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SPECIAL ARTICLE

Alternative Treatments to Selected Medications in the 2023 American Geriatrics Society Beers Criteria®

American Geriatrics Society Beers Criteria® Alternatives Panel | Michael A. Steinman

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ABSTRACT

The American Geriatrics Society (AGS) Beers Criteria® serve to identify medications whose potential for harm outweighs their intended benefit in older adults. This highlights the need for guidance not only on what therapies to avoid but also on readily available alternative treatment strategies. AGS thus convened a multidisciplinary, interprofessional panel to develop a list of these alternative treatment strategies for older adults based on guidelines and evidence, updating an earlier effort published in 2015. This report presents these in a manner intended to be easily usable by front-line clinicians facing common clinical scenarios. The list includes pharmacologic alternatives to medications on the AGS Beers Criteria® as well as non-pharmacologic management strategies that are often safer and equally or more effective than the potentially inappropriate medications they are replacing. Clinician, patient, and caregiver resources are also provided to support the implementation of alternative treatment strategies in clinical practice.

1 | Introduction

The 2023 American Geriatrics Society (AGS) Beers Criteria® and its preceding versions identify medications whose potential for harm outweighs their intended benefit in older adults compared with readily available alternatives [1]. However, clinicians, patients, and caregivers need guidance not only on what therapies to avoid, but on alternative non-pharmacologic and pharmacologic treatment strategies to consider in place of such potentially inappropriate medications. An initial version of such a list of alternatives was published in 2015, addressing medications from the 2012 AGS Beers Criteria® that were included in quality measures used by the Centers for Medicare and Medicaid Services (CMS) to evaluate quality of care provided to Medicare beneficiaries [2]. In the interim, several updated versions of the AGS Beers Criteria® have been published, and a decade has passed. To address the evolving nature of the AGS Beers Criteria® and the overall landscape of care, the AGS thus embarked on an effort to provide an updated list of alternative therapies to consider using in place of commonly used medications identified in the 2023 AGS Beers Criteria® and to present these in a way that would be maximally useful to clinicians caring for older adults.

The list includes common evidence-based alternatives, including non-pharmacologic management strategies that are often safer and equally or more effective than the potentially inappropriate medications they can replace. It does not presume that patients have already tried non-pharmacologic therapies. The list is not intended to be comprehensive or to give detail on deciding between these alternatives or a prioritized order of use; clinical judgment must always be used to determine how the alternatives should be applied to each individual patient. However, brief comments on the relative benefit/safety profile and preferred order of alternatives are noted when there is clear consensus based on clinical practice guidelines and/or expert opinion. Readers are guided to additional resources for more in-depth recommendations. Readers are also provided links to patient guides and other resources for help in implementing these alternative strategies into their clinical practice.

The members of American Geriatrics Society Beers Criteria® Alternatives Panel are given in Appendix 1.

Summary

- Key points
  - This document provides guidance on treatment strategies for common clinical conditions in older adults.
  - These treatment strategies, which include both pharmacologic and non-pharmacologic interventions, can be used in place of medications that are considered potentially inappropriate by the AGS Beers Criteria®.
  - This Alternatives list also includes clinician-facing and patient- and caregiver-facing resources to support the implementation of recommended treatment strategies in clinical practice.
- Why does this paper matter?
  - The Alternatives list is a companion to the AGS Beers Criteria®, which identifies medications whose potential for harm outweighs their intended benefit in older adults.
  - It addresses the need for guidance not only on what therapies to avoid but also on readily available alternative treatment strategies to use in their place.
  - This report presents recommended alternatives in a manner intended to be easily usable by front-line clinicians facing common clinical scenarios.

The primary target audience is primary care providers, but other important audiences include specialists prescribing within or outside of their specialty.

2 | Methods

2.1 | Selection of AGS Beers Criteria® Medications to Be Addressed

The alternatives list focuses primarily on commonly used medications from Table 2 of the AGS Beers Criteria®, which identifies potentially inappropriate medications to avoid in older adults in most circumstances [1]. A draft subset of medications from the AGS Beers Criteria® Table 2 to consider for this alternatives effort was developed by the panel co-chairs and was later reviewed, updated, and approved by the full expert panel, with a focus on selecting medications that are commonly used and sufficiently clinically straightforward such that a brief description of alternatives is feasible. For each included medication, the panel identified the clinical conditions in older adults for which these medications are commonly used and categorized medications by those conditions, recognizing that some medications on the AGS Beers Criteria® appear in more than one condition category.

2.2 | Panel Composition

The AGS Beers Criteria® Alternatives Panel included 19 interprofessional members drawn from Clinical Psychology, Medicine, Nursing, Pharmacy, and Physical Therapy, including 6 who also served on the 2023 AGS Beers Criteria® panel (Appendix 1). In constructing the panel, the co-chairs and AGS staff aimed to achieve a mix of members with specialized knowledge of clinical topics along with generalists who could provide a broader perspective. Selection aimed to identify two or three people per topic, including at least one person with clinical expertise or specialization in that area and one generalist. Sometimes, one person could fulfill both roles. Areas of content expertise included cardiology, psychiatry, sleep disorders, diabetes care, pain, pulmonology, urology and urogynecology, gastroenterology, dementia, and delirium, all with additional expertise in the care of older adults. Potential conflicts of interest were disclosed at the beginning of the process and shared at each panel call and are listed in the Conflicts of Interest section of this paper. Panelists were asked to update any potential conflicts throughout the project.

2.3 | Development Process

Unlike the process used to develop the AGS Beers Criteria®, the development of the Alternatives to Selected Medications in the 2023 American Geriatrics Society Beers Criteria® did not rely on a review of primary studies but rather on existing clinical practice guidelines and associated literature reviews, best-practice guidance, and literature summaries relevant to each drug/condition in question for older adults. The alternatives list refers readers to these sources for additional information (see Table S1).

The panel convened for a series of conference calls between January 2024 and September 2024. Outside of the full panel calls, work was conducted via emails and small workgroup calls.

The panel was divided into eight workgroups, each assigned a subset of medications from the AGS Beers Criteria® categorized by conditions these medications are commonly used to treat: insomnia and anxiety; allergy and pruritus; cardiovascular conditions and anticoagulation; pain; delirium, dementia, and Parkinson's disease; diabetes; gastrointestinal syndromes; and genitourinary syndromes.

Each workgroup worked with a research librarian to identify clinical practice guidelines, best clinical practice statements, and high-quality literature summaries that pertain to the treatment of the conditions of interest in older adults. Given the vast number of potentially eligible guidance documents, the approach to identifying potential documents to review was not comprehensive but pragmatic and based on expert judgment. Searches were guided by the research librarian and expertise of the panelists and included PubMed, as well as but not limited to (1) Turning Research Into Practice (TRIP) database, (2) Epistemonikos database, (3) Guideline Central, and (4) Google Scholar. If there were insufficient practice guidelines or related documents that addressed the key questions of interest, searches were conducted for systematic reviews and meta-analyses relevant to the topic areas.

2.4 | Review of Search Results and Documents, and Drafting List of Alternatives

After the list of guidance documents was assembled, workgroup members reviewed the list of documents and agreed by consensus on a limited set of these documents to use for review. Criteria

for selecting these guidance documents were based on a holistic synthesis of relevance to older adults, credibility and recognition of the source in the field, recency of publication, scientific rigor, thoroughness, and minimizing conflicts of interest. When multiple relevant guidelines met the above criteria, preference was given to guidelines from US organizations (although non-US guidelines were prioritized if they provided better information, e.g., substantively more recent, higher quality of evidence, and/or more relevant to older adults). In most cases, the aim was to have three to four guidance documents per content area selected for final review.

Workgroup members then reviewed the relevant documents for their area, with the goal of drafting a list of alternatives based on these documents and identifying useful resources for patients, caregivers, and clinicians based on their own practice and conversations with other experts, colleagues, and internet searches. Each workgroup worked with the panel co-chairs to finalize a draft list of alternatives and resources for their assigned section.

2.5 | Panel Review, Comments, and Finalization

Draft alternative lists from each workgroup were circulated to the full panel in advance of a full panel video conference focused on initial review of these lists. During this meeting, each workgroup briefly summarized the evidence on their topic and their draft list of alternatives and resources. The panel then had an opportunity to discuss and ask questions. A preliminary vote was taken by voice on each set of alternatives to help determine if there was strong consensus for being acceptable as is or with minor edits.

Following the full panel call, workgroups continued to work on their sections based on comments and feedback provided. These edited alternatives and resources were then sent to the full panel for review before a second full panel video conference, with additional edits made thereafter as needed. The final version of the alternatives list was reviewed and approved by the full panel via email.

