

Medication Management and Polypharmacy Beer's List

The Beer lists are used as a national guideline and reference guide for pharmacists and physicians to improve the use of medication in the elderly. For several years, gerontologist Mark H. Beers, MD, has been advocating the use of explicit criteria-developed through consensus panels-for identifying inappropriate use of medications. In a 1991 paper that looked at the nursing facility population, he wrote with colleagues that these explicit criteria were "based on the risk-benefit definition of appropriateness, i.e., that the use of a medication is appropriate if its use has potential benefits that outweigh potential risks." ⁱ His first set of criteria was developed specifically with the frail elderly nursing facility resident in mind.

In 1997, Beers updated his criteria to include medication therapy inappropriate in all patients over 65 years old.³ Consultant pharmacists can use both sets of criteria in prescription processing and drug regimen review to improve the pharmacotherapeutic regimens of their elderly patients.

Below are the two tables developed by the study's Beer conducted. Table 1 is MEDICATIONS TO AVOID OR USE WITHIN SPECIFIED DOSE AND DURATION RANGES IN ELDERLY PATIENTS and Table 2 is MEDICATIONS TO AVOID IN ELDERLY PATIENTS WITH SPECIFIC CONCOMITANT DISEASES.

The important question to ask is, what can facility's do with this information in managing medication use in the elderly? Below is a list of recommendation standards:

- ↪ Make sure your consultant pharmacist has the lists.
- ↪ Mail the lists to the medical director and attending physicians with a cover letter stating the lists are used as a national guideline and reference guide for pharmacists and physicians to improve the use of medication in the elderly. Ask if there are any new systems or procedures they would like to see at the facility.
- ↪ Set a standard that the pharmacist must address these drugs during drug regimen review.
- ↪ The dispensing pharmacy reviews Table 1 list of drugs and discuss procedurally how the dispensing of these drugs could be handled on a case by case basis.
- ↪ Inservice the licensed staff and CMA's on the two tables, especially table 2.

ⁱ Reference: Beers MH, Ouslander JG, Rollinger I, Reuben DB, Brooks J, Beck JC. Explicit criteria for determining inappropriate medication use in nursing home residents. Arch Intern Med 1991;151:1825-32.

2,3 Beers MH. Explicit criteria for determining potentially inappropriate medication use by the elderly: an update. Arch Intern Med 1997;157:1531-6.

TABLE 1: MEDICATIONS TO AVOID OR USE WITHIN SPECIFIED DOSE AND DURATION RANGES IN ELDERLY PATIENTS^a

MEDICATION(s)^b	EXPLANATION OF PROBLEM	SEVERITY
PSYCHOTROPIC MEDICATIONS		
Amitriptyline, alone or in combination products	Strong anticholinergic and sedating properties	High
Barbiturates (other than phenobarbital)	Side effects and addictive properties	High
Chlordiazepoxide (alone or in combination) or diazepam	Long half-lives, risk of sedation and increased falls	High
Doxepin	Strong anticholinergic and sedating properties	High
Ergot mesylates, cyclandelate isoxsuprine ^c	Not proven effective at doses studied	Low
Flurazepam	Long half-life; risk of sedation and increased falls	High
Haloperidol ^c	Doses > 3mg/day should be avoided; residents with psychotic disorders may require higher doses	• • •
Lorazepam 3 mg, oxazepam 60 mg, alprazolam 2 mg, temazepam 15 mg, zolpidem 5 mg, triazolam 0.25 mg	Total daily doses should not exceed these amounts; in the nursing facility resident, avoid any single dose of oxazepam > 30 mg or triazolam > 0.25 mg	Low
Meperidine	Not effective orally and has disadvantages compared with other narcotic analgesics	High
Meprobamate	Highly addictive and sedating. Avoid unless patient is already addicted to it.	High
Pentazocine	Has more CNS side effects, including confusion and hallucinations; is a mixed agonist-antagonist	High
Propoxyphene	Few advantages over acetaminophen	Low
Thiordiazine ^c	Avoid doses > 30 mg/day; residents with known psychotic disorders may require higher doses.	• • •
DECONGESTANTS		
Antihistamines (alone or in combination, including chlorpheniramine, diphenhydramine, hydroxyzine, cyproheptadine, promethazine, and dexchlorpheniramine)	Strong anticholinergic activity. Substitute cough and cold products without these antihistamines	Low
Decongestants (oxymetazoline, phenylephrine, pseudoephedrine) ^c	Avoid daily use for > two weeks	• • •

MEDICATION(s) ^b	EXPLANATION OF PROBLEM	SEVERITY
Diphenhydramine	Do not use as a hypnotic. For allergies, use the lowest possible dose.	Low
GASTROINTESTINAL AGENTS		
Cimetidine ^c	Avoid doses > 900 mg/day and therapy for > 12 weeks	...
Dicyclomine, hysoscyamine, propantheline, belladonna alkaloids, clidinium, chlordiazepoxide	Strong anticholinergic activity and questionable efficacy as antispasmodic agents. Avoid long-term use; other use is questionable	High
Ranitidine ^c	Avoid doses > 300 mg/day and therapy for > 12 weeks	...
Trimethobenzamide ^c	One of the least effective antiemetic agents; produces extrapyramidal side effects	Low
ENDOCRINE AGENTS		
Chlorpropamide	Can cause prolonged and serious hypoglycemia. Also can cause syndrome of inappropriate antidiuretic hormone	High
CARDIAC AGENTS		
Digoxin	Except for treatment of atrial arrhythmias, doses > 0.125 mg in the elderly should rarely exceed this amount	High
Disopyramide	May induce heart failure because of strong negative inotropic activity. Also has strong anticholinergic activity	High
VASCULAR AGENTS		
Dipyridamole	Causes orthostatic hypotension. Beneficial only in patients with artificial heart valves.	Low
Hydrochlorothiazide ^c Methyldopa (alone or in combination)	Avoid doses > 50 mg/day Causes bradycardia and exacerbates depression	...
Propranolol ^c	Avoid except when used to treat violent behaviors; other beta blockers offer less CNS penetration or more beta-receptor selectivity	...
Reserpine (alone or in combination)	Causes depression, impotence, sedation, and orthostatic hypotension	Low
Ticlopidine	More toxic than aspirin, yet no more effective	High
MUSCULOSKELETAL AGENTS		
Indomethacin	Most CNS side effects of any NSAID	Low

