

Top Four Evidence-Based Nursing Interventions for Delirium

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Delirium has been described in various writings for centuries. Early names for delirium included *mania*, *phrenitis*, and *leros* (Mulkey, Hardin, Olson, & Munro, 2018). Hippocrates claimed acute confusion co-existing with fever was fatal. The term *delirium* comes from the Latin word *deliro-delirare*, meaning to go out of the furrow, to deviate from a straight line, to be crazy, deranged. The term appeared in medical literature in the early first century, when Celcus described mental impairment with fever and head trauma. While the underlying etiology may have resolved, he also noted the patient may continue to appear insane. Not until the late 1980s did the definition become standardized through recognition of delirium in the Diagnostic and Statistical Manual for Mental Disorders (3rd ed.) (DSM-III) (American Psychiatric Association [APA], 1987).

Delirium is defined as an acute impairment in global cognitive function that develops over a short period of time (usually hours to days) and tends to fluctuate during the

The longer delirium is present, the more severe it becomes. Implementing evidence-based nursing interventions will reduce the incidence and severity of delirium.

course of the day (APA, 2013). Delirium represents a decompensation of cerebral function in response to one or more pathophysiological stressors (APA, 2013). Maldonado (2017) described multiple risk factors for delirium, with processes that result in a vicious cycle of supply and demand. The longer delirium is present, the more severe it becomes and the more difficult it is to treat. Therefore, implementing evidence-based interventions may help reduce the incidence and severity of delirium (Mulkey, Hardin et al., 2018).

Delirium occurs in approximately 50%-75% of hospitalized older patients and is credited with increasing hospital lengths of stay by 17.5 million days (Mulkey, Harden et al., 2018). The increased length of stay and secondary complications associated with delirium have led to a significant increase in healthcare cost (Sinvani et al., 2018; Wang, Hammes et al., 2018).

Approximately \$164 billion a year is spent in the United States combating the effect of delirium (Siddiqi et al., 2016). Delirium is associated with a 10-fold increase in rates of cognitive impairment at discharge and a three-fold increase in in-hospital mortality (Mulkey, Hardin, Olson, Munro, & Everhart, 2019). Research suggests one-half of older adults remain delirious at discharge; a fifth of these continue to be delirious 6 months after hospitalization (Gual et al., 2018).

Delirium is difficult to detect, contributing to mismanagement of or failure to detect approximately 80% of cases of delirium in the acute care setting (Nishimura et al., 2016). Once delirium is detected, nurses often are challenged to identify interventions that will provide the best possible patient outcomes. When nurses are prepared to care for patients with delirium, there is a decrease in symptom severity and poor patient outcomes (Mulkey,

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Roberson, Everhart, & Hardin, 2018). In this article, information regarding effective independent nurse interventions for delirium will be provided.

Literature Review

To determine the best nursing interventions, the authors conducted a literature search with the assistance of a medical librarian. Searches were conducted in PubMed, Psych-Info, EBSCO, EMBASE, and Medline for 2014-2018 using keywords based on accepted nomenclature. The search strategy included the following terms: (*delirium* [MeSH Terms] OR *delirium* [tiab] OR *psychosis* [tiab]) AND *adult* [MeSH] OR (*delirium* [MeSH Terms] OR *delirium* [tiab] OR *psychosis* [tiab]) AND (*older adult* [tiab] OR *older adults* [tiab] OR *elder* [tiab] OR *elderly* [tiab] OR *geriatric* [tiab] OR *gerontology* [tiab] OR *elderly* [tiab] OR *senior* [tiab] OR *adult* [tiab] OR *middle age* [tiab] OR *middle aged* [tiab] OR *adults* [tiab]). Articles were excluded if they were not written in English.

Many studies described pharmacologic and nonpharmacologic interventions for delirium. However, studies to determine effectiveness of pharmacologics, particularly antipsychotics, have had conflicting and incongruent results. For example, although the latest published guidelines from The Society of Critical Care Medicine identify no published evidence in support of using haloperidol (Haldol®) for treatment or prevention of delirium, it remains the most commonly used intervention for delirium (Devlin et al., 2018).

Nonpharmacologic nursing interventions (e.g., establishing day and night routines, promoting sleep hygiene and early mobilization) have been found significantly more beneficial than pharmacologic interventions (van Velthuisen, Zwakhalen, Mulder, Verhey, & Kempen, 2017). These nonpharmacologic interventions aim to meet several basic human needs based on Maslow's Hierarchy, including physiological and safety needs. They thus are the primary effective

method for delirium prevention and treatment.