This initial draft was shared with members of the AGS Beers Criteria® Expert Panel, the AGS Executive Committee, the AGS Clinical Practice and Models of Care committee, and representatives from the Centers for Medicare and Medicaid Services (CMS) and the Pharmacy Quality Alliance (PQA) for comment. Final edits were made based on this feedback, including discussion with relevant workgroups as needed. The final approved lists were sent to the AGS Executive Committee for final review and approval in March of 2025.

3 | Results

3.1 | General

The panel selected 30 of the 36 criteria from Table 2 of the 2023 AGS Beers Criteria®, with each criterion consisting of a single medication, medication class, or other medication grouping. The panel also included two additional criteria from the 2023 AGS Beers Criteria® Table 5: drug–drug interactions involving opioids and benzodiazepines, and opioids and gabapentinoids. Two criteria were eventually dropped pertaining to desiccated thyroid and androgens because it was determined that alternatives (levothyroxine) or indications for use (confirmed hypogonadism) are understood by clinicians. In total, alternative treatments were included for 21 conditions for which the medications, medication classes, and medication types listed in these 30 criteria are commonly used. While some conditions on this list are discrete diseases, many are symptoms or syndromes (e.g., insomnia, pruritus) that have a range of etiologies. In selected cases, we provide information on whether a medication in the alternatives list is FDA-approved for the management of specific conditions, but we do not provide such information universally across the range of medications and conditions discussed. Of special note, some of the medications identified as alternatives in this report are listed for purposes or in dosages not specified in the manufacturers' product labels, with recommendations based on practice guidelines and best practice guidance.

Alternative therapies and resources are shown in Tables 1–5 and are organized by clinical conditions that medications on the 2023 AGS Beers Criteria® are commonly used to treat. This is to facilitate usability for clinicians, who may ask "if I should not use [a medication on the AGS Beers Criteria®] to manage my patient's [clinical condition], what should I do instead to help that person?" These tables are organized as four columns: (1) conditions, (2) relevant 2023 AGS Beers Criteria® medications and associated recommendations, (3) alternatives to consider, and (4) resources for patients, caregivers, and clinicians. Footnotes provide additional information, in the interest of keeping the body of the tables streamlined for ease of use. A list of guidance documents that informed this list of alternative therapies is provided in Table S1 and organized by condition. In general, alternatives are provided in the following order: diagnostic and general considerations, non-pharmacologic interventions, then pharmacologic interventions. This reflects the fact that non-pharmacologic alternatives to AGS Beers Criteria® medications are often first-line choices and provide effective and safe management strategies yet are often overlooked.

Alternative therapies and associated resources are shown in Tables 1–5. We also note that for many conditions there are helpful patient- and clinician-facing resources to support safe and effective deprescribing of problematic medications, which are too numerous to list adjacent to each condition. Descriptions of some of these supplemental resources are found in Supporting Information 1. They include informational and motivational brochures that target deprescribing for a number of medications, clinician-facing algorithms that provide clear guidance on how to deprescribe many of these medications, and more. Finally, Figure 1 summarizes five key principles to use when applying the recommendations in this document.

Below we highlight some issues regarding alternative therapies that may be of greatest interest to clinicians.

3.2 | Antihistamines for Pruritus

For pruritus, instead of using first-generation antihistamines (whose sedating and anticholinergic properties are often troublesome for older adults), there are a variety of alternatives that vary by problem, condition, and underlying cause. Of special

TABLE 1 | Allergy and pruritus, pain, diabetes mellitus, and weight loss in older adults.

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Allergic rhinitis and associated symptoms	First-generation antihistamines *Recommendation: Avoid*	Identify and avoid allergens, where possible. Irrigate nasal passages with purified saline solution (distilled or sterilized water only) with a neti pot or similar system. *Do not use unsterilized tap water.* If using an oral antihistamine, 2nd or 3rd generation agents are preferred, e.g., loratadine, cetirizine, levocetirizine, fexofenadine.[a,b] For nasal symptoms: – Nasal antihistamine sprays (e.g., azelastine or olopatadine, which are absorbed less than oral agents and have fewer adverse effects) – Nasal corticosteroids (e.g., fluticasone, budesonide, triamcinolone) – Nasal mast cell stabilizers (e.g., cromolyn) For ocular symptoms: eye drops (ocular antihistamines or decongestants, artificial tears).	**For patients and caregivers:** Information on allergic rhinitis (UpToDate) https://www.uptodate.com/contents/allergic-rhinitis-beyond-the-basics#H1 Self-care for allergic rhinitis (MedlinePlus) https://medlineplus.gov/ency/patientinstructions/000547.htm Instructions on how to self-administer nasal sprays—see Figure 4 (BSACI) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7162111/figure/f4/ Instructions on safe use of Neti pots and nasal irrigation devices (FDA) https://www.fda.gov/consumers/consumer-updates/rinsing-your-sinuses-neti-pots-safe
Pruritus	First-generation antihistamines *Recommendation: Avoid*	Generalized pruritus is generally not responsive to antihistamines unless specifically due to a histamine-mediated etiology like urticaria. Tailor treatment of generalized pruritus to the etiology, typically either dry skin, medications (opioids, CNS medications, diuretics, many others), or underlying medical conditions. For dry skin, consider: – Hydrating emollient twice daily – Short showers (<3 min) in lukewarm water – Humidifiers – For other causes of generalized pruritus, address underlying conditions For localized pruritus, consider topical agents such as: – Topical anesthetics (e.g., lidocaine, pramoxine) – Cooling agents (e.g., menthol) – Topical steroids (e.g., hydrocortisone, triamcinolone) – Topical antihistamines (e.g., topical doxepin) – Capsaicin If using an oral antihistamine, prefer 2nd or 3rd generation agents, e.g., loratadine, cetirizine, levocetirizine, fexofenadine.[a,b]	**For patients and caregivers:** Information on causes of itching (AAFP) https://www.aafp.org/pubs/afp/issues/2022/0100/p55-s1.html Information on causes of itching and self-care (MedlinePlus) https://medlineplus.gov/itching.html **For clinicians:** Chronic pruritus review (JAMA 2024) https://jamanetwork.com/journals/jama/fullarticle/2819296

(Continues)

TABLE 1 | (Continued)

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Pain	Tricyclic antidepressant (TCAs) NSAIDs Meperidine Skeletal muscle relaxants Combination of gabapentinoids with either opioids or benzodiazepines *TCAs recommendation: Avoid* *NSAIDs recommendation: Avoid non-COX-2 selective NSAIDS for chronic use and avoid short-term scheduled use in combination with systemic steroids, anticoagulants, or antiplatelets unless alternatives are ineffective and patient can take a gastroprotective agent (e.g., PPI)* *Meperidine recommendation: Avoid* *Skeletal muscle relaxants recommendation: Avoid*[c] *Combination of gabapentinoids with opioids or benzodiazepines recommendation: Avoid combination (except when cross-tapering opioids and gabapentinoids)*	Use patient-reported outcomes pre- and post- intervention to identify clinically meaningful improvements in pain response to therapeutic options. Improving function should be a key goal in pain management. Consider non-pharmacological approaches for first-line management of chronic pain, alone or in combination with medications. Non-pharmacological options consistently recommended across guidelines for chronic pain vary by the type of pain, and may include the following:[d] – Education interventions – Exercise therapy of any type (e.g., aerobic, aquatic, strengthening, yoga, Tai Chi) – Physical therapy interventions – Needling therapies (e.g., acupuncture) – Psychological interventions (e.g., cognitive behavioral therapy, operant therapy, multicomponent biopsychosocial care, mindfulness-based interventions) – Peripheral electric and/or magnetic stimulation, repetitive transcranial magnetic stimulation (rTMS) Pharmacologic approaches should be targeted to the type of pain (nociceptive, neuropathic).[b,e] For nociceptive pain: Instead of meperidine, choose a different opioid. Instead of skeletal muscle relaxants or long-term use of NSAIDs, consider the following: – Short term use of NSAIDs – Topical NSAIDs (e.g., diclofenac gel) – COX-2 selective inhibitors – Other topical agents, including capsaicin, rubefacients and related agents (e.g., menthol-containing ointments)[f], lidocaine – Acetaminophen – Intra-articular corticosteroids For neuropathic pain: Instead of TCAs, consider the following:[g] – SNRIs – Gabapentinoids[h] – Other topical agents, including capsaicin, rubefacients and related agents (e.g., menthol-containing ointments)[f], lidocaine	**For patients and caregivers:** Physical activity and self-management education programs for arthritis (CDC) https://www.cdc.gov/arthritis/programs/index.html Resources for pain assessment and management (GeriatricPain.org, U. Iowa) https://geriatricpain.org/ Managing osteoarthritis symptoms (NCOA) https://www.ncoa.org/article/how-seniors-can-manage-osteoarthritis-symptoms Information and resources on physical therapy (APTA) https://www.choosept.com/symptoms-conditions Brochures about risks of and opportunities to deprescribe NSAIDS, chronic opioids, and other medications used for pain (EMPOWER) https://www.deprescribingnetwork.ca/patient-handouts **For clinicians:** Simplified summary, 2022 Canadian PEER chronic pain guideline—see Figure 1 (PEER) https://www.cfp.ca/content/68/3/179#F1 Guidance on deprescribing NSAIDs (Primary Health Tasmania) https://www.primaryhealthtas.com.au/wp-content/uploads/2023/03/A-guide-to-deprescribing-non-steroidal-anti-inflammatory-drugs.pdf

