Section 24

Appropriate Medications CAP

Problem

Changes associated with aging affect an individual's capacity to benefit from and tolerate medications (drugs), and inappropriate use of medications can prove harmful to the person. Age-associated changes occur in the absorption, distribution, metabolism, and excretion of many medications due to physiological changes at the organ and cellular level, particularly in the kidneys and gastrointestinal tract. These changes predispose the aging person to adverse effects from many medications. Age-related changes in the body composition, notably changes in the proportion of body fat and water, may alter the effects of fat-soluble medications. The older person often has multiple chronic diseases that may further impair not only the pharmacokinetics of drugs, but also their pharmacodynamic effects. Older persons are at particular risk of adverse effects because most take multiple medications.

On the other hand, evidence supports the use of medications in even very old persons as long as there is a significant likelihood of a benefit balanced against the risk and a proper indication for the use of each drug. The dosage of each medication must be appropriate and there must be an appreciation of the possibility of interactions amongst the medications.

Inappropriate medication prescribing for older persons comes in several varieties, including prescribing medications not suitable for older and frail persons, combinations of medications that interact with one another, and medications at doses that are too high for older persons.

Appropriate prescribing includes a process for monitoring the effects of each medication individually and in combination with others being taken, discontinuing the medication after the intended indication for use no longer exists, and at the same time, prescribing a medication when the potential benefit clearly exceeds the risk.

Multiple medications may be necessary and of benefit when the aim is to control multiple chronic illnesses. However, frequent hospitalizations, multiple treating physicians, and the use of over-the-counter medications make the need for frequent periodic review essential.

In addition to the side effects of each individual medication and the combination of two or more medications being taken, the negative consequences associated with medications include a variety of events, such as the exacerbation of an existing disease, a decline in cognitive or functional capacity, a negative impact on quality of life, as well as an unnecessary use of health services and the associated costs.

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Overall Goals of Care

- Promote the proper management of each person, neither overtreating nor undertreating each disease.
- Promote the appropriate dose, timing, and length of use of each drug.
- Promote the ability and desire of each person to adhere to the schedule of medications as prescribed.
- Demonstrate the value of monitoring the status of each person and assessing the potential hazards of each medication and helping caregivers recognize an adverse effect as soon as possible.
- Encourage the undertaking of a regular review of the drug regimen

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Medications CAP Trigger

TRIGGERED — HIGH PRIORITY

High priority triggers identify persons with nine or more medications, and those with two or more of the conditions listed below. This group contains up to 40% of those in a long-term care facility, a similar percentage of those receiving home care services, and 5 to10% of older persons living in the community.

Both of the following should be present:

- Nine or more medications
- Has two or more of the following conditions:
  - Chest pain
  - Dizziness
  - Edema
  - Shortness of breath
  - Poor health
  - Recent deterioration

NOT TRIGGERED

All other persons.

Note: if any of the following are present, consider completing a medication review:

- Fatigue
- Depression
- Delirium
- Recent cognitive decline
- Fall
- Nausea
- Recent hospitalization
- Weight loss
- Loss of appetite
- Nonspecific complaints such as “I don’t feel well” or “I am not myself”

Medications CAP Guidelines

The Medications CAP can be used as a helpful tool for assessing a person’s medications. The triggered persons, however, are those who receive nine drugs or more or who have two or more of the conditions noted under “Triggered – High Priority.”

Multiple physician prescriptions. To begin, it is important to recognize that more than one physician often may have prescribed the medications taken by the person. In

addition, other medications including "natural substances" may be purchased over the counter by the person or a caregiver. All medications should be administered as ordered by the physician. If there are variations, the physician should be informed. The nurse is in the key position to observe or hear directly from the older person or his or her caregivers about signs and symptoms that may be caused by medications — a single drug or a combination of drugs.

Some of the most frequent adverse effects include those in different organ systems:

- Central nervous system — for example, delirium, memory problems, fatigue, depression, tremor
- Cardiovascular — for example, hypotension, dizziness, arrhythmias
- Gastrointestinal — for example, loss of appetite, weight loss, constipation, diarrhea, nausea, vomiting, bleeding
- Urinary tract — for example, incontinence, urinary retention
- Musculoskeletal and trauma — for example, accidents, falls, fractures, decline in functional status
- Pulmonary — for example, wheezing, shortness of breath
- Skin — for example, itching, rash, swelling

When such symptoms are noted, the possibility of a medication causing the symptom should be considered.

