Older adults frequently report sleep-related complaints and have questions about appropriate sleep therapies. A previous edition of Elder Care, “Cognitive Behavioral Interventions for Insomnia in Older Adults,” discusses the use of non-pharmacological, preventive, and behavioral strategies for treatment of sleep disorders in older adults. It is important to note that a two-stage or interrupted sleep can be normal.

The Role of Medication Therapy
Because many sleep agents are potentially inappropriate for older adults as specified in the Beers Criteria, it is vital to remember that non-drug therapies, including preventive and behavioral measures should be the first-line approach in this population. These include avoiding or adjusting medications and substances that might be contributing to sleep issues. (Table 1). It is also important to address related conditions such as external stressors—anxiety, bereavement, depression, breathing problems, reflux, urinary urgency, and pain. Medications for sleep should be reserved for instances when non-pharmacological and preventive measures do not meet the patient's needs, and should be used in combination with these therapies for a short period only.

Risk versus Benefit of Pharmacotherapy
Although there may be a modest benefit from a sleep agent, there are numerous potential adverse effects such as addiction, cognitive impairment, confusion, sleep walking, falls and other accidents. Therefore, benefit-to-risk ratio should be carefully considered and discussed to older patients and caregivers before starting pharmacotherapy. Regular re-assessments with deprescribing should be performed.

Pharmacotherapy Recommendations
The choice of a sleep medication should be directed by several factors including: (a) insomnia pattern, (b) goals of therapy, (c) past treatment responses, (d) comorbidities, (e) contraindications, (f) side effects, (g) drug interactions, (h) cost, and (i) patient preference. The lowest effective dose of the chosen agent should be used with regular follow up to assess effectiveness and adverse effects and need for continued use. Intermittent dosing (2-4 times/week) may be used. A short-term treatment (3-4 weeks) should be used unless chronic insomnia is present due to a chronic illness. After chronic use, many of the medications need to be tapered off to prevent rebound insomnia.

TIPS FOR USING SLEEP PHARMACOTHERAPY IN OLDER ADULTS
- Use medications only if non-drug therapy and preventive measures do not meet patients’ sleep needs.
- Provide realistic expectations of sleep goals (e.g. 7-8 hours of uninterrupted sleep is not natural in older patients)
- Reverse underlying causes of sleep problems and use behavioral interventions as first-line treatment.
- Discuss risks versus benefit of sleep agents with older adults and caregivers when choosing pharmacotherapy.
- Use lowest effective dose of the chosen agent for shortest duration, with regular follow up to assess effectiveness, adverse effects, and need for continued pharmacotherapy. Try discontinuing on a regular basis.
- To improve sleep latency, use a shorter-acting agent such as short-acting melatonin or ramelteon.
- To improve sleep maintenance, use a longer-acting agent (e.g., trazodone).
Table 2 describes sleep pharmacotherapy options, and Table 3 identifies medications to avoid.

### Table 2. Medications

<table>
<thead>
<tr>
<th>Melatonin Receptor Agonists</th>
<th>Little abuse potential or morning-after effects</th>
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<tbody>
<tr>
<td>Ramelteon (Rozerem®) 8 mg within 30 mins of bedtime; avoid high-fat meal</td>
<td>Melatonin within 30 mins of bedtime (physiologic dose is 0.3-0.5mg; doses &gt;4mg can last 10 hours)</td>
</tr>
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</table>

### Antidepressants with sedating effects
- for patients with comorbid depression. These drugs have orthostatic side effect.
- Tricyclic antidepressants should be avoided, except possibly low dose doxepin.
- Trazodone (Desyrel®) 25-100 mg
- Mirtazapine (Remeron®) 7.5-15 mg, may stimulate appetite, a potential benefit for underweight patients; Beers Criteria recommend use with caution because of potential SIADH.
- Doxepin (Silenor®) 3-6 mg (Beers Criteria limit dose to <6mg/day; many drug interactions).

