

Beers' Criteria for Potentially Inappropriate Medication Use in the Elderly

By: Sheila L. Molony MS, APRN

WHY: Recently published studies confirm that inappropriate medication use remains a serious problem for the elderly.^{1,2,3} Increased nursing awareness of high-risk medications enables attentive monitoring for adverse effects and facilitates collaborative efforts between nurses, primary care providers and pharmacists to reduce medication-related risk.

BEST TOOL: The adapted Beers' Criteria (HCFA Guidelines for Potentially Inappropriate Medications in the Elderly) identifies medications noted by an expert panel to have potential risks that outweigh potential benefits of the drug. The criteria are appropriate for persons older than 65 years of age, regardless of their level of frailty. The criteria provide a rating of severity for adverse outcomes (severe vs. less severe) as well as a descriptive summary of the prescribing concerns associated with the medication.

VALIDITY AND RELIABILITY: The criteria were developed using a modified Delphi method to achieve consensus among 6 nationally recognized experts in geriatric care and pharmacology. The criteria have been used alone and in combination with setting-specific criteria to screen populations for possible medication-related problems. Further research is needed to validate the occurrence and severity of negative outcomes associated with high-risk medications.

STRENGTHS AND LIMITATIONS: The criteria do not identify all cases of potentially inappropriate prescribing and they may sometimes identify appropriate prescribing as inappropriate. The criteria are designed for population-based screening and are not intended to substitute for professional judgment regarding the individualized needs of particular older adults.

FOLLOW-UP: Nurses may use the criteria to increase awareness of medications that may present increased risk for adverse drug reactions. Nurses, primary care providers and pharmacists may collaborate to optimize individualized medication regimes and provide appropriate clinical monitoring and education. The suggested references provide further information on high-risk medications specific to patient diagnosis and prescribing practices in specific care settings.

MORE ON THE TOPIC:

Beers, M.H. (1997). Explicit criteria for determining potentially inappropriate medication use by the elderly. Archives of Internal Medicine 157:1531-1536.

Brown, N.J., Griffin, M.R., Ray, W.A., Meredith, S., Beers, M.H., Marren, J., Robles, M., Stergachis, A., Wood, A.J.J., & Avorn, J. (1998). A model for improving medication use in home health care patients. Journal of the American Pharmaceutical Association 38(6):696-702.

¹Meredith, S., Feldman, P.H., Frey, D., Hall, K., Arnold, K., Brown, N.J., & Ray, W.A. (2001). Possible medication errors in home healthcare patients. Journal of the American Geriatrics Society 49:719-724

³Sloane, P. D., Zimmerman, S., Brown, L. C., Ives, T. J. & Walsh, J.F. (2002). Inappropriate medication prescribing in residential care/assisted living facilities. Journal of the American Geriatrics Society 50: 1001-1011.

²Zhan, C., Sangl, J., Bierman, A.S., Miller, M.R., Friedman, B., Wickizer, S.W., Meyer, G.S. (2001). Potentially inappropriate medication use in the community-dwelling elderly: findings from the 1996 Medical Expenditure Panel survey. Journal of the American Medical Association 286:2823-2829.

Understanding the **HCFA Guidelines** for Potentially **Inappropriate Medications*** in the Elderly—Optimizing Prescribing in Long-Term Care

Drug Therapy with High Potential for

Severe Adverse Outcomes

amitriptyline (Elavil), **chlordiazepoxide-amitriptyline** (Limbitrol), and **perphenazine-amitriptyline** (Triavil)

Summary of Prescribing Concerns for the Elderly

Strong anticholinergic and sedating properties. Rarely the antidepressant of choice in the elderly. (May be used for neurogenic pain if evaluation of risk vs. benefit is documented)

barbiturates (all except phenobarbital)

Higher incidence of side effects than most other sedatives and hypnotics used in the elderly. Highly addictive. Use only to control seizure.

Long-acting benzodiazepines—**chlordiazepoxide** (Librium), **chlordiazepoxide-amitriptyline** (Limbitrol), **clidinium-chlordiazepoxide** (Librax), **diazepam** (Valium), and **flurazepam** (Dalmane)

chlordiazepoxide, **diazepam**, **flurazepam** and other long-acting benzodiazepines have a long half-life in the elderly. Produce prolonged sedation, increased risk of falls and fractures.

chlorpropamide (Diabinese)

Prolonged half-life in the elderly, which can cause prolonged hypoglycemia. Also causes SIADH.†

dicyclomine (Bentyl), **hyoscyamine** (Levsin, Levsinex), **proprantheline** (Pro-Banthine), **belladonna alkaloids** (Donnatal and others), and **clidinium-chlordiazepoxide** (Librax)

GI antispasmodics are highly anticholinergic and generally produce substantial toxic effects in the elderly. Effectiveness at doses tolerated by the elderly is questionable. Best avoided in the elderly, especially for long term use. (Use for 7 days or less, and not more frequently than every 3 months, does not require review.)

digoxin (Lanoxin) >0.125 mg/day

Because of decreased renal clearance in the elderly, avoid doses >0.125mg, except when treating atrial arrhythmias.

disopyramide (Norpace, Norpace CR)

Negative inotrope that may induce heart failure. Strongly anticholinergic.

doxepin (Sinequan)

Strong anticholinergic and sedating properties. Rarely the antidepressant of choice in the elderly.

meperidine (Demerol)

Not an effective oral analgesic.

meprobamate (Miltown, Equanil)

Highly addictive and sedating anxiolytic. Avoid in elderly patients.