MEDICATION(s) ^b	EXPLANATION OF PROBLEM	SEVERITY
Methocarbamol, carisoprodol, oxybutynin, chlorzoxazone, metaxalone, cyclobenzaprine, orphenidrate ^c	Poorly tolerated by the elderly; cause anticholinergic side effects, sedation, and weakness. Effectiveness at tolerated doses questionable	Low
Phenylbutazone (off U.S. market)	Serious hematologic side effects	Low
HEMATOPOIETIC AGENTS		
Iron supplements exceeding 325 mg of ferrous sulfate	Higher doses no more effective but cause constipation	Low
ANTI-INFECTIVE AGENTS		
Oral antibiotics ^c	Avoid therapy for > four weeks except when treating osteomyelitis, prostatitis, tuberculosis, or endocarditis	...

a Adapted from references 2 and 3. Abbreviations: CNS=central nervous system; EENT=eyes, ears, nose, and throat; NSAID=nonsteroidal anti-inflammatory drugs.

b Unless otherwise stated in the "Problems" column, use of these medications should be avoided completely in all patients 65 years and older.

c These criteria were developed specifically for the frail elderly patient, especially those who are residents of nursing facilities. Use in other elderly patients may be acceptable.

TABLE 2: MEDICATIONS TO AVOID IN ELDERLY PATIENTS WITH SPECIFIC CONCOMITANT DISEASES

DISEASE	MEDICATION(s)	PROBLEM	SEVERITY
NEUROLOGIC DISORDERS			
Epilepsy	Clozapine, chlorpromazine, thioridazine, chlorprothixene	Agents lower seizure threshold	Low
	Metoclopramide	Agents lower seizure threshold	High
PSYCHIATRIC DISORDERS			
Insomnia	Decongestants	May cause or worsen insomnia	Low
	Theophylline	May cause or worsen insomnia	Low
	Desipramine, serotonin selective reuptake inhibitors, and monoamine oxidase inhibitors	May cause or worsen insomnia	Low
	Beta agonists	May cause or worsen insomnia	Low
GASTROINTESTINAL DISORDERS			
Constipation	Anticholinergics	Will worsen constipation	Low
	Narcotics	Will worsen constipation	Low
	Tricyclic antidepressants	Will worsen constipation	High
Ulcers	NSAIDs	May exacerbate ulcer disease, gastritis, GERD	High
	Aspirin	May exacerbate ulcer disease, gastritis, GERD	Low
	Potassium supplements	May exacerbate ulcer disease, gastritis, GERD	Low
ENDOCRINE DISORDERS			
Diabetes	Beta blockers	In people being treated with insulin or oral agents, beta blockers may worsen symptoms	Low
	Corticosteroids (started recently)	May worsen diabetic control	Low
RESPIRATORY DISORDERS			
Asthma	Beta blockers	May worsen respiratory function	High

Chronic obstructive pulmonary disease	Beta blockers	May worsen respiratory function	High
	Sedative-hypnotics	May slow respirations and increase carbon dioxide retention	High
CARDIAC DISORDERS			
Arrhythmias	Tricyclic antidepressants	May induce arrhythmias	High if started recently
Heart failure	Disopyramide	May worsen heart failure because of negative inotropic action	High
	Drugs with high sodium content	Large sodium load may lead to fluid retention and thereby worsen heart failure	Low
VASCULAR DISORDERS			
Blood-clotting disorders being treated with anticoagulants	Aspirin	May cause bleeding	High
Hypertension	Amphetamines and other weight-control agents	May increase blood pressure	High
Peripheral vascular disease	Beta blockers	Negative chronotropic and inotropic activity	Low
Syncope	Beta blockers	Negative chronotropic and inotropic activity	Low
	Long-acting benzodiazepines	May contribute to falls	High
UROLOGIC DISORDERS			
Benign prostatic hypertrophy	Anticholinergic antihistamines	May impair micturation and cause obstruction	High
	Gastrointestinal antispasmodics	May impair micturation and cause obstruction	High
	Muscle relaxants	May impair micturation and cause obstruction	Low
	Narcotic drugs (including propoxyphene)	May impair micturation and cause obstruction	Low
	Flavoxate, oxybutyin	May cause obstruction	Low
	Bethanechol	May cause obstruction	Low
	Anticholinergic antidepressants	May impair micturation and cause obstruction	High
Incontinence	Alpha blockers	Relaxes the external bladder sphincter	High

Adapted from references. These criteria apply to all elderly patients, not just nursing facility residents. Abbreviations: NSAID=nonsteroidal anti-inflammatory drugs; GERD=gastroesophageal reflux disease.