The following situations require frequent monitoring and notification of the physician:

- Recent change in cognition [Also see Delirium, Cognitive Loss, and Mood CAPs.]
- Recent change in functional capacity [Also see ADL CAP.]
- Weight loss or gain [See Undernutrition CAP.]
- Recent change in continence [See Urinary Incontinence CAP.]
- Recurrent traumatic event [See Falls CAP.]
- Hospitalization
- The appearance of a new symptom

Some drugs that need particular attention are often (appropriately) used in older persons. To avoid potential adverse events and interactions, it is necessary to review the medications more often in these cases. For example, the following medications require frequent monitoring, especially when initially started:

- Anticoagulants such as warfarin
- Diuretics
- Digoxin
- Antihypertensives

Some medications should be avoided if other options are available. For example, nonsteroidal anti-inflammatory drugs (NSAIDs) carry a risk of gastrointestinal bleeding.

The use of any psychotropic medication requires a proper indication and monitoring over time. [See Behavior CAP.] Medications with anxiolytic, sedative, and hypnotic effects should be used in the lowest possible dose. In addition, these medications should be prescribed for the shortest possible time.

The aim of the medication regimen is to achieve the desired outcome with the fewest medications and the lowest possible dosages. However, the use of multiple medications may often be indicated.

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Multiple Medications

Examples of potentially APPROPRIATE polypharmacy:

- Persons with diabetes may be prescribed several types of insulin in addition to oral medications. In addition, cholesterol or blood pressure lowering agents may be needed.
- Persons with a history of a myocardial infarction, congestive heart failure, or hypertension often require several medications.
- Persons with Parkinson's disease often receive multiple medications.

Examples of potentially DANGEROUS situations:

- Persons may be taking the same pharmaceutical agent under two different trade names.
- Persons may be taking a medication for a problem when a nonpharmacological intervention might be of equal or greater benefit.

Some of the most often seen and potentially (but not always) hazardous combinations of drugs include:

- warfarin and a long list of medications
- potassium sparing diuretic and potassium containing medication

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The physician should be informed when a drug, prescribed on a PRN basis, has not been needed for a significant time. On the other hand, some symptoms, such as pain in a severely ill person, may be undertreated and require an increase in the dose or frequency of administration of the medication or a different pharmaceutical altogether. [See Pain CAP.]

Medication prescribing recommendations derived from clinical practice guidelines have frequently been designed for younger persons with a single chronic condition. When used for older persons with multiple illnesses, they should be reviewed carefully

An appropriate medication regimen in older persons taking even a single medication, but particularly those taking multiple medications, is presented as a guideline to facilitate the learning process:

- Medication prescription is based on a person's unique needs (indication) and care preferences, and that person's life expectancy as documented in the medical record.
- The potential benefit of a medication should outweigh the risk of its use. Any combination of medications should provide potentially greater benefit than any of its components alone.

- In most circumstances, an agreement with the older person, or his or her informal caregiver, should be sought and the care preferences of the person explored as to the need for every new medication and duration of the treatment.
- The person, or the formal and informal caregivers, should be provided with information about the dosage and schedule of the medication, how soon the expected effect will appear, and what adverse effects might be seen. There must be a specific measurable goal for each medication, and there should be a monitoring plan that may result in a change in the goal or the medication.
- Most medications for older persons should be started with a low dose, with the dose increased until the expected effect is reached **or** an adverse effect is noted. "Start low, go slow."
- The effects of the medication (desired and/or undesired) should be documented regularly by the appropriate health care professional.
- If a medication is discontinued, the condition of the person should be monitored and documented over time.
- Many long-acting medications used for anxiety, for example, should be avoided under most circumstances.
- A medication error or nonadherence to a prescribed regimen requires that the physician be notified.
- A list of medications should include all prescribed medications, over-the-counter medications, and all preparations not classified as medications that have a potential effect on other medications being taken or on the person's condition. This list should be provided to all physicians caring for the person, including consultants.

