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"From Survival to Recovery: Nursing Management of Post-Intensive Care Syndrome (PICS): A Comprehensive Narrative Review"

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Abstract: Advances in intensive care have substantially improved survival from severe illness, but survival from critical illness does not always represent complete recovery. Many patients experience persistent or newly developed physical, cognitive, psychological, and functional problems after discharge from the intensive care unit (ICU), collectively described as post-intensive care syndrome (PICS). These consequences may continue for months or years and can interfere with mobility, activities of daily living, employment, relationships, emotional well-being, and quality of life. Family members may also experience anxiety, depression, post-traumatic stress symptoms, sleep disturbance, caregiver burden, and other consequences collectively described as post-intensive care syndrome-family (PICS-F). Nurses occupy a central position in preventing, identifying, and managing PICS because they provide continuous bedside assessment, coordinate multidisciplinary interventions, educate patients and families, promote mobility and self-care, support communication, and facilitate continuity of care after ICU discharge. This narrative review examines the concept, clinical manifestations, risk factors, assessment, prevention, and nursing management of PICS across the continuum from the ICU to post-hospital recovery. Particular emphasis is placed on pain and sedation management, delirium prevention, early mobilization, sleep promotion, nutritional support, psychological care, cognitive rehabilitation, family engagement, ICU diaries, discharge planning, follow-up clinics, and nurse-led transitional care. The review also highlights the importance of the ABCDEF approach and individualized, multidisciplinary rehabilitation. Current evidence indicates that PICS management should begin during critical illness rather than after discharge. Nurses can contribute substantially to improving survivorship outcomes by integrating systematic screening, person-centred care, rehabilitation, education, and follow-up into routine critical-care practice.

Keywords: *Post-intensive care syndrome; PICS; critical illness; intensive care nursing; ICU survivors; ICU-acquired weakness; delirium; cognitive impairment; psychological recovery; rehabilitation; family-centred care; ABCDEF bundle; survivorship.*

Introduction

Modern critical care has transformed the prognosis of patients with life-threatening illness. Patients who previously would not have survived severe sepsis, respiratory failure, shock, major trauma, complex surgery, and other critical conditions are now frequently discharged from the ICU. However, increasing survival has revealed another important clinical challenge: many survivors do not immediately return to their pre-illness level of health and independence. Persistent physical weakness, cognitive difficulties, anxiety, depression, post-traumatic stress symptoms, sleep disturbance, fatigue, pain, and reduced quality of life may occur after critical illness. These interconnected consequences are commonly referred to as post-intensive care syndrome (PICS) [1,2].

PICS was introduced to describe new or worsening impairment in physical, cognitive, or mental health status arising after critical illness and persisting beyond the acute hospitalization. It may affect one domain or several domains simultaneously. The syndrome is not restricted to patients who had a particular diagnosis or treatment and may occur following a wide variety of ICU experiences. Its severity and duration vary considerably between individuals, and recovery is often nonlinear [1,3].

The long-term consequences of critical illness are supported by longitudinal studies. Survivors of acute respiratory distress syndrome, for example, have demonstrated persistent limitations in physical function several years after hospital discharge [4]. Cognitive impairment may involve memory, attention, processing speed, executive functioning, and other domains. In the BRAIN-ICU study, substantial cognitive impairment was observed among survivors of critical illness, with some patients continuing to experience deficits at 12 months [5]. These findings demonstrate that successful discharge from the ICU should not be regarded as the endpoint of critical-care management.

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Nurses have a particularly important role in PICS because nursing care extends continuously from acute physiological stabilization through rehabilitation, discharge preparation, and follow-up. Nursing interventions can influence several modifiable contributors to PICS, including excessive sedation, immobility, delirium, sleep disruption, inadequate nutrition, social isolation, communication difficulties, and insufficient preparation for transition from ICU to home [6,7]. Therefore, PICS should be considered a continuum-of-care issue rather than solely a post-discharge complication.

Concept and Clinical Dimensions of PICS

PICS is generally conceptualized around three principal domains: physical impairment, cognitive impairment, and mental health impairment. Physical consequences include generalized weakness, ICU-acquired weakness, reduced exercise tolerance, fatigue, impaired balance, neuropathy, myopathy, joint stiffness, chronic pain, swallowing difficulties, and limitations in activities of daily living. These problems may make patients dependent on family members for mobility, bathing, dressing, feeding, toileting, and other activities that were previously performed independently [3,4].