(Continues)

TABLE 1 | (Continued)

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Diabetes	Sliding scale insulin Sulfonylureas *Sliding scale insulin recommendation: Avoid* *Sulfonylureas recommendation: Avoid as first- or second-line choice for monotherapy or as add-on therapy, unless there are substantial barriers to using safer and more effective agents*	**Alternatives to sliding scale insulin:** – "Sliding scale insulin" refers to the use of variable doses of short-acting insulin dependent on glucose values without any basal insulin. – For patients started on sliding scale due to unstable insulin needs, the addition of basal insulin often allows for the safe discontinuation of sliding scale. For patients whose glucose levels remain uncontrolled on basal insulin, the addition of pre-prandial bolus insulin may be required. – If sliding scale measurements do not lead to any insulin for 24–48 h, stop sliding scale insulin. For nearly all older adults with Type 2 diabetes, up-titration of basal insulin and other medications can lead to the safe discontinuation of sliding scale insulin within a few weeks. **Alternatives to sulfonylureas:** – Metformin remains a first-line medication option for most older adults with hyperglycemia. If metformin is chosen, ensure patients are on the maximal tolerated dose (as appropriate given renal function) before increasing other medications. – For many older adults, alternatives to sulfonylureas include SGLT2 inhibitors, GLP1-RAs, and DPP4 inhibitors. Selection among agents should be based in part on comorbid conditions, treatment goals, and preferences.	**For patients and caregivers:** Diabetes guideline summary for patients (VA/DoD): https://www.healthquality.va.gov/guidelines/CD/diabetes/VADoD-Diabetes-CPG-Patient-Summary_final_508.pdf Information and resources on diabetes (CDC): https://www.cdc.gov/diabetes/index.html **For clinicians:** 2023 VA/DoD diabetes guideline summary (VA/DoD): https://www.healthquality.va.gov/guidelines/CD/diabetes/VADoD-Diabetes-CPG-Provider-Summary_final_508.pdf 2023 VA/DoD diabetes guideline resources, (VA/DoD): https://www.healthquality.va.gov/guidelines/cd/diabetes/index.asp
Weight Loss (involuntary or undesired)	Megestrol *Recommendation: Avoid*	Treatment should focus on non-pharmacologic strategies including: – Feeding assistance – Identifying and addressing contributing medications (e.g., medications that affect taste or cause dry mouth, nausea, or anorexia) – Providing appealing foods – Social support – Ensuring adequate access to food (e.g., home meal delivery programs, lifting dietary restrictions where appropriate) Consider calorically dense nutritional supplements and referral to a dietician. Evaluate dentition, chewing, and swallowing and refer for swallow evaluation if appropriate. For patients with depression, consider mirtazapine.	**For patients and caregivers:** Tips on how to gain weight (AARP) https://www.aarp.org/health/healthy-living/info-2023/how-to-gain-weight-safely.html **For clinicians:** Overview of unintentional weight loss in older adults (Am Fam Phys 2021) https://www.aafp.org/pubs/afp/issues/2021/0700/p34.html Investigation and management of unintentional weight loss in older adults: review (BMJ 2011) https://www.bmj.com/content/342/bmj.d1732

Abbreviations: AAFP = American Association of Family Physicians; APTA = American Physical Therapy Association; BSACI = British Society for Allergy and Clinical Immunology; CNS = central nervous system; DoD = US Department of Defense; DPP4 = dipeptidyl peptidase-4; GLP1 = glucagon-like peptide 1; NCOA = National Council on Aging; NSAID = non-steroidal anti-inflammatory drug; SGLT2 = sodium glucose co-transporter-2; SNRI = serotonin-norepinephrine reuptake inhibitor; TCA = tricyclic antidepressant; VA = US Department of Veterans Affairs.

[a]Second and third generation oral antihistamines are less sedating and have fewer anticholinergic effects than first generation antihistamines. Among second and third generation agents, fexofenadine is among the least sedating even at high doses.

[b]Counsel patients to follow directions on over-the-counter products including amount and duration of use. Community and other pharmacists can be valuable resources for information and counseling.

[c]This recommendation from the AGS Beers Criteria® covers skeletal muscle relaxants such as cyclobenzaprine and methocarbamol but does not include antispasticity agents such as baclofen and tizanidine.

[d]Other therapies for which there is not enough consensus to recommend for or against that may be used depending on the type of pain include non-pharmacologic options such as chiropractic therapy, hydrotherapy, manual therapy, massage therapy, dry needling, heat and cold therapy, electrotherapy, taping and braces, shoe orthotics, and footwear, and pharmacologic and related options such as glucocorticoid injection (hip and polyarticular osteoarthritis), intraarticular hyaluronic acid injections, platelet-rich plasma injections, stem cell injection, glucosamine and chondroitin individually or combined (glenohumeral joint osteoarthritis), nutraceuticals, and cannabidiol (CBD)-containing therapies.

[e]For refractory symptoms, referral to a pain specialist may be helpful to consider advanced therapies, for example, injections, implantable devices, surgery.

[f]Use caution with the quantity and duration of use of methyl salicylate-containing products (e.g., limit to ≤7 days of continuous use) due to the risk of systemic salicylate toxicity. Methyl salicylate is commonly included in varying concentrations in menthol-based topical agents sold under brand names BenGay, Icy Hot, Salonpas, and others. See the product label for product-specific instructions.

[g]Refer to AGS Beers Criteria® for cautions about these alternative medications.

[h]Gabapentinoids (gabapentin, pregabalin) should not be used concurrently with opioids due to increased risk of severe adverse events, as noted in the AGS Beers Criteria®.

TABLE 2 | Cardiovascular conditions and anticoagulation in older adults.

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Atrial fibrillation/ flutter and venous thromboembolism (anticoagulation)	Warfarin Rivaroxaban *Warfarin recommendation: Avoid as initial therapy for non-valvular atrial fibrillation (NVAF) or venous thromboembolism (VTE) unless alternatives are contraindicated or there are substantial barriers to using alternatives. For patients using warfarin chronically, may be reasonable to continue depending on circumstances* *Rivaroxaban recommendation: Avoid for long-term treatment of NVAF or VTE in favor of safer anticoagulants*	Consider other DOACs (e.g., apixaban, edoxaban). Pay attention to indication-specific dosing of DOACs – For most people with AF, full dose is preferred. Reduced doses are indicated in renal dysfunction and select other situations. – For long-term treatment of VTE, guidelines suggest reducing dose of certain agents after 6 months (e.g., for apixaban, reduce dose to 2.5 mg twice daily after 6 months). In patients with NVAF at moderate to high risk of stroke and high risk of major bleeding with oral anticoagulants, consider non-pharmacologic alternatives, e.g., percutaneous left atrial appendage occlusion and surgical left atrial appendage ligation or removal.	**For patients and caregivers:** Information and resources on atrial fibrillation (AHA) https://www.heart.org/en/health-topics/atrial-fibrillation/afib-resources-for-patients--professionals **For clinicians:** Flow chart of antithrombotic options in atrial fibrillation, 2023 ACC/AHA/ACCP/HRS guideline—see Figure 10 (ACC/AHA/ACCP/HRS): https://www.ahajournals.org/doi/10.1161/CIR.0000000000001193#F10
Atrial fibrillation/flutter (rate/rhythm control)	Amiodarone Dronedarone Digoxin *Amiodarone recommendation: Avoid as first-line treatment for AF unless patient has heart failure or substantial LVH* *Dronedarone recommendation: Avoid in patients with permanent AF or severe or recently decompensated HF; use caution in patients with NYHA class I-II HFrEF* *Digoxin recommendation: Avoid as first line therapy for AF or HF. If used for these indications, avoid doses > 0.125 mg/d*	Choice of alternatives depends on whether rhythm or rate control is selected. *If rhythm control is selected:* – Preferred therapy varies by clinical scenario including presence or absence of structural heart disease and heart failure (see Resources column for guidelines). – For many older adults seeking rhythm control, dofetilide and sotalol are preferred antiarrhythmic agents. Initiation of dofetilide and sotalol require hospitalization, and referral to a specialist should be considered. If the patient has normal LV function, no CAD or prior MI, and no significant structural heart disease (e.g., LVH), other options include dronedarone, flecainide, and propafenone. – Non-pharmacologic alternatives for rhythm control include catheter ablation and surgical ablation (Maze procedure). *If rate control is selected:* – Beta-blockers are an appropriate rate-control alternative to digoxin for most patients. If the patient has LVEF > 40%, nondihydropyridine calcium channel blockers (diltiazem, verapamil) can also be used. – Non-pharmacologic alternatives for rate control include AV nodal ablation with permanent pacemaker.	**For patients and caregivers:** Information and resources on atrial fibrillation (AHA) https://www.heart.org/en/health-topics/atrial-fibrillation/afib-resources-for-patients--professionals **For clinicians:** Algorithm for drug therapy to maintain sinus rhythm, 2023 ACC/AHA/ACCP/HRS guideline—see Figure 23 (ACC/AHA/ACCP/HRS): https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000001193#F23 Concise information on antiarrhythmic drugs and monitoring, 2023 ACC/AHA/ACCP/HRS guideline—see Tables 23–25 (ACC/AHA/ACCP/HRS) https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000001193#T23 Algorithm for AF long-term rate control, 2023 ACC/AHA/ACCP/HRS guideline—see Figure 18 (ACC/AHA/ACCP/HRS 2023): https://www.ahajournals.org/doi/full/10.1161/CIR.0000000000001193#F18

