications. Evaluate the total cost per month of the medications comparing generic and name brand drugs, and review the health payment reimbursement available to the client.
6. *Self-Evaluation:* Ask students if they could take as many medications the elderly are taking considering size, number, and taste. Ask students if they could afford the medications.

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Evaluation Strategies*

A. Mr. G is a 96-year-old man residing in a nursing home. He recently developed herpes zoster (shingles) following a left hip fracture. He has a history of benign prostatic hypertrophy and ulcerative colitis. The physician prescribed amitriptyline (Elavil) for pain management and depression (Beck Depression Score is 16). Which of the following questions should the nurse raise in relation to this drug prescription?

   1. Is the use of any psychotropic drug appropriate for the client's age?
   2. Is the client's depression sufficient to warrant an antidepressant?
   * 3. Is Elavil the best choice for this client with BPH?
   4. Is the client allergic to yeast?

B. The home-care nurse is seeing Mrs. H, who is on a complex drug regimen. She can't remember when she last took several of her medications and her husband states she is confused by the recent change of several drugs to generic equivalents. Which nursing strategy would be most helpful to decrease the client's risk for noncompliance?

   * 1. Have the client's husband consistently administer the drugs.

**Instructor's Resource Manual and Test Bank* to accompany Lueckenotte, AG, *Gerontologic Nursing*, prepared by Green, C.J. and Marshall, P.L. St. Louis, MO: Mosby, 1996:139–141. Used by permission.

2. Teach the client how to prepare daily pills using a pill dispenser.
3. Call the client daily to review the drug schedule.
4. Increase drug dosages and decrease frequency.

C. The physician has prescribed enalapril (Vasotec) for a client with mild congestive heart failure. Which of these statements best explains the physician's choice of medication for this older client?

* 1. ACE inhibitors cause fewer electrolyte disturbances than diuretics.
2. Drugs in this category have a well-defined therapeutic window.
3. Vasotec is more effective than other drugs in the same class.
4. The drug's effectiveness does not depend on normal liver function.

D. Of the following older clients, who presents with the greatest risk for an adverse drug reaction?

* 1. A client on 10 different drugs.
2. A client who has never taken prescription drugs before.
3. A client hospitalized on a geriatric unit for three days.
4. A client who uses generic equivalents.

Evaluation Strategies

E. The nurse is caring for a 72-year-old taking dioxin and verapamil. Which of the following should the nurse report as an indication of an adverse drug interactions:

1. Urinary retention.
2. Increased urine output.
3. Decreased pulse.

* 4. Vision disturbances.

F. A 65-year-old client is receiving propranolol (Inderol) for hypertension. In planning care for this client, the nurse should include which of the following outcomes as an indicator of the drug's potential affect on quality of life?

1. Verbalizes the importance of moderate exercise and low sodium diet.

* 2. Able to maintain social activities without development of depression.

3. Blood pressure will be within normal limits for the client.
4. Describes potential side effects and knows when to report symptoms.

Work with undergraduates and graduates in the clinical area as they administer medications to the elderly. Have them discuss the pertinent issues that make it difficult for older individuals to tolerate and maintain wellness on complex medication regimens.

Resources

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Walker, M. K., Foreman, M. D., and the NICHE Faculty. Ensuring Medication Safety for Older Adults. In I. Abraham, M. M. Bottrell, T. Fulmer, and M. Mezey (Eds.), *Geriatric Nursing Protocols for Best Practice* (p. 131). New York: Springer Publishing Company.

Other Resources

Video. *The Age Wave Series on Pharmacology on Aging.*
The Merck Manual of Geriatrics Website: www.merck.com/pubs.mm_geriatrics/home.html