Cognitive impairment may include problems with memory, attention, concentration, executive functioning, processing speed, and problem-solving. These difficulties can be particularly challenging because patients and families may not initially recognize them as consequences of critical illness. A survivor may appear physically recovered while experiencing difficulty reading, remembering instructions, managing medications, returning to work, or making decisions. Long-term cognitive impairment has been associated with severe illness, delirium, sepsis, and other factors encountered during critical care [5,8].

Mental health impairment represents the third major domain. Anxiety, depression, post-traumatic stress symptoms, irritability, emotional lability, sleep disturbance, fear, and altered self-confidence may occur after ICU hospitalization. Patients may have distressing memories, nightmares, hallucination-like experiences, or fragmented recollections of their ICU stay. Psychological morbidity can interfere with rehabilitation and social reintegration and may also increase the burden experienced by caregivers [9].

PICS is closely related to, but distinct from, PICS-F. Family members of critically ill patients may experience psychological, physical, social, and socioeconomic consequences associated with the ICU experience. Recent reviews indicate that anxiety, depression, post-traumatic stress symptoms, fatigue, and caregiver burden may affect a substantial proportion of family members [10,11]. Consequently, nursing management should consider the patient and family as interconnected units of care.

Pathophysiological Basis and Risk Factors

PICS is multifactorial rather than the consequence of a single pathological mechanism. Critical illness can produce systemic inflammation, metabolic stress, muscle catabolism, neurological dysfunction, vascular abnormalities, sleep disruption, and prolonged physical inactivity. These processes may be amplified by mechanical ventilation, prolonged immobilization, organ failure, infection, sepsis, and exposure to sedative and analgesic medications [2,12].

Physical deconditioning develops rapidly during critical illness. Immobility combined with inflammation, catabolism, inadequate nutritional intake, and neuromuscular dysfunction contributes to ICU-acquired weakness. The resulting loss of muscle strength can delay ventilator liberation, reduce mobility, increase dependence, and prolong rehabilitation [13]. Early mobilization is therefore an important component of strategies designed to reduce functional decline.

Delirium is another important risk factor for adverse long-term outcomes. Critically ill patients may develop acute disturbances in attention and awareness related to illness, medications, sleep disruption, metabolic abnormalities, and environmental factors. Longer duration of delirium has been associated with subsequent cognitive impairment, emphasizing the importance of systematic delirium assessment and prevention [5,14].

Psychological stress is influenced by the patient's perception of illness, frightening ICU experiences, inability to communicate, pain, sleep deprivation, uncertainty, and separation from familiar surroundings and people. Mechanical ventilation and periods of altered consciousness may produce fragmented or frightening memories. Family members may simultaneously experience uncertainty regarding prognosis, financial concerns, disrupted family roles, and fear of death [10].

Risk factors for PICS therefore include pre-existing frailty, older age, comorbidities, severe illness, sepsis, prolonged mechanical ventilation, prolonged ICU or hospital stay, delirium, immobility, deep sedation, sleep disturbance, malnutrition, and pre-existing psychological or cognitive vulnerability [3,8]. Identification of these factors enables nurses to prioritize individuals requiring closer surveillance and rehabilitation.

Assessment of PICS

Assessment should begin before ICU discharge and continue throughout hospitalization and after discharge. A structured nursing assessment should establish the patient's pre-illness

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functional, cognitive, psychological, and social baseline whenever possible. Information from the patient, family, previous medical records, and multidisciplinary team can help establish baseline status.

Physical assessment should include muscle strength, mobility, balance, endurance, pain, fatigue, respiratory symptoms, swallowing, nutritional status, and ability to perform activities of daily living. The Medical Research Council muscle-strength score and handgrip strength can be useful for evaluating weakness, while the six-minute walk test may assist with assessing functional exercise capacity when clinically appropriate [15]. Functional measures such as the Barthel Index, Functional Independence Measure, or assessment of instrumental activities of daily living can provide information about dependence.

Cognitive assessment should evaluate orientation, attention, memory, concentration, executive function, and the patient's ability to understand and follow instructions. The Montreal Cognitive Assessment and Mini-Mental State Examination are among the instruments identified for PICS cognitive assessment [15]. Nurses should recognize that a normal brief screening result does not necessarily exclude subtle cognitive difficulties, particularly in patients with high educational attainment or specific executive deficits.

Mental health assessment should include symptoms of anxiety, depression, traumatic stress, sleep disturbance, and distress. The Hospital Anxiety and Depression Scale, Patient Health Questionnaire-9, and Impact of Event Scale-Revised are among the instruments used in PICS assessment [15]. Assessment should be conducted sensitively and repeated when clinically indicated because symptoms may emerge after discharge rather than immediately after ICU recovery.

