Highlights of the 2015 Update of the American Geriatrics Society Beers Criteria

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The American Geriatrics Society (AGS) has released its second version of the *Beers Criteria for Potentially Inappropriate Medication Use in Older Adults*.[1] The specific aim of this version was to update and expand the 2012 AGS Beers Criteria using a comprehensive, systematic literature review and grading the quality of the evidence on the use of potentially inappropriate medications (PIMs) in older adults.

Similar to the 2012 AGS Beers Criteria, the updated criteria is an explicit list of PIMs best avoided, used with extra caution, or used at reduced dosage in older adults in general and in those with certain diseases or syndromes.

In addition to updating existing criteria, by incorporating new evidence on current PIMs and adding new evidence for medications or conditions not addressed in the 2012 version, the 2015 AGS Beers Criteria have been expanded to include two new areas of evidence on drug-drug interactions and drug-dosage adjustments based on kidney function. Further, in an accompanying publication to the 2015 AGS Beers Criteria, the society provides the first-ever list of alternatives to the Beers Criteria PIMs.[2]

The AGS Beers Criteria is an essential evidence-based clinical tool to incorporate into a comprehensive approach to medication decision-making for older adults. Healthcare professionals who care for older adults should comprehend the purpose of the Beers Criteria, understand how to use (and not use) the criteria in clinical practice, familiarize themselves with the changes implemented with the 2015 AGS update, and recognize how the criteria are used, as it is not only a clinical tool but also a public health tool. The purpose of this article is to provide a brief review of these updated Beers Criteria for healthcare professionals who care for older adults.

History of the Beers Criteria

In 1991, gerontologist Dr. Mark H. Beers and colleagues developed a consensus list of PIMs to be avoided in older adults.[3] These criteria were originally intended to be applied for older adults receiving care in long-term care settings, particularly nursing homes.[3] Since then, the Beers Criteria have been adopted by the Centers for Medicare & Medicaid Services (CMS) for nursing home regulation; updated in 1997, 2003, and 2012[4-6]; extended to be applied for all older adults, including those receiving care in outpatient settings, but excluding those receiving palliative or hospice care; widely utilized in research for studying prescribing patterns and outcomes in older adult populations;[7-11] and incorporated into national quality measures.[2,12,13]

The purpose of the Beers Criteria has been, and continues to be, improving the care of older adults by reducing exposure to PIMs.[1] These criteria, though controversial at times, are intended to: improve medication selection; reduce adverse drug events (ADEs); educate healthcare professionals and older adults; and serve as a tool for evaluating quality of care, cost, and patterns of medication use of older adults.[1]

Conversely, these criteria are not intended to be applied in a punitive manner, nor are they designed to supplant good clinical judgment.[14] Applying the criteria in inflexible, dogmatic

ways is contradictory to how the criteria are intended to be used.[14]

How to Use (and Not Use) the Beers Criteria

To coincide with the 2015 update of the Beers Criteria, the AGS convened a workgroup to develop guidance on the intended use and application of the 2015 AGS Beers Criteria.[14] As a result, the workgroup developed seven key principles that should be used to guide intended use of the criteria. These principles are summarized in the table below and explained in detail in the workgroup's publication,[14] which includes suggestions for how older adults, healthcare professionals, and health systems and payers can apply the key principles to improve medication use in older adults.

Seven Key Principles to Guide Intended Use of the 2015 AGS Beers Criteria

Key Principle 1	Medications in the criteria are "potentially inappropriate" and merit special scrutiny, but are not definitely inappropriate in all older adults.
Key Principle 2	The caveats included in the rationale and recommendations statements for each criterion are essential and, therefore, should be read.
Key Principle 3	Understand why medications are included in the criteria and use the information provided in the rationale statement to guide decision-making.
Key Principle 4	Optimal application of the criteria involves not only identifying PIMs but also offering safer alternatives, where appropriate.
Key Principle 5	The criteria should be used as a "starting point" for a comprehensive process of reviewing an individual older adult's entire medication regimen.
Key Principle 6	Access to medications included in the criteria should not be excessively restricted by prior authorization and/or other coverage policies.
Key Principle 7	Appreciate that the criteria were developed chiefly based on medications available in the U.S. and are not equally applicable to other countries.