### Anticonvulsant with sedating effect
- Gabapentin (Neurontin®) 100 mg at bedtime to start and titrate gently; dose must be adjusted in renal insufficiency and there is a 40% risk of “dizziness”
- Valproate (Depakote®) 100-1500 mg
- Gabapentin (Neurontin®) 100 mg at bedtime to start and titrate gently; dose must be adjusted in renal insufficiency and there is a 40% risk of “dizziness”
- Lithium carbonate ( Eskalith®) 300-900 mg
- Divalproex sodium (Depakote ER®) 500-2000 mg
- Gabapentin (Neurontin®) 125-750 mg
- Valproate (Depakote®) 300-1500 mg
- Lamotrigine (Lamictal®) 25-200 mg
- Clonazepam (Klonopin®) 0.5-10 mg
- Levetiracetam (Keppra®) 500-3000 mg
- Topiramate (Topamax®) 100-400 mg
- Oxcarbazepine (Trileptal®) 600-2400 mg

### Table 3. Medications to Avoid

- Antihistamines, (e.g. diphenhydramine, hydroxyzine, meclizine)
- Antipsychotics (all classes)
- Benzodiazepines (short, intermediate, or long-acting)
- Benzodiazepine receptor agonists: eszopiclone (Lunesta®), Zaleplon (Sonata®), Zolpidem (Ambien®), Zolpidem ER (Ambien CR®)
- Barbbiturates (e.g., phenobarbital)
- Tricyclic Antidepressants (e.g., amitriptyline)
- Newer agents: Suvorexant (Belsomra®) can impair next-day driving and can cause REM-sleep behavior disorder; Tasimelteon (Hetlioz®) is for non-24-hr sleep-wake disorder and very expensive

To improve sleep latency, use a shorter-acting agent (e.g., short-acting melatonin or ramelteon). To improve sleep maintenance, consider zolpidone or a sustained release melatonin. Do not try to medicate for 7+ hours of uninterrupted sleep. Most pharmacotherapies have potential drug/herbal/food interactions and adverse effects that need close monitoring.

Patient education includes: (a) expectations and treatment goals, (b) safety concerns and potential adverse effects, (c) potential drug interactions, (d) dose escalation plan, (e) rebound insomnia, and (f) non-pharmacological therapies (e.g., cognitive behavioral and sleep hygiene).

### Supplements for Sleep

The use of natural products and Complementary and Alternative Medicine (CAM) approaches among Americans is widespread according to the National Health Interview Survey (NHIS). In fact, data from 2012 suggest that at least 40% of adults in the US used at least one CAM approach with a cost in the billions of dollars.

#### Melatonin

Synthesized in the pineal glands during sleep, evidence suggests levels drop significantly in older adults when compared to younger adults. Melatonin supplementation may be beneficial for insomnia due to its effect on the circadian cycle, with onset of action within 40 minutes. It is well tolerated. Vivid dreams, dysphoria in depressed patients or sleep apnea in predisposed patients are possible. Melatonin may have an additive effect with sedatives. Melatonin can also potentiate anticoagulants, reduce insulin sensitivity, and possibly induce orthostatic hypotension. Effects from doses > 4mg may last 10 hours.

#### Valerian

Thought to have sedative-hypnotic, anxiolytic, anti-depressant, anticonvulsant and antispasmodic effects, valerian modestly reduces sleep latency and improves subjective sleep quality. It is generally well tolerated, but cases of headache, gastrointestinal upset, excitability, and cardiac problems have been reported. It may have hypotensive effects, and has an additive effect with sedatives.

#### Lemon Balm

Lemon Balm is “generally recognized as safe” status from the FDA when taken by mouth. Clinical research has shown that taking a standardized extract of lemon balm twice daily for 15 days reduced insomnia by 42% in people with sleep disorders. Lemon balm can have an additive effect with other sedating substances and thyroid therapy, and may modestly reduce blood glucose. Lemon Balm taken orally may increase appetite.

### References and Resources

Natural Medicines Comprehensive Database: [http://naturalmedicines.therapeuticresearch.com](http://naturalmedicines.therapeuticresearch.com)