ALDOMET® (methyldopa), **ALDORIL® (methyldopa/hydrochlorothiazide)**

May cause bradycardia and exacerbate depression in the elderly. Alternate antihypertensives are preferred.

pentazocine (Talwin)

Narcotic analgesic causing more CNS† side effects than other narcotic drugs, including confusion and hallucinations. Mixed agonist and antagonist.

ticlopidine (Ticlid)

No better than aspirin in preventing clotting and considerably more toxic. Avoid in the elderly. (Review not necessary if used in patients who have had a stroke or have evidence of stroke precursors [transient ischemic attacks], and cannot tolerate aspirin.)

* It is important to note that most package circulars produced by manufacturers do not include language identical to the statements presented here. Although the adverse effects that these drugs can produce are generally listed in the package circulars, these as well as warnings and contraindications must be approved by regulatory agencies and in general are not based on consensus or surveys.

† CNS indicates central nervous system; NSAIDs indicates nonsteroidal anti-inflammatory drugs. SIADH indicates syndrome of inappropriate antidiuretic hormone.

Drug Therapy with High Potential for

Less Severe Adverse Outcomes

diphenhydramine (Benadryl)

Summary of Prescribing Concerns for the Elderly

Potent anticholinergic properties. Should not be used as a sedative/hypnotic. To treat allergic reactions, use lowest dose possible, and with great caution. (Review not necessary if used for 7 days or less, and not more frequently than every 3 months, for treatment of allergies.)

dipyridamole (Persantine)

Frequently causes orthostatic hypotension. Use in the elderly should be avoided.

ergot mesyloids (Hydergine), **cyclandelate** (Cyclospasmol), (other cerebral vasodilators)

Have not demonstrated effectiveness in the treatment of dementia or any other condition.

Antihistamines such as: single and combination preparations containing **chlorpheniramine** (Chlor-Trimeton), **diphenhydramine** (Benadryl), **hydroxyzine** (Vistaril, Atarax), **PERIACTIN® (cyproheptadine HCl)**, **promethazine** (Phenergan), **tripelennamine** (PBZ), and **dexchlorpheniramine** (Polarmine)

Potent anticholinergic properties. Use cough-and-cold substitutes without antihistamines. (Review not necessary if diphenhydramine is used for 7 days or less, and not more frequently than every 3 months, for treatment of allergies.)

INDOCIN® (indomethacin), **INDOCIN SR® (indomethacin)**

More CNS† side effects than other NSAIDs† and, therefore, should not be used in the elderly. (Short-term use, e.g. 1 week, is acceptable for treatment of gouty arthritis.)

methocarbamol (Robaxin), **carisoprodol** (Soma), **chlorzoxazone** (Paraflex), **metaxalone** (Skelaxin), **FLEXERIL® (cyclobenzaprine)**, **dantrolene** (Dantium), and **orphenadrine** (Norflex, Norgesic)

Most **muscle relaxants** are poorly tolerated by the elderly, leading to anticholinergic side effects, sedation and weakness. The effectiveness at doses tolerated by the elderly is questionable. (Review not necessary if used for 7 days or less, and not more frequently than every 3 months, for symptoms of an acute, self-limiting condition.)

phenylbutazone (Butazolidin)

May produce serious hematological side effects (blood disorders) and should not be used in the elderly.

reserpine (Serpasil), reserpine combination products

May cause depression; sedation, and orthostatic hypotension. Safer alternatives exist.

trimethobenzamide (Tigan)

Can cause extrapyramidal side effects. Low effectiveness as an antiemetic drug.

ALDOMET, ALDORIL, INDOCIN, INDOCIN SR, FLEXERIL and PERIACTIN are registered trademarks of Merck & Co., Inc. All other brands listed are trademarks of their respective owners and not of Merck & Co., Inc.

* It is important to note that most package circulars produced by drug manufacturers do not include language identical to the statements presented here. Although the adverse effects that these drugs can produce are generally listed in the package circulars, these as well as warnings and contraindications must be approved by regulatory agencies and in general are not based on consensus or surveys. **Before prescribing ALDOMET, ALDORIL, INDOCIN, INDOCIN SR, FLEXERIL, and PERIACTIN, please read the accompanying full Prescribing Information.**

† CNS indicates central nervous system; NSAIDs indicates nonsteroidal anti-inflammatory drugs. SIADH indicates syndrome of inappropriate antidiuretic hormone.

Source: Adapted from: Beers MH. Explicit Criteria for Determining Potentially Inappropriate Medication Use by the Elderly. An Update. *Arch Intern Med.* 1997;157:1531-1536. Reprinted with permission.



A series provided by
The Hartford Institute for Geriatric Nursing
(hartford.ign@nyu.edu)
www.hartfordign.org