Adapted from Reference 14.

Highlighted Updates of the 2015 AGS Beers Criteria

Since the 2012 AGS Beers Criteria, medications have been modified, removed, and added. While a detailed description of these changes is beyond the scope of this article, several changes are highlighted in the following table. For a detailed description of the differences between the 2012 and 2015 AGS Beers Criteria, readers should refer to the AGS publication.[1]

Selected Updates to the 2015 AGS Beers Criteria

PIMs Independent of Diagnoses or Conditions	
Nitrofurantoin	The recommendation to avoid this medication in older adults with a CrCl <60mL/min has been modified because evidence indicates that it can be used with relative safety and efficacy in individuals with a CrCl ≥30mL/min. The use of nitrofurantoin for long-term suppression of infection should still be avoided.
Nonbenzodiazepine hypnotics	The recommendation to avoid the nonbenzodiazepine hypnotics (eszopiclone, zaleplon, and zolpidem) has been modified to avoid usage entirely without consideration of duration of use because evidence suggests that risks outweigh benefits. The 90-day duration of use caveat has been removed.
Antiarrhythmics	The recommendation to avoid antiarrhythmics (Classes Ia, Ic, III) as first-line treatment for atrial fibrillation has been removed because new evidence suggests that rhythm control can be as effective as or better than rate control. Nevertheless, certain antiarrhythmics (e.g., amiodarone) remain in the criteria.
Proton pump inhibitors	The recommendation to avoid proton pump inhibitor use beyond 8 weeks duration without a strong indication has been added because evidence supports an association between long-term proton pump inhibitor exposure and *Clostridium difficile* infection, bone loss, and fractures.
PIMs Considering Disease or Syndrome Interactions	
Nonbenzodiazepine hypnotics	The nonbenzodiazepine hypnotics (eszopiclone, zaleplon, and zolpidem) have been added to the list of medications to avoid in older adults with cognitive impairment or dementia because of evidence of their adverse CNS effects.
Opioids	Opioids have been added to the list of CNS medications that should be avoided in older adults with a history of falls or fractures because of evidence of their adverse CNS effects.
Antipsychotics	Antipsychotics have been added to the list of medications that should be avoided as first-line treatment of delirium because of conflicting evidence on their effectiveness and the potential for adverse effects, including worsening delirium and mortality in older adults with underlying dementia.

This list, which was obtained from Reference 1, is not meant to be comprehensive.
CNS = central nervous system, CrCl = creatinine clearance, PIMs = potentially inappropriate medications.

Although the actual changes in the 2015 update are not as extensive as those of the previous AGS version,[1] in addition to updating existing criteria, the 2015 AGS Beers Criteria have been expanded to include the following major new areas: 1) select drug-drug interactions proven to be associated with harmful outcomes in older adults and 2) select drugs that should be avoided or for which the dosage should be adjusted based on a specific degree of kidney function to avoid harm in older adults. Neither of these new additions is intended to be comprehensive, nor do they include anti-infectives; rather, the AGS expert panel focused on including medications for which there is evidence in older adults that they are at risk of serious harm if the drug-drug interaction is overlooked or the dosage is not adjusted to account for kidney function.[1]

Examples of drug-drug interactions included in this new area include using two or more CNS-active medications concomitantly (e.g., antipsychotics and opioids), which significantly increases the risk of falls; and using two or more medications with anticholinergic properties, which significantly increases the risk of cognitive, functional, and physical decline.[1]

Examples of medications that should be avoided, or for which the dosage should be adjusted based on a specific degree of kidney function, in this new area include using dabigatran in older adults with creatinine clearance less than 30mL/min, which significantly increases the risk of bleeding; and using a histamine H_2-receptor antagonist (e.g., famotidine or ranitidine) in older adults with creatinine clearance less than 50mL/min, which significantly increases the risk for mental status changes.[1]