A recent Cochrane Review included seven studies addressing multimodal interventions (e.g., establishing day and night routines, promoting sleep hygiene and early mobilization) (Siddiqi et al., 2016). Authors concluded medical and surgical patients benefit from these interventions. They found moderate-level quality evidence supporting the concurrent use of more than one intervention as more effective than use of any one intervention alone. They also found nonpharmacologic interventions to be more effective than medications. However, they concluded it was not clear if these interventions are effective for patients with preexisting dementia.

To provide patients the greatest chance of recovery from delirium and prevent additional secondary complications, healthcare providers need to follow a multimodal approach (American Geriatrics Society, 2015). Siddiqi and colleagues (2016) described four interventions found to have a significant impact on the length and severity of delirium: promotion of day/night routines, early mobility, reduction of the impact of sensory impairment, and reorientation (see Table 1).

Promotion of Day/Night Routines

Providing multi-modal analgesia to reduce opioid use, decreasing nursing care activities at night to provide periods of uninterrupted sleep, and promoting family and social support may improve sleep and are unlikely to have unintended effects (Mulkey et al., 2019). Sleep hygiene interventions that have been effective in healthy persons also may be helpful in promoting sleep in the acute care setting; these include maintaining a quiet, dim nighttime environment; reducing blue light at night; and using white and pink noise. Limiting quiet time or rest periods during the day to only a few hours has been shown to improve sleep (Mulkey,

Hardin et al., 2018; Zhang et al., 2017). Moreover, daytime napping runs counter to well-established advice for patients with sleep problems to avoid sleeping during the day (Mulkey et al., 2019). Likewise, it is unclear if ear plugs and eye masks will improve sleep in the intensive care setting, or if blocking appropriate environmental stimuli might increase risk of delirium. Although some research has suggested melatonin use might reduce the associated risk for delirium, additional studies are needed (Jaiswal et al., 2018).

Sleep disturbances, lack of sleep, and sleep disruption are core risk factors for delirium (APA, 2013). The circadian rhythm (sleep/wake cycle) is controlled by a complex system that responds to internal and external stimuli. Sleep requires complex regulation by the brainstem and diencephalic structures. The suprachiasmatic nucleus in the hypothalamus, part of the ascending reticular activating system, responds to environmental factors, primarily light exposure. The amount of light exposure affects nighttime serotonin-derived melatonin secretion (Burry et al., 2017). The amount of light and darkness thus can impact the circadian rhythm by restricting secretion of melatonin by the pineal gland. An insufficient supply of melatonin can contribute to disrupted circadian rhythms, fragmented sleep/wake cycles, and nighttime awakenings. If the amount of darkness in a 24-hour period is insufficient, free-running rhythms lead to advancing sleep cycles a little each night. Other factors shown to alter melatonin secretion include environmental factors (e.g., noise, sunlight, medical devices), sepsis, systemic inflammatory response, hormone interactions, medications (e.g., opioids, benzodiazepines), critical illness, burns, and use of mechanical ventilation.

In the 2019 update, guidelines of the National Institute for Health and Care Excellence (NICE) recommended multi-component nonpharmacologic interventions, including the use of ear plugs, modification of

TABLE 1.
Nurse Prevention and Intervention Strategies

	Individual Interventions
Day/Night Routines	Implement unit-wide noise reduction. Facilitate uninterrupted sleep. Minimize nighttime procedures. Minimize sedation. Restrict sleep medication. Reduce lighting at night. Open curtains and blinds during the day. Turn lights on in patient rooms during the day. Promote sleep hygiene.
Early Mobility	Implement nurse-driven early mobility protocols. Optimize pain management and mobility techniques to reduce pain. Encourage early frequent ambulation throughout the day. Get patients out of bed. Limit use of bed in chair position to transitioning strategy rather than a replacement for getting patient out of bed. Consider physical and occupational therapy early (not a replacement for nursing care).
Reducing Sensory Impairment	Ensure visual and hearing aids are available. Check aids for proper functioning. Provide communication aids for nonverbal patients. Implement quiet time measures.
Reorientation	Place daily schedule, clock, and calendar in patient view. Promote provision of personal objects by next of kin. Promote regular family visit. Implement frequent re-orientation strategies. Provide cognitively stimulating activities such as reminiscing.