(Continues)

TABLE 2 | (Continued)

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Heart failure	Digoxin *Recommendation: Avoid as first line therapy for AF or HF. If used for these indications, avoid doses > 0.125 mg/d.*	Initiate guideline-directed medical therapy for HFrEF before considering digoxin. First line agents include: sacubitril/valsartan (or an ACEI/ARB if sacubitril/valsartan is not tolerated or unaffordable), beta blocker, MRA, and SGLT2i. Hydralazine-nitrates may be used for Black patients with NYHA class III-IV HFrEF. Use diuretics as needed for fluid retention. Advanced non-pharmacologic adjuncts for HFrEF include cardiac resynchronization therapy (CRT), which requires referral to a cardiac specialist.	**For patients and caregivers:** Information and resources on heart failure (AHA) https://www.heart.org/en/health-topics/heart-failure **For clinicians:** Algorithm for treatment of HFrEF stages C and D, 2022 AHA/ACC/HFSA guideline—see Figure 6 (AHA/ACC/HFSA): https://www.ahajournals.org/doi/10.1161/CIR.0000000000001063#F6 Additional therapies for HFrEF once GDMT optimized, 2022 AHA/ACC/HFSA guideline—see Figure 7 (AHA/ACC/HFSA): https://www.ahajournals.org/doi/10.1161/CIR.0000000000001063#F7
Hypertension	Non-selective peripheral alpha-1 blockers (e.g., doxazosin, prazosin, terazosin) Central alpha-1 agonists including clonidine, guanfacine, others Immediate-release nifedipine *Non-selective alpha-1 blockers recommendation: Avoid use as antihypertensive* *Central alpha-1 agonists recommendation: Avoid clonidine as first-line treatment for hypertension; Avoid other central alpha-agonists for the treatment of hypertension* *Immediate-release nifedipine recommendation: Avoid*	Non-pharmacologic options include the DASH diet, exercise and weight loss, treatment of obstructive sleep apnea (if present). First-line drug therapies for HTN include thiazide diuretics, calcium channel blockers, ACEIs, and ARBs. Beta blockers may be indicated in some cases (e.g., recent MI or acute coronary syndrome, HFrEF, AF, or angina). Alternatives to immediate-release nifedipine include other calcium channel blockers (e.g., amlodipine, felodipine, nifedipine ER). Additional agents for use in patients with resistant HTN include spironolactone and hydralazine, after considering other causes of resistant HTN (e.g., medication non-adherence, hyperaldosteronism).	**For patients and caregivers:** Information and resources on hypertension (AHA) https://www.heart.org/en/health-topics/high-blood-pressure DASH diet information and recipes (NIH) https://www.nhlbi.nih.gov/education/dash-eating-plan **For clinicians:** Selection of initial medication for management of HTN, 2017 AHA/ACC/AGS/other guideline—see Section 8.1.6 (2017 AHA/ACC/AGS/other) https://www.ahajournals.org/doi/10.1161/HYP.0000000000000065 Recommendations for HTN management in people with stable ischemic heart disease, 2017 AHA/ACC/AGS/other guideline—see Section 9.1 (2017 AHA/ACC/AGS/other multispecialty) https://www.ahajournals.org/doi/10.1161/HYP.0000000000000065

Abbreviations: ACC = American College of Cardiology; ACCP = American College of Clinical Pharmacy; ACEI = angiotensin converting enzyme inhibitor; AF = atrial fibrillation; AGS = American Geriatrics Society; AHA = American Heart Association; ARB = angiotensin receptor blocker; CAD = coronary artery disease; CRT = cardiac resynchronization therapy; DASH = Dietary Approaches to Stop Hypertension; DOAC = direct-acting oral anticoagulant; ER = extended release; GDMT = guideline-directed medical therapy; HF = heart failure; HFrEF = heart failure with reduced ejection fraction; HFSA = Heart Failure Society of America; HRS = Heart Rhythm Society; HTN = hypertension; LV = left ventricular; LVEF = left ventricular ejection fraction; LVH = left ventricular hypertrophy; MI = myocardial infarction; MRA = mineralocorticoid receptor antagonist; NVAF = non-valvular atrial fibrillation; NYHA = New York Heart Association; SGLT2i = sodium glucose co-transporter-2 inhibitor; VTE = venous thromboembolism.

TABLE 3 | Central nervous system and neuropsychiatric conditions in older adults.

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Insomnia	Benzodiazepines Z-drugs First-generation antihistamines Tricyclic Antidepressants Barbiturates *Recommendation (all): Avoid*	Assess for health conditions and other factors contributing to sleep disruption (e.g., sleep environment, pain, medications or substances which interfere with sleep, obstructive sleep apnea). Cognitive behavioral therapy for insomnia (CBT-I) is first-line treatment for chronic insomnia in older adults. CBT-I may be delivered by a trained provider or via other formats (e.g., digital CBT-I; see Resources column); evidence supports both. Core components of CBT-I include sleep restriction, stimulus control therapy, cognitive therapy, relaxation, and sleep hygiene. However, sleep hygiene alone is not effective for chronic insomnia. If CBT-I alone is unsuccessful, use shared decision-making when considering adding short-term pharmacological therapy. Medications which may be safer (but not completely safe) and have evidence of effectiveness for insomnia in older adults include low-dose doxepin (up to 6 mg), dual orexin receptor antagonists (e.g., daridorexant, lemborexant, suvorexant), and ramelteon, all for short-term use. However, formal, evidence-based guidelines addressing efficacy and/or safety of these medications in older adults are not available. There is insufficient evidence to recommend trazodone, mirtazapine, melatonin, and other medications commonly prescribed for older adults with insomnia disorder. Guidelines do not recommend these drugs for insomnia disorder in adults of any age.	**For patients and caregivers:** Digital CBT-I tools. Examples include: • Insomnia Coach digital CBT-I app (VA), https://mobile.va.gov/app/insomnia-coach • SleepEZ digital CBT-I (VA), https://veterantraining.va.gov/insomnia/ • Curated list of digital CBT-I and other resources (Sleepwell), https://mysleepwell.ca/cbti/sleepwell-recommends/ Sleep hygiene recommendations (as a component of CBT-I) (AASM) https://sleepeducation.org/healthy-sleep/healthy-sleep-habits/ Self-help books for insomnia (see footnote)[a] **For clinicians:** Insomnia toolkit for clinicians (AASM) https://aasm.org/clinical-resources/insomnia-toolkit/ Sleep education resources (AASM) https://sleepeducation.org/resources-for-health-care-professionals/ CBT-I provider training online course (CBTIweb) https://cbtiweb.org/

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TABLE 3 | (Continued)