Quality of life should also be evaluated because PICS can affect physical functioning, emotional well-being, social relationships, independence, and participation in usual activities. Instruments such as the EQ-5D and SF-12 or SF-36 may be used depending on the clinical and research context [15]. Importantly, there is no single universally accepted diagnostic instrument for PICS; assessment should therefore be multidimensional and individualized.

Nursing Management During the ICU Stay

Prevention through the ABCDEF Approach

The ABCDEF bundle provides a practical framework for reducing modifiable contributors to PICS. Its components include assessment, prevention, and management of pain; spontaneous awakening and spontaneous breathing trials; appropriate analgesia and sedation; delirium assessment, prevention, and management; early mobility and exercise; and family engagement and empowerment [6,7]. Evidence from a large multicenter collaborative involving more than 15,000 adults demonstrated that higher bundle performance was associated with improvements in several clinically important outcomes, including delirium, mechanical ventilation, coma, ICU readmission, and discharge disposition [16]. However, newer randomized evidence suggests that effects on individual long-term outcomes may vary, reinforcing the need to view the bundle as a coordinated care framework rather than a guaranteed intervention for every component of PICS [17].

Nurses contribute directly to implementation by assessing each bundle element during every shift, communicating barriers during multidisciplinary rounds, documenting compliance, and coordinating interventions. Nursing leadership is particularly important because nurses are continuously present at the bedside and can identify changes in pain, sedation, delirium, mobility, sleep, and family needs.

Pain Management and Appropriate Sedation

Uncontrolled pain may contribute to anxiety, sleep disturbance, immobility, and traumatic ICU experiences, while excessive sedation may contribute to prolonged mechanical ventilation, immobility, delirium, and delayed rehabilitation. Nurses should therefore conduct regular pain assessment using validated tools appropriate to the patient's communication ability and clinical status. When patients cannot communicate verbally, behavioral indicators such as facial expression, body movement, muscle tension, and ventilator interaction may assist assessment.

Analgesia should be individualized and reassessed frequently. Sedation should be targeted to the patient's clinical requirements rather than maintained unnecessarily. The current SCCM focused update continues to emphasize evidence-based approaches to pain, sedation, delirium, immobility, and sleep disruption, while recognizing that the optimal intensity and delivery of rehabilitation remain areas of ongoing investigation [18]. Nurses should participate in daily evaluation of sedation targets and advocate for reduction of unnecessary sedation when clinically appropriate.

Delirium Prevention and Management

Delirium prevention is a major component of PICS-oriented nursing care. Nurses should regularly assess patients using validated instruments such as the Confusion Assessment Method for the ICU or Intensive Care Delirium Screening Checklist. Risk reduction includes avoiding unnecessary sedation, maintaining day-night orientation, promoting sleep, providing appropriate sensory aids,

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correcting dehydration and metabolic abnormalities, controlling pain, encouraging mobility, and reducing unnecessary environmental stimulation [14,18].

Orientation can be supported through clocks, calendars, clear explanations, familiar voices, and consistent communication. Hearing aids and glasses should be made available when required. Nurses should explain procedures before performing them and repeatedly reassure patients who are frightened or confused. Early recognition is essential because delirium may fluctuate and can easily be missed during brief assessments.

Early Mobilization and Physical Rehabilitation

Immobility is one of the most important modifiable contributors to physical decline during critical illness. Nurses should collaborate with physiotherapists and other members of the multidisciplinary team to initiate mobility as soon as it is clinically safe. Progression may include passive range-of-motion exercises, active exercises, bed mobility, sitting, standing, transferring to a chair, and ambulation.

Mobilization must be individualized according to hemodynamic stability, respiratory status, neurological status, lines and devices, level of consciousness, muscle strength, and patient tolerance. Evidence reviews indicate that early mobilization can reduce muscle atrophy and contribute to improved functional outcomes, although the optimal dose and long-term effects remain areas of research [19,20]. Nurses should monitor oxygen saturation, heart rate, blood pressure, respiratory distress, fatigue, pain, and other safety parameters during activity.

Importantly, mobilization should not be considered solely a physiotherapy responsibility. Nurses can incorporate activity into routine care by encouraging patients to participate in repositioning, grooming, sitting for meals, and other appropriate self-care activities. Such an approach promotes independence and helps restore confidence.

Sleep Promotion

Sleep disruption is common in the ICU because of noise, lighting, alarms, procedures, pain, medication effects, and altered circadian rhythms. Persistent sleep problems can contribute to fatigue, impaired cognition, mood disturbance, and reduced quality of life. Nursing interventions include clustering care where clinically appropriate, minimizing unnecessary nighttime noise and light, maintaining day-night cues, controlling pain, reducing avoidable interruptions, and promoting relaxation.