Source: Wassenaar et al., 2018

the external environment, provision of verbal and visual cues, and promotion of sleep-wake cycles that entrain the circadian rhythm (Davis, Searle, & Tsui, 2019; Starr, 2018). Use of medications to enhance circadian rhythm was not recommended. Instead, the NICE guidelines suggest providing ear-plugs and eye masks may have a positive effect on sleep quality and delirium by reducing light exposure and limiting stimulation from the external environment. Additionally, if a room is dark at night, use of a dim light can reduce the patient's nighttime confusion. Quiet time interventions also may have a positive physiological effect, including improved restfulness and patient's perception of sleep quality.

Promotion of day-night routines was described as having a significant impact on sleep-wake cycles, and likely reduces the incidence and duration of delirium (Arora, Djaiani, & Rudolph, 2017). Pro-

moting the use of natural light during the day also was identified as helpful. This can be accomplished by opening the blinds or curtains during the day to reduce melatonin secretion and promote wakefulness. Use of artificial light can augment or simulate daylight and should be considered (Locihova, Axmann, Padysakova, & Fejfar, 2018). To improve the perception of a 24-hour cycle, use of an analogue clock that shows the 24 hours of a day and a visible calendar is recommended (Ghaeli, Shahhatami, Mojtahed Zade, Mohammadi, & Arbabi, 2018).

Bright light therapy (BLT), provided for at least 2 hours a day, has been used by psychiatrists to treat seasonal depression (Potharajaroen et al., 2018). Evening BLT also has been used as adjunctive treatment to consolidate circadian rhythm activity and improve sleep. Using BLT thus is thought to restore natural circadian rhythms and daytime

awakening. Potharajaroen and co-authors found a relationship between BLT and length of time patients were remaining in bed. Patients who received BLT were able to get out of bed and ambulate about 2 days earlier than those who did not receive the therapy.

Early Mobility

The second intervention involves increasing physical activity and promoting early mobility. Physical activity enhances angiogenesis, neurogenesis, release of neurotrophic factors, and neuroplasticity (Wang, Li et al., 2018). Exercise increases cerebral blood flow and oxygen extraction, improves effectiveness of glucose uptake, and reduces inflammation. Studies have found older patients who participate in aerobic exercise had the greatest increase in blood volume in frontal and parietal lobe white matter (Abraha et al., 2016;

Arora et al., 2017). In these studies, exercise improved executive cognitive ability more than any other cognitive domain.

Although effectiveness of using a nurse-driven early mobility protocol to reduce the prevalence of delirium has not been studied, use of early mobility programs in older adult non-intensive care patients has been associated with 40% reduction in the prevalence of delirium (Braun, Gruneberg, Thiel, & Schulz, 2018). Early mobility protocols typically include turning bed-bound patients frequently, completing active and passive range-of-motion, assisting patients to sit on the edge of the bed, actively transferring patients to a chair, and ambulating patients (Larsen et al., 2019). Dermody and Kovach (2018) suggested nurses may defer ambulation in the hall inadvertently to physical therapists.

Early mobility includes mobilizing patients requiring mechanical ventilation with limitations on requirements for oxygen and positive end-expiratory pressures; and patients with multiple catheters, tubes, wires, and drains. The amount and type of exercise introduced requires individualization based on the patients' clinical condition (Hastings et al., 2018). In a study conducted by Klein, Bena, Mulkey, and Albert (2018), implementing an early mobility protocol was associated with increased psychological health. Early mobility has been shown to reduce hospital length of stay, improve patients' progress, and decrease incidence of postoperative adverse effects (e.g., nausea, drowsiness, pain, 30-day readmission) (Kappel et al., 2018; Palmer, 2018).

Reduction of the Impact of Sensory Impairment

Uncorrected visual impairment can decrease quality of life, increase cognitive decline, lower Mini-Mental Status Exam scores, and strongly predispose patients to delirium (Barnes & Sewell, 2014). Additionally, Barnes and Sewell

found uncorrected sensory impairment has been correlated with increasing the prevalence of delirium, adversely affecting patient recovery and hospital outcomes. Inouye, Westendorp, and Saczynski (2014) evaluated the relative risk of developing delirium based on the presence of predisposing and precipitating factors. They found patients with visual and hearing impairments were 1.1 to 3.5 times more likely to develop delirium than older adults on medical-surgical units without visual impairments. A survey of nurses working on inpatient geropsychiatry units found reading glasses were valuable, but most units do not have glasses available. The association between sensory impairment and delirium is significantly amenable to intervention. According to Oliver (2017), when hospitalized patients do not have these care essentials met, they can experience compromised dignity and greater disability, disorientation, delirium, depression, or dependence.