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Anxiety symptoms	Benzodiazepines First-generation antihistamines Tricyclic Antidepressants Barbiturates Meprobamate *Recommendation (all): Avoid*	Clarify whether symptoms are related to an underlying psychiatric disorder, e.g., Generalized Anxiety Disorder, Panic Disorder, PTSD. Some anxiety symptoms may be an appropriate response to life events and can be addressed through non-pharmacologic supports until symptoms improve. Evaluate other conditions that may be contributing to anxiety, such as comorbid medical disorders, mental health disorders (e.g., major depression), substance misuse, and medications. This is of special importance for new-onset anxiety, as late-life onset of anxiety disorders is uncommon. Non-pharmacologic interventions are first-line therapy for many psychiatric disorders that present with anxiety. Tailor such treatment to the specific diagnosis; examples of options include individual or group psychotherapy approaches including cognitive behavioral therapy, acceptance and commitment therapy, mindfulness-based stress reduction, and imagery rehearsal therapy (for nightmares). If pharmacologic therapy is indicated, consider agents with a safer adverse effect profile for older adults, including the following. Note that the AGS Beers Criteria® cautions use of SSRIs and SNRIs in older adults with a history of falls, due to increased fall risk:[b] – *Generalized Anxiety Disorder:* escitalopram, sertraline, venlafaxine, duloxetine, buspirone, pregabalin[c] – *Panic Disorder:* sertraline, escitalopram, venlafaxine – *Social Anxiety Disorder:* escitalopram, sertraline, venlafaxine (also: beta-blocker, e.g. propranolol, for performance-only anxiety) – *PTSD, global symptoms:* sertraline, venlafaxine – *PTSD, nightmares:* prazosin	**For patients and caregivers:** Brochure on why and how to stop anti-anxiety medications (EMPOWER) https://www.deprescribingnetwork.ca/patient-handouts Information and resources on anxiety (ADAA) https://adaa.org/ Information and resources on PTSD (VA) https://www.ptsd.va.gov/index.asp Self-help books https://www.abct.org/self-help-book-recommendations/ **For clinicians:** Algorithm for deprescribing benzodiazepines (deprescribing.org) https://deprescribing.org/wp-content/uploads/2019/03/deprescribing_algorithms2019_BZRA_vf-locked.pdf Other resources on deprescribing benzodiazepines (deprescribing.org) https://deprescribing.org/resources/deprescribing-guidelines-algorithms/ Detailed information on tapering benzodiazepines (Ashton) https://www.benzo.org.uk/manual/ Information and resources on PTSD (VA) https://www.healthquality.va.gov/guidelines/mh/ptsd/index.asp

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TABLE 3 | (Continued)

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Delirium	Antipsychotics *Recommendation: Avoid except in FDA-approved indications (e.g., schizophrenia, adjunctive treatment of major depression) or short-term use as an antiemetic*	First-line management includes multicomponent nonpharmacological interventions such as the AGS CoCare: HELP Program. No pharmacologic treatment is recommended as a routine response to delirium in all populations. Antipsychotics or sedatives may be considered for short term use (e.g., hours to days) to address severe behavioral disturbances that pose a substantial risk to patients or staff and are refractory to non-pharmacologic interventions. Such use should be accompanied by discussion and documentation of risk and prevention of prolonged use.[d]	**For patients and caregivers:** Information and resources on delirium (DeliriumCentral.org) https://www.deliriumcentral.org/family-members-patients/ Guidance for families (ADS) https://americandeliriumsociety.org/patients-families/family-guidance/ **For clinicians:** Delirium prevention, assessment, and management tools (ADS) https://americandeliriumsociety.org/healthcare-professionals/clinical-application/ AGS CoCare: HELP program (AGS; requires paid subscription) https://www.americangeriatrics.org/programs/ags-cocarer Delirium management algorithms (International Delphi panel) https://pmc.ncbi.nlm.nih.gov/articles/instance/10861222/bin/NIHMS1959412-supplement-Additional_File_2.pdf Guidance on deprescribing antipsychotics (deprescribing.org) https://deprescribing.org/resources/deprescribing-guidelines-algorithms/
Agitation and/or aggression in people with dementia	Antipsychotics *Recommendation: Avoid except in FDA approved indications (e.g., schizophrenia, adjunctive treatment of major depression) or short-term use as an antiemetic.*	Evaluate and address potential contributing factors to agitation and/or aggression in people with dementia, including clinical conditions (e.g., pain, constipation, urinary retention, acute illness), medication adverse effects, and environmental stressors. Non-pharmacological strategies are first line and may need to be modified as the disease progresses and symptoms change. If non-pharmacologic interventions fail to adequately manage agitation and/or aggression, pharmacologic interventions such as antipsychotics may be considered when the patient is at risk of harming themselves or others and risks are discussed with surrogate decision-makers. If started, use the lowest possible dose for the least amount of time, combine with non-pharmacological strategies, and perform ongoing assessment of clinical effects and risk/benefit ratio to minimize duration of use.[e] Similar principles of evaluating potential contributors and attempting non-pharmacologic management strategies apply for other types of behavioral and psychological symptoms of dementia (e.g., apathy, anxiety, delusions).	**For patients and caregivers:** Information for caregivers about managing BPSD (Alzheimer's Association) https://www.alz.org/help-support/caregiving/stages-behaviors **For clinicians:** Resources on dementia and BPSD (NIA) https://www.nia.nih.gov/health/health-care-professionals-information/alzheimers-and-related-dementias-resources#tools Guidance on deprescribing antipsychotics (deprescribing.org) https://deprescribing.org/resources/deprescribing-guidelines-algorithms/

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TABLE 3 | (Continued)

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Parkinson's disease	Benztropine and trihexyphenidyl *Recommendation: Avoid*	Optimize exercise/strengthening, balance, and physical therapy at time of diagnosis and throughout the course of care. Non-motor symptoms such as psychosis may reflect underlying Parkinson's disease progression, an adverse effect of treatment, or signal other systemic processes (e.g., infection) and warrant comprehensive assessment.[e] First-line medication treatment: levodopa (often in combination with carbidopa) and dopamine agonists are typically preferred. If symptoms are mild or if daily dosing preferred: consider MAO-B inhibitors (rasagiline is best tolerated). Amantadine can be useful for managing levodopa-induced dyskinesia and "off" time in advanced disease but should be used with caution in older populations. If inadequate control of symptoms with medications: surgical therapies such as deep brain stimulation or focused ultrasound can be considered.	**For patients and caregivers:** Information and resources for care partners (Parkinson's Foundation) https://www.parkinson.org/resources-support/carepartners Information and resources for care partners (Michael J. Fox Foundation) https://www.michaeljfox.org/news/care-partners **For clinicians:** 2019 Canadian Parkinson's Disease Guideline (Parkinson Canada) https://www.parkinsonclinicalguidelines.ca/wp-content/uploads/2019/10/canadian-guideline-for-parkinson-disease-full.pdf
Tardive dyskinesia	Benztropine and trihexyphenidyl *Recommendation: Avoid*	Strong anticholinergic medications such as benztropine and trihexyphenidyl are not effective treatments for tardive dyskinesia. Reversible causes of tardive dyskinesia should be identified and addressed, including medications and deprescribing attempts (e.g., metoclopramide, haloperidol). For tardive dyskinesia that does not resolve after discontinuing the responsible medication and that is distressing to the patient, clinicians may consider offering an FDA-approved medication (e.g., valbenazine, deutetrabenazine).	**For patients and caregivers:** Information and resources on TD (NOTD) https://tdhelp.org/resources/ Information and resources on TD (NAMI) https://www.nami.org/about-mental-illness/treatments/mental-health-medications/tardive-dyskinesia/ **For clinicians:** Brief summary of guidelines for treatment of tardive syndromes (AAN) https://www.aan.com/Guidelines/Home/GetGuidelineContent/613

Abbreviations: AAN = American Academy of Neurology; AASM = American Academy of Sleep Medicine; ABCT = Association for Behavioral and Cognitive Therapies; ADAA = Anxiety and Depression Association of America; ADS = American Delirium Society; AGS = American Geriatrics Society; BPSD = behavioral and psychological symptoms of dementia; CBT-I = cognitive behavioral therapy for insomnia; MAO-B = Monoamine Oxidase B; NAMI = National Alliance on Mental Illness; NIA = National Institute on Aging; NOTD = National Organization for Tardive Dyskinesia; PTSD = post-traumatic stress disorder; TCA = tricyclic antidepressant; VA = US Department of Veterans Affairs; Z-drugs = non-benzodiazepine benzodiazepine receptor agonists (zolpidem, zaleplon, zopiclone, eszopiclone).

