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Drug Interactions Added to the Beers Criteria

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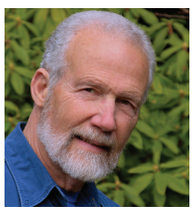

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In 1991, the first "Beers Criteria" were published to alert clinicians to drugs that are potentially inappropriate for use in older adults.[1] Updates to the list have appeared periodically, and the most recent (November 2015) includes drug–drug interactions (DDIs) for the first time.[2] The expert panel included primarily pharmacists, physicians, and nurses, and they used a modified Delphi method to compile the criteria.

Criteria for the Inclusion of DDIs

The panel members made it clear that the DDI list is not intended to be comprehensive, and that individuals should not assume that these are the only DDIs worth considering in older adults. The panel selected DDIs it felt were particularly problematic in the elderly, regarding the potential for adverse outcomes. The panel did not include anti-infective agents or address drug therapy in individuals receiving palliative and hospice care.

Drug Interactions that Were Included

The DDIs the panel added to the Beers Criteria fell into several categories, but the most prevalent was an increased risk of falls due to combined use of 2 or more central nervous system (CNS) drugs (eg, antidepressants, antipsychotics, benzodiazepines, hypnotics, opioid analgesics). Unfortunately, despite the fact that these additive pharmacodynamic effects are well known and predictable, they are still too often overlooked in the elderly. Also included in the list were the following:

- Lithium toxicity from concurrent angiotensin-converting enzyme (ACE) inhibitors or loop diuretics
- Hyperkalemia from ACE inhibitors with amiloride or triamterene
- Cognitive decline from multiple anticholinergics
- Peptic ulcers and gastrointestinal (GI) bleeding from nonsteroidal anti-inflammatory drugs (NSAIDs) plus systemic corticosteroids
- Urinary incontinence in older women from peripheral alpha-1 blockers plus loop diuretics
- Theophylline toxicity due to cimetidine
- Increased bleeding risk from warfarin when combined with amiodarone or NSAIDs

Evaluation

The expert panel appears to have achieved its goal of preparing a list of DDIs that can be particularly dangerous in the elderly. It would not be difficult for pharmacists to commit these to memory given that there are only 13 DDIs on the list. When alerted to these DDIs by a computerized screening system, pharmacists could pay particular attention to the alert for elderly patients. In general, the DDIs on the list should be avoided in older adults when possible; therefore, action by a pharmacist may well be warranted.

It is important to keep in mind that this list is not comprehensive. The risk of GI bleeding due to NSAIDs can be increased by drugs other than corticosteroids (eg, spironolactone). The risk of lithium toxicity can be increased by drugs other than ACE inhibitors or loop diuretics (eg, angiotensin receptor blockers, NSAIDs). Many drugs other than cimetidine inhibit CYP1A2 and can cause theophylline toxicity. In addition, dozens of drugs other than amiodarone and NSAIDs can increase the risk of bleeding in patients on warfarin, usually through inhibition of CYP2C9 or by inhibitory effects on platelet function. Moreover, many other important DDIs were not included, as the expert panel pointed out. Leaving out anti-infective agents was probably prudent, but many anti-infectives have properties that result in clinically important DDIs.

It is important to note that the new Beers Criteria DDIs are not intended to be applied to patients in palliative and hospice care. These patients, for example, may well need therapy with various combinations of CNS-active drugs that can be problematic in other older adults.

For most of the 13 DDIs on the list, the expert panel recommended that they should be avoided if possible, but for one of the interactions (theophylline plus cimetidine), the panel simply said "Avoid." This is appropriate because other histamine$_2$-receptor antagonists have little effect on theophylline and there is no reason to use cimetidine.

Summary

The American Geriatrics Society 2015 Updated Beers Criteria included DDIs for the first time. The panel listed 13 DDIs that may be particularly dangerous in older adults. It would be prudent for pharmacists to pay particular attention to these DDIs in all patients, but especially in the elderly. ■

Drs. Horn and Hansten are both professors of pharmacy at the University of Washington School of Pharmacy. For an electronic version of this article, including references, visit hanstenandhorn.com.