The 2025 focused SCCM guideline update includes sleep among the domains requiring attention in critically ill adults and provides updated recommendations relevant to ICU practice [18]. Nurses should also assess sleep after ICU transfer because patients may continue to experience poor sleep during ward recovery.

Nutrition and Hydration

Nutritional deterioration can continue after ICU discharge and may contribute to muscle wasting and delayed functional recovery. Nurses should monitor weight, appetite, swallowing, gastrointestinal symptoms, oral intake, feeding tolerance, and signs of nutritional deficiency. Collaboration with dietitians is essential for patients who have inadequate intake, dysphagia, substantial weight loss, or increased nutritional requirements.

Nutrition should be individualized according to the phase of critical illness and recovery. Recent literature emphasizes the importance of nutritional support during the recovery phase while avoiding inappropriate assumptions that more aggressive nutritional delivery is always beneficial during acute critical illness [21,22]. Nurses can support recovery by monitoring actual intake, assisting patients during meals, addressing barriers such as fatigue and nausea, and ensuring continuity of nutrition plans during transfer from ICU to ward and from hospital to home.

Psychological and Cognitive Nursing Care

Psychological recovery requires more than identifying psychiatric symptoms. Nurses should create opportunities for patients to describe their ICU experience, fears, memories, dreams, and concerns. Therapeutic communication should be nonjudgmental and patient-centred. Patients should be reassured that confusion, weakness, fatigue, sleep disturbance, and emotional reactions can occur after critical illness and that recovery may take time.

Patients with significant anxiety, depression, traumatic stress, or persistent sleep disturbance should be referred to appropriate mental-health professionals. Nurses should not interpret emotional distress simply as a normal reaction to hospitalization when symptoms are persistent, severe, or functionally impairing.

Cognitive rehabilitation should involve simple communication, repetition, written instructions, orientation cues, and gradual progression of cognitively demanding activities. Medication instructions should be reviewed carefully because cognitive impairment may affect adherence. Families can assist by reinforcing information and observing changes in memory or behavior after discharge.

Family Engagement and PICS-F Prevention

Family members are essential partners in recovery. Nurses should provide understandable and consistent information regarding the patient's condition, expected recovery, medications, mobility limitations, nutritional requirements, warning signs, and follow-up arrangements. Families should be encouraged to participate in

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appropriate activities, including communication, orientation, emotional support, and rehabilitation.

PICS-F should be considered whenever family members demonstrate persistent anxiety, depressive symptoms, traumatic stress, sleep problems, excessive caregiver burden, or difficulty coping with the patient's recovery. Reviews indicate that family members may experience substantial psychological and physical burdens following critical illness [10,11].

ICU diaries represent one possible strategy for helping patients reconstruct fragmented memories of their ICU experience. Evidence is mixed: a meta-analysis of randomized trials reported a reduction in PTSD symptoms with ICU diaries, whereas a large randomized clinical trial did not demonstrate a significant reduction in PTSD symptoms at three months [23,24]. Therefore, diaries may be considered as part of individualized family-centred care, but nurses should avoid presenting them as a universally effective intervention.

Nursing Management After ICU Transfer and Hospital Discharge

Transfer from ICU to the ward can be psychologically and physically challenging. Patients may perceive the reduction in monitoring as loss of security, while ward nurses may not immediately recognize the complexity of post-ICU needs. A structured nursing handover should communicate the patient's baseline function, ICU course, delirium history, mobility status, nutritional concerns, cognitive changes, psychological symptoms, devices, medication changes, and rehabilitation goals.

Discharge planning should begin early rather than immediately before hospital discharge. Nurses should assess whether patients and caregivers understand medication schedules, mobility restrictions, wound care, nutritional plans, oxygen requirements, follow-up appointments, and warning symptoms. Written instructions should be simple and accessible, particularly for patients with cognitive difficulties.

Patients should be informed that recovery may continue for weeks or months and that persistent weakness, fatigue, sleep problems, emotional distress, or cognitive difficulties should be reported. Families should receive information about caregiver burden and available support services.

Post-ICU Follow-Up and Nurse-Led Transitional Care

Post-ICU follow-up may occur through dedicated clinics, primary care services, home visits, telephone follow-up, or telemedicine. A recent narrative review describes PICS follow-up systems using combinations of these approaches and notes that multidisciplinary care is important because PICS involves multiple domains [25].

Nurses can function as care coordinators during follow-up. The first assessment should establish current physical, cognitive, psychological, nutritional, social, and functional status. Subsequent visits can monitor progress toward individualized goals and identify problems requiring referral.