An important intervention to reduce symptoms of delirium is to decrease unit noise that can disturb sleep and natural sleep cycles. Although results have been inconsistent, Ghaeli and co-authors (2018) found use of headphones improved sleep and reduced patients' confusion. They also concluded promoting access to and use of glasses for nearsighted patients reduced the risk of post-traumatic stress and post-ICU syndrome. The impact of sensory impairments can be reduced by simply encouraging patients to keep their glasses and hearing aids with them and assisting patients to apply these devices; providing routine device care can reduce delirium risk significantly (LaHue & Liu, 2016). Inouye and colleagues (2014) studied the impact of visual and hearing aids. They found providing glasses and magnifying aids, placing fluorescent tape on call bells, and using amplification devices significantly reduced frequency and duration of delirium episodes in hospitalized older adults.

Reorientation

In early work, Posner and Boies (1971) claimed patients with delirium show impairment in several cognitive components, including attention span, selective attention, and sustained attention. In delirium, the ability to focus and maintain attention to something or someone is very poor (Adamis et al., 2016). Despite this, delirium remains poorly detected, diagnosed, and managed. Nurses thus need to perform careful assessment, maintaining the rigor of the nursing process when conducting cognitive assessments (Mulkey, Roberson et al., 2018). Specific behaviors should be identified as possible symptoms of delirium, with behavioral examples used in documentation.

Reorientation involves the nurse explaining who he or she is, and regularly communicating the day, date, time, and location (Munro et al., 2017). A variety of reorientation methods have been used with similar results (Abraha et al., 2016; Munro et al., 2017; Siddiqi et al., 2016; van Velthuisen et al., 2017). Researchers have described use of a 1-minute family video (compared to a nature video or usual care) to reduce the proportion of patients experiencing agitation and reduce scores on instruments such as the Richmond Agitation Sedation Scale.

Combining Strategies

One example of a multi-model strategy, modified from early clinical trials, is the Hospital Elder Life Program (HELP). This program is used currently in some hospitals to prevent cognitive and functional impairment and defects in older patients (Ghaeli et al., 2018). Yevchak and colleagues (2017) conducted a qualitative study using focus groups to assess nurse perceptions regarding the most effective interventions for managing delirium. Identified strategies included enhancing sensory abilities to communicate, using cognitive stimulation and behavioral approaches to comfort, and promoting sleep as the best methods to reduce deliri-

um. While Yevchak and co-authors did not describe cognitive stimulation and behavioral approaches, other authors have suggested strategies may include using calendars, clocks, and photographs; addressing problems with environmental stimuli (e.g., noise, sleep disruption, disruptive roommate); using de-escalation techniques; and providing comfort measures (Davis et al., 2019; Munro et al., 2017). Nurses described the main barriers to implementing these strategies as lack of time and resources. Additionally, nurses described failure to see the patient as an individual as another barrier.

Because delirium occurs across settings, it is important to implement preventive interventions as soon as patients arrive on the nursing unit and continue them until hospital discharge. While no strong evidence exists regarding the most effective nursing interventions for preventing and treating delirium, a variety of nursing interventions (e.g., reorientation, established day-night routines, early mobility) have been found to be more effective than pharmacologic management (Guthrie, Rayborn, & Butcher, 2018). These nursing-focused interventions can help to minimize the development of delirium. For patients who develop delirium, early identification and prompt nursing management using interventions with the best available evidence are critical factors for overall prognosis (Mulkey, Hardin et al., 2018; Mulkey et al., 2019).

Conclusion

Improving care of patients with cognitive impairment such as delirium has been identified as a priority by many leading healthcare organizations. Evidence-informed management of delirium requires an individualized, multi-component nursing approach (Mulkey, Hardin et al., 2018). This clinical approach should include considering all patients who present with confusion as having delirium until proven otherwise. Supportive care interventions aimed at restoring physiological function and preventing further

imbalances are vital, as are reorientation strategies. Early nursing management can help reduce delirium-related complications, while delayed management has been associated with worse patient outcomes (Mulkey et al., 2019). [MSN](#)

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