Contact the physician if questions about medications arise. The nursing staff may help inform the person and/or his or her caregivers about the effects of the medications and the care plan. The nursing staff is in a key position to monitor any clinical changes associated with a change in medications.

Some drug-related conditions and symptoms can be detected by systematic monitoring. This may be deemed appropriate over an agreed period of time, for example 3, 7, or 14 days. Symptoms may best be documented according to time of the day, thereby demonstrating a relationship to a medication. Such systematic monitoring may also suggest the need for a new medication.

Disclaimer: This CAP is not intended to be an all-inclusive guide to medication management. A nurse should always contact a physician if there is any indication of an unexpected medication-related symptom or indeed a change in the clinical situation.

Additional Resources

Boyd CM, Darer J, Boult C, Fried LP, Boult L, Wu AW. 2005. Clinical practice guidelines and quality of care for older patients with multiple comorbid diseases: Implications for pay for performance. *JAMA* 294: 716–24.

Doshi JA, Schaffer T, Briesacher BA. 2005. National estimates of medication use in nursing homes: Findings from the 1997 Medicare current beneficiary survey and the 1996 medical expenditure survey. *JAGS* 53: 438–43.

Fialová D, Topinková E, Gambassi G, Finne-Soveri H, Jónsson PV, Carpenter I, Schroll M, Onder G, Sørbye LW, Wagner C, Reissigová J, Bernabei R for AdHOC project research group. 2005. Potentially inappropriate medication use among home care elderly patients in Europe. *JAMA* 293: 1348–58.

Fick DM, Cooper JW, Wade WE, Waller JL, Maclean JR, Beers MH. 2003. Updating the Beers criteria for potentially inappropriate medication use in older adults. *Arch Intern Med.* 163: 2716–24.

Gandhi TK, Weingart SN, Borus J, Seger AC, Peterson J, Burdick E, Seger DL, Shu K, Frederico F, Leape LL, Bates DW. 2003. Adverse drug effects in ambulatory care. *NEJM* 348(16): 1556–64.

Knight EL, Avorn J. 2001. Quality indicators for appropriate medication use in vulnerable elders. *Ann Intern Med* 135(8S): 703–10.

Lane CJ, Bronskill SE, Sykora K, Dhalla IA, Anderson GM, Mamdani MM, Gill SS, Gurwitz JH, Rochon PA. 2004. Potentially inappropriate prescribing in Ontario community-dwelling older adults and nursing home residents. *JAGS* 52: 861–66.

McLeod PJ, Huang AR, Tamblyn RM, Gayton DC. 1997. Defining inappropriate practices in prescribing for elderly people: A national consensus panel. *CMAJ* 156: 385–91.

Monastero R, Palmer K, Qiu C, Winblad B, Fratiglioni L. 2007. Heterogeneity in risk factors for cognitive impairment, no dementia: Population-based longitudinal study from the Kungsholmen project. *AM J Geriatr Psychiatry* 15(1): 60–69.

Redelmeier DA, Tan SH, Booth GL. 1998. The treatment of unrelated disorders in patients with chronic medical diseases. *NEJM* 338: 1516–20.

Simon SR, Chan KA, Soumerai SB, Wagner AK, Andrade SE, Feldstein AC, Lafata JE, Davis RL, Gurwitz JH. 2005. Potentially inappropriate medication use by elderly persons in U.S. health maintenance organizations, 2000–2001. *JAGS* 53: 227–32.

Socialstyrelsen. 2003. Indikatorer för utvärdering av kvaliteten i äldres läkemedelsterapi. Socialstyrelsens förslag. Artikelnummer: 110–20.

Veehof LJG, Stewart RE, Haaijer-Ruskamp FM, Meyboom-de-Jong B. 2000. The development of polypharmacy. A longitudinal study. *Family Practice* 17: 261–67.

Zhan C, Sangl J, Bierman AS, et al. 2001. Potentially inappropriate medication use in the community-dwelling elderly. *JAMA* 286: 2823–29.

Useful Links

DrugInfoNet: www.druginfonet.com
Janusinfo: www.janusinfo.org
Pharmacy-related databases: www.pharmacy.org/wwwdbs

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