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Nursing Strategies for the Prevention and Management of Delirium in Intensive Care Units

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ABSTRACT: Delirium is a common yet serious complication in intensive care units (ICUs), often resulting from a combination of factors such as underlying medical conditions, medications, and environmental stressors. Effective nursing strategies for the prevention and management of delirium should focus on promoting a supportive environment, optimizing patient-oriented care, and employing evidence-based practices. First, fostering an environment that minimizes sensory overload and enhances orientation

is crucial. This can include maintaining consistent staffing, using clear communication, encouraging the presence of family members, and providing cognitive stimulation through activities like reading or puzzles. Nurses should also be vigilant in monitoring and managing pain and sleep disturbances, as inadequately addressed needs can contribute to delirium onset. Additionally, nursing interventions should emphasize early detection and aggressive management of delirium symptoms. Regular assessments using standardized tools such as the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) can aid in the timely identification of delirium. Nurses must also be trained to recognize the early signs of delirium and to implement tailored interventions promptly. This may include adjusting medication regimens, reorienting patients regularly, and promoting mobility where appropriate. Collaborating with interdisciplinary teams to devise individualized care plans can further improve outcomes. By integrating these strategies into daily nursing practice, ICU staff can significantly mitigate the incidence and severity of delirium, ultimately enhancing patient recovery and safety.

INTRODUCTION

Delirium is an acute, fluctuating neuropsychiatric syndrome characterised by disturbed attention, altered awareness, and cognitive dysfunction that develops over a short period and tends to vary throughout the day. In intensive care units, delirium is a common complication rather than an unavoidable consequence of critical illness, and it is associated with substantial immediate and long-term harm [1]. Prevalence estimates in mixed adult ICU populations are high, and the condition is even more frequent among patients receiving mechanical ventilation [2]. Delirium is independently associated with prolonged mechanical ventilation, longer ICU and hospital stay, higher healthcare costs, unplanned extubation, nosocomial infection, long-term cognitive impairment, and increased mortality [3]. These outcomes make delirium a modifiable target for nursing-led prevention and management rather than merely a marker of illness severity.

Nurses are central to delirium care because they maintain continuous bedside presence, perform ongoing assessment, control many environmental factors, and coordinate care with the multidisciplinary team. Many of the most effective preventive strategies are non-pharmacological and nursing-led, including repeated orientation, sleep promotion, early mobilisation, sensory support, pain management, and family engagement [4].

The pathophysiology of ICU delirium is multifactorial and incompletely understood. Converging evidence implicates systemic inflammation, neuroinflammation, neurotransmitter dysregulation, cerebral metabolic dysfunction, and blood–brain barrier disruption. Inflammatory mediators such as interleukin-6, interleukin-8, interleukin-1β, tumour necrosis factor-alpha, and C-reactive protein have been associated with delirium in critically ill adults, and these peripheral inflammatory signals are thought to activate microglia, impair synaptic function, and disturb neuronal signalling [5]. Superimposed on this inflammatory cascade are disturbances in cholinergic, dopaminergic, and GABAergic neurotransmission, impaired cerebral oxidative metabolism, and circadian disruption, all of which contribute to the attentional and cognitive deficits that define delirium [6].

Risk factors are conventionally divided into predisposing factors, which reflect baseline vulnerability, and precipitating factors, which relate to acute illness and treatment. Advanced age and pre-existing cognitive impairment are consistently identified as the most powerful predisposing factors, while sensory impairment, frailty, alcohol misuse, and comorbid medical illness further increase baseline risk [1]. Precipitating factors include deep sedation, benzodiazepine exposure, untreated pain, physical restraints, sleep deprivation, immobility, invasive devices, electrolyte disturbances, infection, and prolonged ICU stay [1]. Many of these factors are modifiable and fall directly within nursing influence. Because delirium is multifactorial, no single intervention is sufficient; effective prevention requires a multicomponent approach that addresses the full constellation of modifiable risks.