[a]Books to recommend to patients and caregivers include: End the Insomnia Struggle (Colleen Ehrnstrom and Alisha Brosse); Goodnight Mind: Turn Off Your Noisy Thoughts and Get a Good Night's Sleep (Colleen Carney and Rachel Manber); Hello Sleep (Jade Wu); No More Sleepless Nights (Pater Hauri and Shirley Linde); Overcoming Insomnia: A Cognitive-Behavioral Therapy Approach (Jack Edinger and Colleen Carney); Quiet Your Mind and Get to Sleep: Solutions to Insomnia for Those with Depression, Anxiety, or Chronic Pain (Colleen Carney and Rachel Manber); Say Good Night to Insomnia (Gregg Jacobs); The Insomnia Workbook (Stephanie Silberman); The One-Week Insomnia Cure: Learn to Solve Your Sleep Problems (Jason Ellis).

[b]Among the medications within each disorder listed below, the following are approved by FDA: Generalized anxiety disorder—escitalopram, venlafaxine, duloxetine, buspirone; Panic disorder—venlafaxine; Social anxiety disorder—sertraline, venlafaxine; PTSD (global symptoms)—sertraline, venlafaxine. For management of generalized anxiety disorder, buspirone and pregabalin can be used as monotherapy or as an augmentation agent.

[c]Gabapentinoids (gabapentin, pregabalin) should not be used concurrently with opioids due to an increased risk of severe adverse events, as noted in the AGS Beers Criteria®.

[d]When pharmacologic strategies are used, where feasible, minimize use of other high-risk medications identified in the AGS Beers Criteria® (see European Society of Anaesthesiology and Intensive Care Medicine 2024 Guidelines for Postoperative Delirium).

[e]Brexpiprazole is the only atypical antipsychotic that is FDA-approved for agitation associated with Alzheimer's dementia, and pimavanserin is the only atypical antipsychotic that is FDA-approved for psychosis associated with Parkinson's disease. However, like other antipsychotics, these medications carry a boxed warning for increased mortality risk in older adults with dementia. Therefore, all antipsychotic medications should be limited to situations where the patient is at risk of harming themselves or others, used at the lowest possible dose for the least amount of time, and should be combined with non-pharmacological strategies.

TABLE 4 | Gastrointestinal conditions in older adults.

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
GERD and associated symptoms	Proton pump inhibitors *Recommendation: Avoid use for > 8 weeks unless indicated for high-risk patients or failure to respond to less intensive therapy.*	First line interventions are non-pharmacologic; these include: – Lifestyle changes (e.g., stop smoking) – Dietary behaviors (e.g., avoid trigger foods) – Relaxation strategies – Weight management – Not eating within 2–3 hours of bedtime – Elevating head of the bed – Awareness of the connection between gut and the brain ("gut-brain axis") For breakthrough symptoms: acid-protective therapies containing alginate.[a,b] For nocturnal symptoms: nighttime H2 receptor antagonists. For those on twice daily PPI: consider dose reduction to once daily, if not complete discontinuation. For functional heartburn or reflux disease associated with esophageal hypervigilance, reflux hypersensitivity, and/or behavior disorders: consider pharmacologic neuromodulation and/or referral to a behavioral therapist for hypnotherapy, cognitive behavioral therapy, diaphragmatic breathing, and relaxation strategies.	**For patients and caregivers:** Information and resources about acid reflux (ACG) https://gi.org/topics/acid-reflux/ One-page infographic (ACG) https://webfiles.gi.org/docs/patients/GERD-infographic-final_2022.pdf Information on causes and management of heartburn symptoms (My GI Health) https://mygi.health/education/symptoms/heartburn Information on causes and management of acid reflux (My GI Health) https://mygi.health/education/diseases/acid-reflux **For clinicians:** Best practice advice for management of GERD (AGA) https://gastro.org/clinical-guidance/personalized-approach-to-the-evaluation-and-management-of-gastroesophageal-reflux-disease-gerd/ Proton pump inhibitor deprescribing algorithm (deprescribing.org) https://deprescribing.org/resources/deprescribing-guidelines-algorithms/
Gastroparesis (chronic) and associated nausea	Metoclopramide *Recommendation: Avoid except for short-term management of gastroparesis (do not exceed 12 weeks use)*	First line management includes dietary changes: – Foods that are soft, small, and easy to chew into small pieces before swallowing (small particle diet) – Frequent small meals – Avoid fatty, spicy, acidic, and high fiber meals – Add soups or liquid-containing meals to diet – Follow tips on preparation of fruits and vegetables to minimize discomfort (see Resources column) Consider treatments for symptomatic relief of gastroparesis symptoms, i.e., ginger 1 mg twice daily or ondansetron for nausea. Consider short course of erythromycin 50–100 mg 4 times a day, given 30–45 min before main meals and at bedtime. For people with diabetes, control glucose.	**For patients and caregivers:** Causes of and treatments for gastroparesis (ACG) https://gi.org/topics/gastroparesis/ One-page infographic (ACG) https://webfiles.gi.org/docs/patients/22ACGMag-gastroparesis-one-pager.pdf Tips on how to prepare fruits and vegetables to minimize discomfort (AGA) https://patient.gastro.org/gastroparesis-nutrition-therapy/ Information on causes and pharmacologic and non-pharmacologic treatments (My GI Health) https://mygi.health/education/diseases/gastroparesis **For clinicians:** Best practice advice for management of refractory gastroparesis (AGA) https://www.sciencedirect.com/science/article/pii/S1542356521011514?via%3Dihub Gastroparesis guideline, ACG 2022 (ACG) https://journals.lww.com/ajg/fulltext/2022/08000/acg_clinical_guideline__gastroparesis.15.aspx

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TABLE 4 | (Continued)

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Intestinal cramping and diarrhea	GI antispasmodics *Recommendation: Avoid*	Identify and address underlying etiology. Encourage dietary changes: – Avoid triggering foods (e.g., gas-producing foods such as beans, broccoli, cabbage) – Trial of a low FODMAP diet Gut directed psychotherapies. For diarrhea: antidiarrheals such as loperamide (for short-term use).[b]	**For patients and caregivers:** Information and resources on irritable bowel syndrome (ACG) https://gi.org/topics/irritable-bowel-syndrome/ Information and resources on irritable bowel syndrome (MyGiHealth) https://mygi.health/education/diseases/ibs Information on low FODMAP diet (AGA) https://patient.gastro.org/low-fodmap-diet/ **For clinicians:** ACG guideline on irritable bowel syndrome (ACG) https://journals.lww.com/ajg/fulltext/2021/01000/acg_clinical_guideline__management_of_irritable.11.aspx Information on low FODMAP diet (ACG) https://gi.org/topics/low-fodmap-diet/
Constipation	Mineral oil (oral) *Recommendation: Avoid*	Identify and address underlying etiology. First-line management comprises lifestyle modification including: – Scheduled toileting after meals – Increased fluid intake – Increased intake of fiber – Exercise and ambulation Consider stimulant laxatives (e.g., senna) and/or osmotic laxatives (e.g., polyethylene glycol, magnesium-containing laxatives).[b] For symptoms not responding to above: consider secretagogues (e.g., lubiprostone, linaclotide, plecanitide) and serotonin type 4 agonist (prucalopride).	**For patients and caregivers:** Information and resources on constipation (ACG) https://gi.org/topics/constipation-and-defection-problems/ Information and resources on constipation (MyGIHealth) https://mygi.health/education/symptoms/constipation https://mygi.health/education/diseases/constipation-and-defecation-problems Brief handout on idiopathic constipation (ACG) https://webfiles.gi.org/links/patients/Chronic_Idiopathic_Constipation_One-Pager_based_on_ACG_AGA_Guidelines_2023.pdf **For clinicians:** Overview of management of constipation in older adults (Am Fam Phys 2015) https://www.aafp.org/pubs/afp/issues/2015/0915/p500.html

Abbreviations: ACG = American College of Gastroenterology; AGA = American Gastroenterological Association; FODMAP = Fermentable Oligosaccharides, Disaccharides, Monosaccharides, and Polyols (carbohydrates that are more difficult to digest); GERD = gastroesophageal reflux disease.

[a]Alginate (alginic acid)-containing therapies are sold under a variety of brand names. They work by creating a low-density gel that floats atop gastric contents, creating a physical barrier to acid reaching the esophageal mucosa. Avoid ingesting a variety of other medications within 2 hours before or after alginate use due to impacts on drug absorption.

[b]Counsel patients to follow directions on over-the-counter products, including amount and duration of use. Community and other pharmacists can be valuable resources for information and counseling.

TABLE 5 | Genitourinary conditions in older adults.

