

# Sleep in Hospitalized Older Adults

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## KEYWORDS

• Sleep • Hospitalized adults • Geriatrics • Older adults • Patients • Hospitals

## KEY POINTS

- Despite the need for rest and recovery during acute illness, hospitalization is a period of acute sleep deprivation for older adults owing to environmental, medical, and patient factors.
- Sleep loss in the hospital for older adults is associated with worse health outcomes, including cardiometabolic derangements and an increased risk of delirium.
- Both pharmacologic and nonpharmacologic interventions have shown promise in improving sleep loss for hospitalized older adults.

## INTRODUCTION

Nearly 70 million Americans suffer from a chronic disorder of sleep that adversely affects their health.<sup>1</sup> The National Academy of Medicine estimates that hundreds of billions of dollars per year are spent caring for patients with sleep disorders. For example, 1 in 5 of all injuries owing to serious car crashes are owing to drowsy driving.<sup>1</sup> Despite this, most people with underlying sleep disorders remain undiagnosed. Awareness of diagnoses and treatment of sleep disorders among health care professionals and the public remain very low.

Sadly, the patients most at risk for poor, nonrestorative sleep are often acutely ill and hospitalized, when they arguably need sleep to recover from their acute illness. Acute sleep loss in the hospital has been associated with poor patient outcomes, including cardiometabolic effects such as high blood pressure and hyperglycemia, as well as delirium.<sup>2</sup> For instance, Krumholz<sup>3</sup> coined the term “post-hospital syndrome” to highlight the increased risk of readmission for the nearly 3 million hospitalized seniors for diseases unrelated to the index admission. Although studies of

long-term consequences of acute sleep loss of hospitalization are lacking, in-hospital sleep loss has been implicated as a potential mediator of post-hospital syndrome.

Prior research has demonstrated that sleep loss is associated with worse cardiometabolic outcomes in the hospital,<sup>4</sup> that hospitalization is a period of acute sleep loss that does not recover in the week after discharge,<sup>5</sup> and that 40% of medical patients without a known sleep disorder are actually at high risk for sleep-disordered breathing.<sup>6</sup> Therefore, the hospital setting is a missed opportunity to optimize the sleep environment for better sleep in the hospital and after discharge, but also to improve diagnosis and treatment of previously unrecognized sleep disorders and potentially reduce unnecessary hospital readmissions.<sup>7</sup>

## SLEEP LOSS IN OLDER ADULTS

Changes in sleep among healthy older adults are highly relevant when considering disturbed sleep among older adults in the hospital setting. Sleep in older adults is characterized by decreased

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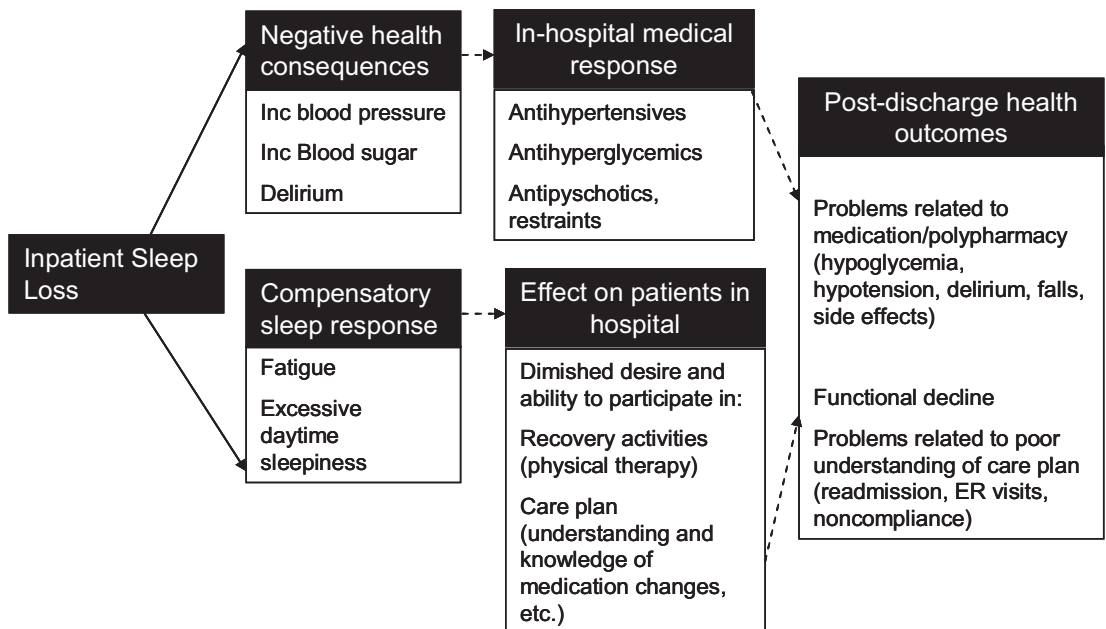
deep sleep (N3), increased amounts of lighter sleep, more frequent awakenings, less rapid eye movement sleep, and less total sleep time.<sup>8</sup> In addition, complaints of insomnia are more frequent in older adults. Older patients are also more easily aroused from sleep by environmental stimuli such as noise or light exposure (which is common in the hospital setting). As a result, sleep becomes increasingly fragmented and sleep efficiency decreases. The circadian sleep-wake cycle also frequently advances with age, resulting in a tendency to fall asleep and awaken earlier, and circadian rhythms are more sensitive to disruption in older adults. These changes occur in nearly all older adults, independent of any medical or psychiatric pathology.<sup>9</sup> Anxiety, depression, loss of social support, pain, and acute illness can all further contribute to sleep disturbances in older patients.

Given the increasing recognition that sleep disturbance in older patients can be considered as part of a geriatric syndrome,<sup>10</sup> it is important to optimize sleep in older patients, especially during times of care transitions, such as admission and discharge from the hospital. Unfortunately, obtaining a good night's sleep in the hospital is often difficult.

### HEALTH EFFECTS OF SLEEP LOSS FOR HOSPITALIZED OLDER ADULTS

Although there is a paucity of literature regarding the effects of sleep loss in hospitalized patients,

a model of 2 possible pathways by which sleep loss may impair recovery and function in hospitalized older patients can be proposed (Fig. 1). First, laboratory and epidemiologic studies provide evidence to suggest that sleep deprivation itself can lead to a variety of intrinsic negative health consequences (eg, development of delirium, metabolic derangements in blood sugar or blood pressure).<sup>11–14</sup> Interestingly, these health consequences that are linked to sleep deprivation (eg, delirium, hypertension, and hyperglycemia) are also known complications of hospitalization in older patients.<sup>15,16</sup> In addition, these conditions often are associated with administration of additional medications or higher dosages of existing medications for older people (eg, antipsychotics for delirium, insulin for hyperglycemia, or antihypertensives for elevated blood pressure). Furthermore, a significant portion of these medications may be continued after discharge and subsequently result in patient harm.<sup>17</sup> Another possible pathway by which sleep loss can impair recovery in hospitalized older patients is due to fatigue and excessive daytime sleepiness, which may hinder patients' participation in recovery activities (eg, physical therapy), or could diminish patients' desire and ability to be an active participant in their care (ie, ask informed questions, understand medication changes, follow-up tests).<sup>18,19</sup> Understanding this pathway is especially important because diminished daytime physical activity is a



**Fig. 1.** Potential mechanisms for effects of inpatient sleep loss on older patients. ER, emergency room; Inc, increased.

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