Table 1. Predisposing and Precipitating Risk Factors for ICU Delirium

Category	Examples
Predisposing factors	Advanced age; pre-existing cognitive impairment or dementia; hearing or vision impairment; frailty; alcohol or substance misuse; comorbid medical illness; previous delirium

Precipitating factors	Deep sedation and benzodiazepine use; uncontrolled pain; physical restraints; sleep deprivation and circadian disruption; immobility; endotracheal tube, urinary catheter, and arterial lines; electrolyte and metabolic derangements; infection and systemic inflammation; prolonged ICU stay

Systematic Assessment and Screening

Systematic, valid, and reliable delirium assessment is the foundation of prevention and management. Without routine screening, delirium is frequently missed, especially the hypoactive subtype, which is characterised by withdrawal, lethargy, and reduced responsiveness rather than agitation. Two tools are most widely used and recommended in adult ICU practice: the Confusion Assessment Method for the Intensive Care Unit and the Intensive Care Delirium Screening Checklist. Both have been validated in critical care populations and can be administered by trained bedside nurses [7]. The Confusion Assessment Method for the Intensive Care Unit assesses acute onset or fluctuating course, inattention, altered level of consciousness, and disorganised thinking. It is brief, feasible in non-verbal and mechanically ventilated patients, and generally has high specificity, although sensitivity can vary across populations. The Intensive Care Delirium Screening Checklist is an eight-item checklist completed over a nursing shift and incorporates inattention, disorientation, hallucination or delusion, psychomotor agitation or retardation, inappropriate speech or mood, sleep–wake cycle disturbance, and fluctuating symptoms. A score of four or more is typically considered positive.

Evidence suggests that the Intensive Care Delirium Screening Checklist may be more sensitive than the Confusion Assessment Method for the Intensive Care Unit in certain subgroups, including neurocritically ill patients, whereas the Confusion Assessment Method for the Intensive Care Unit may offer higher specificity [7]. Both tools have limitations and neither replaces clinical judgement, but routine use substantially improves detection compared with unstructured assessment. Newer iterations, such as the Confusion Assessment Method for the Intensive Care Unit-7, provide a graded measure of delirium severity and correlate well with established severity instruments, offering additional utility for monitoring trajectories and evaluating interventions [8]. Nursing documentation of screening results, fluctuations, and response to interventions is essential for continuity of care and for triggering timely multidisciplinary action.

Table 2. Comparison of the Confusion Assessment Method for the Intensive Care Unit and the Intensive Care Delirium Screening Checklist

Feature	**Confusion Assessment Method for the Intensive Care Unit**	**Intensive Care Delirium Screening Checklist**
Structure	Four core features: acute change or fluctuation, inattention, altered consciousness, disorganised thinking	Eight-item checklist completed over a shift
Administration time	Brief, typically 1–2 minutes	Requires observation over time and shift-level information
Suitability for mechanically ventilated patients	High; uses non-verbal assessment	High; behavioural items can be observed
Sensitivity	Variable; generally moderate	Generally higher sensitivity, particularly in neurocritical care
Specificity	Generally high	Moderate to high
Severity grading	Confusion Assessment Method for the Intensive Care Unit-7 provides a severity score	Total score reflects severity but was not originally designed as a severity measure

Prevention Through Multicomponent Care

Because delirium is multifactorial, prevention is most effective when delivered as a coordinated bundle rather than as isolated interventions. The ABCDEF bundle is the most extensively studied multicomponent framework in ICU delirium care. Its elements are: Assess, prevent, and manage pain; Both spontaneous awakening and spontaneous breathing trials; Choice of analgesia and sedation; Delirium assessment, prevention, and management; Early mobility and exercise; and Family engagement

and empowerment. An umbrella meta-analysis synthesising data from 62,949 participants found that bundle interventions incorporating at least three ABCDEF components were associated with a 50% reduction in ICU delirium incidence and a significant reduction in delirium duration [9]. Bundle adherence has also been associated with reduced in-hospital mortality and shorter ICU length of stay, although not every trial has demonstrated consistent effects on every outcome. For nursing practice, the bundle provides an organising framework that transforms delirium prevention from a series of disconnected tasks into a coherent and auditable standard of care.