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Nocturia and nocturnal polyuria	Desmopressin *Recommendation: Avoid for treatment of nocturia or nocturnal polyuria.*	Start by addressing non-urological causes of nocturnal polyuria including: – Manage fluids (timing, alcohol, caffeine, avoid evening dosing of diuretics) – Manage daytime edema (treat contributing causes, use compression stockings, elevate legs during daytime) – Address the "SCREeN" conditions: *s*leep (especially sleep apnea), *c*ardiovascular (congestive heart failure), *r*enal (CKD), *e*ndocrine (diabetes), and *n*eurological Behavioral therapies for lower urinary tract symptoms including adjusting fluids and bladder retraining with pelvic floor muscle exercises. For symptoms due to overactive bladder: consider β-3 agonists over antimuscarinic agents due their safer adverse event profile in older adults. For women, also consider vaginal estrogen. For men with BPH-associated lower urinary tract symptoms: consider uroselective alpha-1 blockers, 5-alpha reductase inhibitors.	**For patients and caregivers:** iUFlow—free app for recording a bladder diary *Google Play Store:* https://play.google.com/store/apps/details?id=com.paperact.android.iuflow&hl=en_US&pli=1 *Apple App Store:* https://apps.apple.com/us/app/iuflow-voiding-bladder-diary/id935581221 Information and resources on nocturia (Urology Care Foundation) https://www.urologyhealth.org/urology-a-z/n/nocturia Information on causes and non-pharmacologic management of nocturia (sleepfoundation.org) https://www.sleepfoundation.org/physical-health/nocturia-or-frequent-unrination-night **For clinicians:** Summary of nocturia diagnosis and treatment pathways—see Figures 2 and 3 (ICS) https://www.ics.org/document/5948 Bladder diary to assess nocturnal polyuria (Urology Care Foundation) https://www.urologyhealth.org/resources/bladder-diary Concise review of diagnosis and management of nocturia (Stat Pearls) https://www.ncbi.nlm.nih.gov/books/NBK518987/

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TABLE 5 | (Continued)

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Genitourinary syndrome of menopause (GSM) including vasomotor symptoms (hot flashes), vulvovaginal atrophy, and urinary symptoms	Systemic estrogens *Recommendation: Do not initiate systemic estrogen (e.g., oral, transdermal); consider deprescribing among older women already taking this medication; do not use systemic estrogen to manage incontinence (all types)*	For GSM-associated bladder symptoms:[a] – Behavioral interventions, pelvic floor muscle training – Vaginal estrogen – For pharmacologic management of overactive bladder symptoms, consider β-3 agonists over antimuscarinic agents due their safer adverse event profile in older adults For GSM-associated vaginal atrophy or dyspareunia: – Non-hormonal vaginal lubricants/moisturizers[b] – Pelvic floor physical therapy – Intravaginal medications including estrogen, dehydroepiandrosterone (DHEA, prasterone), hyaluronic acid – Ospemifene For GSM-associated vasomotor symptoms (e.g., hot flashes):[c] – Cognitive behavioral therapy, hypnosis – SSRIs (paroxetine, citalopram, escitalopram) or SNRIs (venlafaxine) – Gabapentin – Neurokinin 3 receptor antagonist (fezolinetant)	**For patients and caregivers:** Information and resources (IUA): https://www.yourpelvicfloor.org/conditions/genitourinary-syndrome-of-menopause-gsm/ Information and resources (AUGS): https://www.voicesforpfd.org/ Condition fact sheets (AUGS) https://www.augs.org/patient-fact-sheets/ **For clinicians:** Algorithm for diagnosis and treatment of overactive bladder—see Figure (AUA/SUFU) https://www.auajournals.org/doi/10.1097/JU.0000000000003985#F1 Treatment of GSM—see Figure (management algorithm); Table 3 (OTC nonhormone and vaginal moisturizers); Table 4 (non-systemic hormone therapy options) (Clin Obstet Gynecol 2024) https://journals.lww.com/clinicalobgyn/fulltext/2024/03000/clinical_practice_guidelines_for_managing.11.aspx Urinary rehabilitation guidelines on non-pharmacologic management—see Figure 1 (APHPT) https://journals.lww.com/jwphpt/fulltext/2023/10000/clinical_practice_guidelines__rehabilitation.3.aspx Bladder anticholinergics and dementia risk—white paper (SUFU) https://onlinelibrary.wiley.com/doi/10.1002/nau.25037

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TABLE 5 | (Continued)

Condition	Relevant AGS Beers Criteria® medications	Alternatives to consider (recommendations)	Resources
Recurrent UTIs in Women	Systemic estrogens *Recommendation: Do not initiate systemic estrogen (e.g., oral, transdermal); consider deprescribing among older women already taking this medication; do not use systemic estrogen to manage incontinence (all types)*	First-line preventive therapy for recurrent UTIs in most older women is vaginal estrogen. Many experts recommend trialing non-pharmacological and/or non-antibiotic interventions before resorting to suppressive antibiotics. Evidence for other preventive approaches varies in extent and quality. Such approaches include:[b] – Increasing fluid intake – Behavioral modifications – Methenamine hippurate – Cranberry products – D-mannose – Glycosaminoglycan However, if necessary prophylactic antibiotics such as trimethoprim or fosfomycin may be used.	**For patients and caregivers:** UTI patient fact sheet (AUGS): *English:* https://www.voicesforpfd.org/assets/2/6/UTI_LARGE_PRINT.pdf *Spanish:* https://www.voicesforpfd.org/assets/2/6/UTI_Spanish.pdf What Should I Know About Recurrent UTIs in Older Women? Patient page. (JAMA Intern Med, 2024) https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2819818 **For clinicians:** Algorithm for diagnosis and treatment of recurrent UTIs in women, 2019 AUA/CUA/SUFU guideline—see Figure (AUA/CUA/SUFU) https://www.auajournals.org/doi/10.1097/JU.0000000000000296#F1 Overview of recurrent UTIs (StatPearls) https://www.ncbi.nlm.nih.gov/books/NBK557479/ Recurrent Urinary Tract Infection in Older Outpatient Women—clinical review (JAMA Intern Med 2024) https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2819823 Antibiotic prophylaxis regimens for recurrent UTI in women, 2018 AUGS guideline—see Table 7 (AUGS) https://journals.lww.com/fpmrs/fulltext/2018/09000/american_urogynecologic_society_best_practice.2.aspx

Abbreviations: APHPT = Academy of Pelvic Health Physical Therapy; AUA = American Urological Association; AUGS = American Urogynecologic Society; BPH = benign prostatic hyperplasia; CKD = chronic kidney disease; CUA = Canadian Urological Association; EAU = European Association of Urology; GSM = genitourinary syndrome of menopause; ICS = International Continence Society; IUS = International Urogynecological Society; SNRI = serotonin-norepinephrine reuptake inhibitor; SSRI = selective serotonin reuptake inhibitor; SUFU = Society for Urodynamics, Female Pelvic Medicine, and Urogenital Reconstruction; UTI = urinary tract infection.
[a]For refractory symptoms, consider advanced therapies (e.g., percutaneous tibial nerve stimulation, botulinum toxin, sacral nerve stimulation).
[b]Counsel patients to follow directions on over-the-counter products, including amount and duration of use. Community and other pharmacists can be valuable resources for information and counseling.
[c]Among the medications listed below, only paroxetine and fezolinetant are FDA-approved for this indication.

FIGURE 1 | Five principles for applying alternatives recommendations in clinical practice.

note, pruritus has several causes that do not respond to antihistamines. When a systemic antihistamine is indicated, a second- or third-generation agent is recommended.

3.3 | Pain

The many types and causes of pain, including inflammation and neuropathy, influence treatment choice. Thus, identifying the underlying cause of pain and comorbid conditions (e.g., falls) is critical when selecting a pain management regimen, including non-pharmacologic treatments. Several resources are provided to help patients and clinicians understand the role and value of non-pharmacologic options, with an emphasis that improving function should be a key target of therapy. When pharmacologic treatment is needed, it should be tailored to the type of pain. Options can include topical agents such as capsaicin, rubefacients (e.g., menthol and salicylate ointments), lidocaine, and topical NSAIDs, which in many cases have more favorable adverse event profiles than systemic agents.

3.4 | Diabetes

Advances in pharmacotherapy for diabetes care have limited the role of sulfonylureas (including both short- and long-acting varieties) given their potential risk for hypoglycemia. Medication alternatives to sulfonylureas include metformin, SGLT2 inhibitors (especially for patients with heart failure, atherosclerotic cardiovascular disease, or chronic kidney disease), GLP1 receptor agonists (especially for patients with obesity, atherosclerotic cardiovascular disease, or chronic kidney disease), DPP-4 inhibitors, and other options. Better yet, the need for medications may be reduced through diet and exercise, and relaxed targets for glycemic control may often be appropriate, especially in older adults with extensive comorbid burden, functional impairments, and/or cognitive decline.