How the Beers Criteria are Used: Focus on Quality

The Beers Criteria continue to be useful and necessary, as a clinical and public health tool to improve medication selection and safety in older adults. The 2015 AGS Beers Criteria are reasonable to use for quality and performance measurement across populations of older adults and large groups of providers.[14] Indeed, since their introduction more than two decades ago, widespread efforts to use the Beers Criteria in quality assurance and performance improvement initiatives have had meaningful impacts on the quality of care of older adults.[8,9,14,15]

While the AGS Beers Criteria are widely used in geriatric clinical care, education, and research, the criteria also have been used in development of national quality measures used by insurers and other payers. The National Committee for Quality Assurance (NCQA) and the Pharmacy Quality Alliance (PQA) used the AGS Beers Criteria to develop the quality measure *Use of High-Risk Medications in the Elderly (HRM)*.[2,12] The Centers for Medicare and Medicaid Services (CMS) use the HRM measure – in their Part D Star Ratings – to monitor and evaluate the quality of care provided to Medicare beneficiaries.[2,13] Additionally, the NCQA used the AGS Beers Criteria to develop a second quality measure, *Potentially Harmful Drug-Disease Interactions in the Elderly*.[2,12] Both measures, published in 2015, were based on the 2012 AGS Beers Criteria and include some medications that elderly adults should avoid and some medications that could potentially exacerbate three diseases or conditions (chronic kidney disease, dementia, and a prior history of falls).

Examples of high-risk medications included in the two national quality measures include the following: chlorpheniramine, imipramine, meperidine, and promethazine (in older adults with dementia).[2,12,13,16] Overall, medications included in these two measures may be harmful to older adults and negatively affect a healthcare plan's quality ratings.[2]

To support healthcare professionals and plans with avoiding problems with quality ratings, two members of the AGS Beers Criteria expert panel and one of their colleagues developed a list of evidence-based alternative medications, along with some nonpharmacological interventions when appropriate, that may be used instead of the potentially high-risk medications included in the two [aforementioned] quality measures.[2] This list of medication alternatives coincides with the publication of the 2015 AGS Beers Criteria and is published online in the same issue of the *Journal of the American Geriatrics Society*.[2] Examples of potential medication alternatives from this publication are provided in the following table. Currently, it is unknown how the HRM and Potentially Harmful Drug-Disease Interactions in the Elderly quality measures will be revised based on the updated 2015 AGS Beers Criteria.[2]

Selected Alternatives for Medications Included in National Quality Measures

High-Risk Medications in the Elderly Measure	
First-generation antihistamines (e.g., diphenhydramine)	Alternatives (for allergies): - Intranasal normal saline - Second-generation antihistamines (e.g., loratadine) - Intranasal steroid (e.g., fluticasone)
Sulfonylureas, long-acting (e.g., glyburide)	Alternatives (for type 2 diabetes): - Short-acting sulfonylureas (e.g., glipizide) - Metformin
Potentially Harmful Drug-Disease Interactions in the Elderly Measure	
Dementia + TCAs (e.g., amitriptyline)	Alternatives: - Depression – bupropion (not in older adults+ with seizures), SSRIs (not paroxetine), SNRIs (not duloxetine if CrCl <30mL/min) - Neuropathic pain – pregabalin (not if CrCl <60mL/min), SNRIs (not duloxetine if CrCl <30mL/min)

This list, which was obtained from Reference 2, is not meant to be comprehensive.
CrCl = creatinine clearance, SNRI = serotonin norepinephrine reuptake inhibitors, SSRI = selective serotonin reuptake inhibitors, TCA = tricyclic antidepressants.

Summary

Although medication use decisions must be individualized, healthcare professionals often use consensus criteria to decide medication appropriateness in certain populations, particularly when precise clinical information is lacking. In the United States, the most widely used consensus criteria for deciding medication appropriateness in older adult populations are the Beers Criteria. Since their inception, substantial updates have been made to the Beers Criteria, including not only the application but also the content. These continually evolving criteria are intended to be used by healthcare professionals who care for older adults as one component of a comprehensive medication use process, but they are not

meant to override clinical judgment. Appropriate use of the Beers Criteria by healthcare professionals should lead to improved quality of care for older adults.

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