Among individual non-pharmacological components, a network meta-analysis of 38 randomised controlled trials involving 7,229 critically ill patients identified nurse-led cluster nursing as the most favourable intervention for reducing delirium incidence, delirium duration, and mechanical ventilation duration in older ICU patients. Physical exercise and cluster care were additionally associated with shorter ICU stay [10]. A systematic meta-review of non-pharmacological and multicomponent interventions similarly concluded that early mobilisation, family participation, and multicomponent bundle care had the most consistent favourable evidence, while sleep-oriented and sensory interventions showed promise but greater variability [11]. These findings reinforce that the effect is greatest when interventions are combined and delivered consistently by the nursing team rather than when single measures are applied in isolation.

Sleep Promotion

Sleep promotion is a particularly important nursing domain. ICU patients experience fragmented sleep, frequent awakenings, loss of circadian rhythm, and continuous exposure to light and noise. Sleep-oriented non-pharmacological interventions include noise reduction, clustering care activities to protect uninterrupted rest periods, dimming lights at night, promoting daytime light exposure, and using eye masks and earplugs. A systematic review of randomised controlled trials found that although several high-quality studies demonstrated significant reductions in delirium incidence, other trials showed no effect, highlighting variability in intervention design and implementation fidelity [12]. Nevertheless, sleep promotion is low-risk, patient-centred, and consistent with the broader principles of ICU liberation. Nurses should embed sleep protection within every delirium prevention protocol, document sleep–wake patterns, and advocate for environmental changes that support circadian rhythm.

Early Mobilisation

Early mobilisation has emerged as one of the most consistent non-pharmacological strategies. A systematic review and meta-analysis of early mobilisation in critically ill patients reported a pooled odds ratio of 0.65 for delirium, indicating a significant protective effect [13]. The meta-review of non-pharmacological interventions similarly concluded that early mobilisation significantly reduced delirium incidence and duration, with effects that were among the most consistent across included reviews [11]. For nurses, early mobilisation requires careful safety assessment, coordination with physiotherapy and respiratory therapy, and a shift in culture away from prolonged bed rest as the default. Even incremental mobility, such as sitting out of bed, standing, or marching in place, can contribute to delirium prevention when applied systematically. Nurses are also responsible for evaluating tolerance, monitoring haemodynamic and respiratory status, and documenting mobility progression.

Sensory and Cognitive Stimulation

Sensory and cognitive stimulation addresses the disorienting effects of the ICU environment. Interventions include repeated orientation to person, place, and time; provision of hearing aids and glasses; cognitive stimulation activities; and the use of calendars, clocks, and familiar objects. A systematic review of sensory-based interventions found favourable effects on delirium prevention, although the certainty of evidence varied [14]. Virtual reality interventions have also been investigated as a means of providing calming, orienting, and cognitively stimulating experiences. A systematic review and meta-analysis concluded that virtual reality may reduce delirium incidence and improve anxiety, depression, and sleep, albeit with low certainty of evidence [15]. These findings should be interpreted cautiously, but they suggest that nurses have an expanding repertoire of tools for addressing sensory and cognitive risk factors. The nursing role includes assessing sensory deficits, ensuring that aids are available and functioning, and integrating orientation cues into every patient interaction.

Family Engagement

Family engagement and participation represent a distinctly nursing-sensitive intervention. Families provide familiar voices, emotional security, orientation cues, and continuity of identity that the ICU environment otherwise strips away. A systematic review of 14 studies involving 33,232 patients concluded that both single-component family interventions, such as familiar

voice messages, flexible visitation, and family presence, and multicomponent interventions, such as family visitation with professional-guided orientation, family education, emotional support, and participation in ICU care, showed favourable effects on delirium prevention [16]. A subsequent meta-analysis reported that family involvement significantly reduced delirium incidence and shortened ICU length of stay. The meta-review of non-pharmacological interventions likewise identified family participation as one of the more promising strategies, particularly when combined with early mobilisation and other bundle elements [11]. Nurses are central to operationalising family engagement: they assess family readiness, facilitate presence, coach families in reorientation and communication, and integrate family-delivered interventions into the plan of care.