Recent evidence specifically examining nursing interventions in PICS follow-up clinics describes interventions such as symptom evaluation, debriefing, health education, ICU revisits, cognitive-behavioral approaches, support groups, home-based rehabilitation, and virtual interventions [26]. These findings demonstrate that nursing involvement can extend beyond bedside care into survivorship management.

Follow-up should also assess return to work, financial difficulties, caregiver responsibilities, medication management, transportation, and access to rehabilitation. In resource-limited settings, nurse-led telephone follow-up and structured education may provide practical alternatives when dedicated PICS clinics are unavailable.

Multidisciplinary Collaboration

Effective PICS management requires collaboration among critical-care physicians, nurses, physiotherapists, occupational therapists, psychologists, psychiatrists, speech and language therapists, dietitians, pharmacists, social workers, rehabilitation specialists, and primary-care professionals. Nurses often serve as the communication link between these professionals.

Multidisciplinary rounds should address not only physiological stability but also mobility, cognition, delirium, nutrition, sleep, psychological well-being, discharge readiness, and family needs. The increasing emphasis on liberation-oriented care also supports greater nursing participation in structured multidisciplinary rounds and care planning [27].

Challenges in Nursing Management

Several barriers may limit effective PICS prevention and management. These include inadequate staffing, limited rehabilitation resources, inconsistent delirium screening, excessive sedation, fear of mobilizing critically ill patients, fragmented communication, insufficient post-ICU services, limited staff education, and lack of standardized follow-up pathways. Resource availability differs substantially between institutions and countries.

Another challenge is that PICS may remain clinically invisible. Patients may be considered successfully treated because the immediate life-threatening condition has resolved, while persistent cognitive or psychological problems are overlooked. The absence of a single diagnostic test further complicates recognition.

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Current evidence also demonstrates heterogeneity in PICS assessment and intervention. Different studies use different instruments, follow-up periods, rehabilitation doses, and outcome measures. A 2023 scoping review and modified Delphi study identified multiple recommended instruments across physical, cognitive, psychological, functional, quality-of-life, sleep, pain, and family domains, illustrating both the breadth of PICS and the complexity of standardized assessment [15].

Future Directions for Nursing Practice

Future nursing practice should move toward integrated survivorship care beginning at ICU admission. Electronic health records could incorporate structured PICS screening, delirium assessments, mobility targets, sedation goals, nutritional monitoring, family needs, and discharge plans. Nurse-led PICS pathways could provide standardized assessment at ICU discharge, hospital discharge, and subsequent follow-up intervals. Education is another priority. Critical-care nurses should receive continuing education regarding PICS, ICU-acquired weakness, delirium, psychological consequences, rehabilitation, communication, nutrition, and family support. Nursing students should also be introduced to survivorship concepts so that PICS becomes part of routine critical-care education.

Research should focus on identifying which interventions produce meaningful long-term improvements in patient-centred outcomes. The optimal timing, intensity, and duration of rehabilitation remain incompletely established, and evidence regarding individual interventions is sometimes inconsistent [17,28]. Future studies should use standardized PICS outcome measures and include culturally diverse populations, family outcomes, cost-effectiveness, return to work, and long-term quality of life.

Conclusion

Post-intensive care syndrome represents an important consequence of modern critical-care survival and extends the responsibilities of healthcare professionals beyond physiological stabilization. Physical weakness, cognitive impairment, psychological distress, sleep disturbance, pain, nutritional problems, and functional dependence may continue long after ICU discharge and substantially affect quality of life. Family members may simultaneously experience significant psychological, physical, and social consequences.

Nurses are ideally positioned to address these challenges because of their continuous patient contact, holistic assessment skills, communication role, and involvement in care coordination. Nursing management should begin during the ICU stay through systematic pain assessment, appropriate sedation, delirium prevention, early mobility, sleep promotion, nutritional support, cognitive stimulation, psychological care, and family engagement. The ABCDEF framework provides a useful structure for integrating these interventions, although current evidence indicates that individual components may have variable effects and should be individualized [6,17].

After ICU discharge, nursing responsibilities should continue through structured transition planning, education, rehabilitation support, PICS screening, family assessment, and coordination with multidisciplinary services. Dedicated PICS clinics are valuable where available, but telephone, home-based, and telehealth approaches may provide additional models of follow-up [25,26]. Ultimately, the goal of critical-care nursing should extend from keeping patients alive to helping them regain function, independence, psychological well-being, meaningful participation, and quality of life. A recovery-oriented nursing model that connects ICU care, ward rehabilitation, discharge preparation, primary care, and long-term follow-up can help ensure that survival becomes the beginning of recovery rather than the end point of critical-care treatment.

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