3.5 | Insomnia

Insomnia and sleep disorders are common problems reported by older adults. Rather than using a benzodiazepine or a non-benzodiazepine benzodiazepine receptor agonist hypnotic (i.e., "Z-drugs") or a sedating agent with anticholinergic properties (e.g., first-generation antihistamines), underlying causes of and contributors to these conditions should be identified and removed or minimized. Cognitive behavioral therapy for insomnia (CBT-I) is recommended as the initial treatment for chronic insomnia. Resources are listed for patients and families on sleep hygiene and understanding and accessing CBT-I, including virtual and self-directed programs. For clinicians,

links are provided to professional organizations that offer additional resources, as well as guidance on deprescribing sedative-hypnotic medications. When a medication is needed, such as for acute sleep issues or conditions refractory to other interventions, oral doxepin 3 or 6 mg, ramelteon, or an orexin receptor antagonist may be a safer alternative. While melatonin is an option for patients requesting a natural remedy, evidence of meaningful benefit is limited for most causes of insomnia in older adults, and the contents, purity, and dose of available formulations cannot be guaranteed due to the absence of FDA oversight of supplements.

3.6 | Delirium

No pharmacologic treatment is recommended as a routine response to delirium in all populations, and antipsychotics should be avoided in most older adults unless the patient presents a danger to themselves or others and symptoms cannot be managed with non-pharmacologic interventions. First-line options for delirium prevention and management include multicomponent non-pharmacologic interventions such as the AGS CoCare: HELP Program, complemented by approaches to better manage and understand behavior as a form of communication. When antipsychotics or other sedatives are deemed justified despite their risks, the duration of use should be as short as possible and risks documented.

3.7 | Gastroesophageal Reflux

Treating gastroesophageal reflux with a proton pump inhibitor (PPI) for longer than 8 weeks should be avoided for most older adults except for those with high-risk conditions (e.g., erosive esophagitis, chronic systemic steroid or NSAID use) or in whom adequate trials of PPI discontinuation or substitution have not been effective. If not introduced already, review and initiation of non-pharmacologic interventions such as making dietary changes and elevating the head of the bed are recommended. Deprescribing protocols for PPIs are a valuable resource for patients and clinicians to aid in dose reduction and eventual discontinuation. Histamine-2 receptor blockers may be helpful alternatives for relief of nocturnal symptoms, and acid-protective therapies containing alginic acid (also known as alginate) can be useful for breakthrough symptoms, although with attention to avoiding ingestion of a variety of other medications within 2 hours before or after alginate use due to impacts on drug absorption.

3.8 | Recurrent Urinary Tract Infections

Recurrent UTIs in older women may be prevented with vaginal estrogen, the recommended first-line management strategy in most older women, rather than treatment with systemic estrogen or maintenance antibiotics and their associated risks. Other non-pharmacologic and pharmacologic interventions including increased fluid intake, cranberry products, and methenamine have mixed evidence of effectiveness but warrant consideration by patients and clinicians before introducing prophylactic treatment with an antibiotic. (Note that due to the absence of FDA oversight the contents, purity, and dose of cranberry and other supplements cannot be guaranteed).

4 | Discussion

Recognizing the demand for an updated list of alternate treatment strategies that can be used in place of medications identified as potentially inappropriate in the 2023 AGS Beers Criteria®, the AGS supported an interdisciplinary, interprofessional panel of 19 generalists and specialists to identify alternatives to these medications. Unlike the earlier list of alternatives [2] aligned with quality measures used by CMS, the current list examines alternatives to the 2023 AGS Beers Criteria® medications and focuses on medications chosen by the panel on the basis of clinical relevance and opportunities to improve care. Other changes from the earlier version include the use of an interdisciplinary expert panel with a formal review process, an emphasis on including both non-pharmacologic and pharmacologic alternatives, and inclusion of useful resources for clinicians, patients, and caregivers.

While providing alternative therapies for common conditions in older adults may seem to be a straightforward process, a number of challenges are worth noting. Potentially inappropriate medications may often be prescribed on the basis of symptoms rather than diagnoses, such as when a medication is used to treat the symptoms of insomnia, anxiety, rhinorrhea, or pain without having a confirmed diagnosis of the underlying disease process [3, 4]. For this reason, a number of alternative therapies in this list are organized by symptom rather than by diagnosis. Yet, clinical practice guidelines and related documents are typically organized by diagnosis, which can create challenges in transposing their guidance in a manner that reflects the realities and diagnostic uncertainties of busy clinical practice. Moreover, such guidelines often provide relatively little information on how to address the complex needs of older adults, and often there is limited evidence specific to older adults that can be used to guide recommendations [5, 6].

In light of these challenges, the panel aimed to take a commonsense approach that was guided by evidence, existing clinical practice guidelines, and other best-practice documents to craft practical, clinically sensible alternatives that are feasible for clinicians to review and use in busy clinical practice environments. As part of this, the panel attempted to highlight when evidence was limited or unavailable, including in clinical scenarios where prescribing practice often diverges from available evidence, such as medication choices for the management of insomnia. When especially important, the alternatives also include reminders for clinicians to seek out and target management to the underlying cause of symptoms—for example, symptoms of rhinorrhea, insomnia, or involuntary weight loss—rather than just treating the symptom without further investigation.

Moreover, it is important to remember that the solution for stopping a potentially inappropriate medication is not just to start a "better" medication in its place. Thus, when appropriate, the panel emphasized the role of non-pharmacologic strategies to help manage the listed conditions. In addition, stopping a potentially inappropriate medication is not the end goal, especially if

doing so may worsen symptoms or result in goal-discordant care. It is equally important to find safer non-pharmacologic and/or pharmacologic management strategies that help the patient feel better while reducing the risk of medication-associated harms.

Users of this list should keep several things in mind. The list is intended as brief, practical guidance that is most applicable to ambulatory care settings (although not exclusively so). It is not comprehensive; it should not substitute for clinical judgment or for individualized, patient-centered care; and it is intended to complement rather than replace other forms of clinical support such as clinical practice guidelines or best-practice monographs. Alternatives for each condition were based on a review of a limited number of guidelines or other best practice documents, further informed by the expertise of the panelists, and the panelists did not review primary research literature or all available guidelines.

Additional considerations also merit attention. With limited exceptions, the list does not denote which medications are approved by the FDA for which conditions. Readers considering the use of agents not subject to FDA oversight (e.g., dietary supplements, nutraceuticals, herbal products) should remember that the contents, dose, and purity of these agents cannot be guaranteed. When medications available over-the-counter are recommended, it is important to keep in mind that the dose of the active agent(s) and presence of other medications may vary by product, so attention to product formulation and product-specific instructions is important. Finally, but not least, medications on the AGS Beers Criteria® are *potentially* inappropriate for most older adults, not *definitely* inappropriate for all [7]. Thus, there are older adults for whom AGS Beers Criteria® medications are the best choice given their individual circumstances, and in whom alternative treatment options are not needed.

Clinical practice is difficult, and clinicians need guidance not only on what not to do, but also on what to do instead. This list of alternative non-pharmacologic and pharmacologic management strategies that can be used instead of AGS Beers Criteria® medications to treat common conditions in older adults is intended to provide clinicians an easy-to-use resource for improving care. It is a starting point, and the panel encourages readers to peruse the resources provided and to review practice guidelines, best-practice monographs, and other guidance in service of developing optimal management plans for the older adults under their care.

Author Contributions

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Conflicts of Interest

Drs. Akgun, Alessi, Campbell, DuBeau, George, Herr, LaHue, Lee, Maust, Steinman, and Vincenzo declare no conflicts of interest. Dr. Beizer serves as an editor for Wolters Kluwer. Dr. Holmes receives grant funding from Blue Cross/Blue Shield. Dr. Lai serves on a Consulting and Advisory Board for Novo Nordisk; is a consultant for Genfit; and a site PI for a clinical trial for Lipocine. Dr. Linnebur is a Committee Member for the CVS Pharmacy and Therapeutics Committee and the Colorado Access Pharmacy and Therapeutics Committee. Dr. Mundt has a research Grant from Harmony Biosciences. Dr. Rich has received consulting fees from Synchrony Medical Communications. Dr. Richter has research grant funding from COSM; receives royalties from DSMB member: Bluewind, Juniper Medical, Veristat; serves as a consultant to ICA, Eli Lilly, Axena, Neomedic, Coloplast, Palette Life Science, Laborie, Moremme; Board of Directors: SOLACE, Worldwide Fistula Fund. Dr. Semla serves as a consultant to United Health Care and an editor for Wolters Kluwer; his spouse holds shares of Abbvie and Abbott stock.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.

Appendix 1

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