Table 3. Summary of Evidence for Non-Pharmacological Nursing Interventions

Intervention	Key evidence	Nursing role
ABCDEF bundle	50% reduction in delirium incidence; reduced delirium duration and in-hospital mortality [9]	Coordinate bundle elements; ensure daily assessment, sedation choice, mobilisation, and family engagement
Nurse-led cluster nursing	Highest probability of being optimal for delirium incidence, duration, and ventilation duration in older ICU patients [10]	Design and deliver clustered care protocols; lead multidisciplinary rounds
Early mobilisation	Pooled odds ratio 0.65 for delirium prevention; reduced delirium duration [13]	Screen for safety; mobilise incrementally; coordinate with physiotherapy
Sleep promotion	Variable but favourable evidence; reduced delirium incidence in several randomised trials [12]	Cluster care; reduce nocturnal noise and light; use eye masks and earplugs; promote daytime light exposure
Sensory and cognitive stimulation	Sensory-based interventions and virtual reality show potential, with variable certainty [14,15]	Orient repeatedly; provide aids; use calendars, clocks, and familiar objects; consider technology-assisted stimulation
Family engagement	Reduced delirium incidence and shortened ICU stay [16]	Facilitate flexible visitation; coach families in reorientation; integrate family voice messages and participation in care

Pain, Sedation, and Pharmacological Management

Pain, agitation, and sedation are inextricably linked to delirium, and nursing practices in these domains have profound effects on delirium risk. The 2025 focused update to the Society of Critical Care Medicine's PADIS guidelines provides contemporary guidance on pain, agitation and sedation, delirium, immobility, and sleep disruption. The guideline conditionally recommends using dexmedetomidine over propofol for sedation in mechanically ventilated adults when light sedation and/or reduction in delirium are high priorities, with moderate certainty of evidence. It also suggests enhanced mobilisation over usual mobilisation and suggests melatonin over no melatonin for delirium prevention, while the evidence for antipsychotics for delirium treatment remains insufficient to issue a recommendation for or against their routine use [17]. The executive summary of this update reinforces that pharmacological prophylaxis with antipsychotics is not supported as routine practice and that the emphasis should be on optimising sedation strategy, minimising benzodiazepines, and controlling pain [18].

The evidence on antipsychotics illustrates the importance of evidence-based restraint in pharmacological decision-making. A systematic meta-review of pharmacological interventions found that antipsychotics have not been established to reliably treat delirium itself; their role is primarily in managing severe agitation or psychosis that poses a risk to the patient or staff, and they appear poorly effective at resolving the core cognitive deficits of delirium [19]. Dexmedetomidine, by contrast, has a more established role in facilitating ventilator weaning in agitated patients and in reducing delirium in specific contexts such as major surgery and mechanical ventilation, although it is not a universal solution. For nurses, these pharmacological nuances translate into concrete practice imperatives. Pain should be assessed regularly using a validated tool and treated before it escalates; sedation should be light and targeted to the minimum effective level; benzodiazepine exposure should be minimised; and antipsychotics should not be used as a substitute for environmental, orientation, and sleep-promoting interventions. Nurses are

also ideally positioned to monitor for adverse effects, evaluate response, and advocate for deprescribing when sedation or antipsychotic therapy is no longer necessary.

Table 4. Pharmacological Considerations in ICU Delirium Management

Agent or class	Evidence and guidance	Nursing implications
Dexmedetomidine	Suggested over propofol for sedation when light sedation and/or delirium reduction are priorities; may facilitate ventilator weaning in agitated patients [17]	Monitor sedation depth, haemodynamics, and delirium scores; avoid use as a sole substitute for non-pharmacological care
Antipsychotics	Not recommended for routine prevention or treatment; may be considered for severe agitation or psychosis after non-pharmacological measures [19]	Use the lowest effective dose for the shortest duration; monitor for extrapyramidal and cardiac adverse effects; prioritise de-escalation
Melatonin	Suggested over no melatonin for delirium prevention, with low certainty [17]	Administer as part of a sleep-promotion strategy; monitor sleep–wake patterns
Benzodiazepines	Should be minimised; associated with increased delirium risk; insufficient evidence to recommend for routine anxiety treatment [17,18]	Avoid routine use; advocate for alternative sedation strategies; monitor for accumulation

Quality Improvement and Implementation Science

Translating evidence into routine practice requires deliberate quality improvement infrastructure. Nurse-led quality improvement initiatives have demonstrated that delirium care can be improved through multifaceted, context-sensitive approaches. One nurse-led programme in a quaternary ICU focused on screening documentation reliability, family engagement, and non-pharmacological care. Interventions included multidisciplinary education, delirium champions, bedside prompts, a co-designed ICU admission pack, a "This is Me" bedside tool, and iterative audit and feedback [20]. Such programmes illustrate that successful implementation is not simply a matter of issuing a protocol; it requires attention to workflow, documentation systems, team culture, and the practical realities of bedside care.

Other quality improvement approaches have targeted specific high-risk populations and care processes. A nurse-led project using ICU diaries and targeted education empowered nurses to improve early identification of delirium and support recovery in older adults at risk, demonstrating that low-cost, nurse-driven interventions can be feasibly integrated into practice [21]. Nurse-led implementation of the ABCDEF bundle has also been described, with protocols incorporating routine pain assessment, spontaneous awakening and breathing trials, evidence-based sedation choices minimising benzodiazepines, systematic delirium screening using validated tools, and early mobilisation [22]. These examples converge on a common set of implementation facilitators: visible nursing leadership, interprofessional collaboration, standardised documentation, ongoing education, and continuous feedback.

Barriers to delirium care remain substantial and must be anticipated. A qualitative analysis informed by the Theoretical Domains Framework identified loss of experienced nurses, limited knowledge and understanding among junior staff, and a perception that delirium is not a priority on ward rounds as key impediments [23]. These barriers are not solely individual; they are systemic and cultural. Addressing them requires organisational commitment to delirium as a quality indicator, investment in nursing education and retention, and integration of delirium assessment and prevention into daily interdisciplinary rounds and handovers.

Nursing Education and Competence

The effectiveness of any delirium strategy depends on the knowledge, attitudes, and skills of the nursing workforce. Yet substantial evidence documents persistent knowledge gaps and practice inconsistencies. A multicentre study of ICU nurses found significant deficits in delirium knowledge and practice, with lack of formal education, absence of adopted policies, and insufficient training courses identified as contributory factors. Although many healthcare professionals recognise the clinical significance of delirium, routine screening practices remain inconsistent, and prior delirium education is a strong predictor of

both knowledge and positive attitudes [24]. These findings indicate that education is not a peripheral adjunct to delirium care but a prerequisite for it.

Structured educational programmes can produce measurable improvements. A study evaluating the impact of education on ICU nurses' knowledge and attitudes toward Confusion Assessment Method for the Intensive Care Unit delirium assessment found that a structured programme effectively enhanced knowledge, attitudes, and confidence in delirium assessment [25]. However, education alone is insufficient if institutional barriers such as lack of standardised protocols, inadequate staffing, and competing clinical priorities are not addressed. Nursing education should therefore be coupled with protocol development, bedside decision-support tools, and ongoing feedback on performance. Competence in delirium care should include recognition of subtypes, accurate use of screening tools, knowledge of modifiable risk factors, skills in non-pharmacological intervention delivery, and confidence in communicating findings to the multidisciplinary team.

Conclusion

Delirium in the ICU is prevalent and distressing, yet it is preventable through effective nursing strategies. Evidence shows that systematic assessment with tools like the Confusion Assessment Method and the Intensive Care Delirium Screening Checklist facilitates early detection. Implementing the ABCDEF bundle—focusing on sleep promotion, early mobilization, sensory stimulation, and family involvement—addresses modifiable risk factors. Additionally, careful pharmacological practices, including light sedation and limited use of certain medications, enhance non-pharmacological care. Ongoing nursing education and quality improvement are vital for maintaining these practices. Ultimately, delirium prevention and management are key nursing duties, with bedside strategies proving highly effective.

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