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# Insights into Post-Intensive Care Syndrome, A Complex and Multifaceted Condition

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## Abstract

Post-intensive care syndrome (PICS) is a complex and multifaceted condition that affects a significant proportion of patients who have survived critical illness and received intensive care. The prevalence of PICS is substantial and has been reported to range from 30% to 80% of ICU survivors. PICS has been associated with increased mortality, hospital readmissions, and healthcare utilization, emphasizing the need for comprehensive post-ICU follow-up care. There is a multitude of risk factors that predispose an individual to develop PICS. However, the educational level has been proven protective against developing the condition. Clinical presentation of PICS includes physical impairments, cognitive deficits, and psychological conditions, with some symptoms lasting from months to years post-recovery. The diagnosis is primarily clinical and requires an interdisciplinary medical team to tailor the diagnostic approach and a global health assessment. PICS multidisciplinary team involves critical care physicians, rehabilitation specialists, mental health professionals, and social support networks. Since no treatment is entirely adequate, controlling the underlying cause and prevention is the most used strategy. A multidimensional approach of the "ABCDEF" bundle is recommended for preventing PICS alongside other non-pharmacological practices. Early mobilization, delirium prevention, and tailored rehabilitation programs have shown promising outcomes for these patients. The long-term prognosis of PICS varies extensively and depends on numerous individual factors, including overall health, pre-existing conditions, age, and access to follow-up care. It is also possible to have a recurrence of symptoms after initial recovery, particularly during physical or emotional stress periods. The recovery rates for PICS depend on multiple factors, and the recovery process is usually gradual. Long-term consequences of the syndrome extend beyond the physical, cognitive, and psychological domains. Increased public awareness about PICS is essential to diagnose the condition early before it progresses. This article provides a comprehensive overview of PICS encompassing its characteristics, epidemiology, risk factors, clinical presentation, diagnosis, prevention, management, and prognosis. Further research is needed to refine risk stratification, optimize interventions, and develop novel approaches to mitigate the burden of PICS.

**Keywords:** Post-intensive care syndrome; ICU; Critical illness; Cognitive disturbance; Approach; Management

**Abbreviations:** PICS: Post-intensive care syndrome, ICU: Intensive care unit, TBI: Traumatic brain injury, CVA: Cerebrovascular accident, US: United States, PTSD: Post-traumatic stress disorder, UK: United Kingdom, MDSC: Myeloid-derived suppressor cell, IL: Interleukin, HLA: Human leukocyte antigens, CIP: Critical illness polyneuropathy, CIM: Critical illness myopathy, AKI: Acute kidney injury, CKD: Chronic kidney disease, ARDS: Acute respiratory distress syndrome, ICU-AW: ICU Intensive care unit acquired weakness, HADS: Hospital Anxiety and Depression Scale, IES-R: Impact of Event Scale-Revised, MoCA: Montreal Cognitive Assessment (MoCA), RBANS: Repeatable Battery for the Assessment of Neuropsychological Status, FIM: Functional Independence Measure, ADL: Activities of daily living, PSG: Polysomnography, MMT: Manual muscle testing, TUG: Timed Up and Go, 6MWT: 6-Minute Walk Test, CT: Computed tomography, MRI: Magnetic resonance imaging, CRP: C-reactive protein, BMI: Body mass index, EKG: Electrocardiogram, BPS: Behavioral Pain Scale, CPOT: Critical-Care Pain Observation Tool, PADIS: Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU, NSAIDs: Nonsteroidal anti-inflammatory drugs, CAM-ICU: Confusion Assessment Method for ICU, ICDSC: Intensive Care Delirium Screening Checklist.

## Introduction

Post-intensive care syndrome (PICS) describes recent and persistent declines in physical, cognitive, and mental health functioning that arise after critical illness and persist beyond acute care hospitalization and for which other causes, such as traumatic brain injury (TBI) or cerebrovascular accident (CVA) have been excluded [1,2]. The term could be applied to a survivor (PICS) or family member (PICS-F). Reported rates of these syndromes vary considerably in the scientific literature due to differences in the study population, periods of follow-up, and methods of assessing impairment, with prevalence in the U.S. around 64% and 56% of survivors after 3 and 12 months, respectively [2,3]. The etiology mechanisms include complex interactions between metabolic and hormonal pathways, individual factors such as genetic predisposition, and social determinants of health [4,5]. Clinical presentation is broad and includes anxiety, depression, memory and attention decline, and neuromuscular or pulmonary impairment. Diagnosis requires a global health assessment. Prevention is focused on identifying barriers that challenge providing coordinated and comprehensive care for patients and families after discharge. PICS treatment requires a multidisciplinary approach [1-5]. Increased public and both non-critical care and critical care health professionals' awareness and education are essential to the initial steps to progress the collective understanding of PICS manifestations. Hence, this narrative review aims to identify and profile PICS characteristics, epidemiology, risk factors, clinical presentation, diagnosis, prevention, management, and prognosis. This information will serve as an important step in developing the necessary support structures to enable optimal treatment and support for individuals with PICS.

## Epidemiology & Risk Factors

The epidemiology of post-ICU syndrome can vary depending on several factors, including the population studied, the definition and criteria used, and the duration of follow-up. The prevalence of PICS has been reported to be high, with estimates ranging from 30% to 80% of ICU survivors experiencing at least one symptom of post-ICU syndrome. However, it's important to note that the symptoms and severity can vary widely among individuals. For example, cognitive symptoms such as problems with memory, attention, concentration, and executive functioning are estimated to affect approximately 30-80% of ICU survivors. Finally, mental health symptoms such as anxiety, depression, post-traumatic stress disorder (PTSD), and other psychological distress vary widely but have been reported to range from 20-60% among ICU survivors [6-8].

The increase in life expectancy of the world's population has made ICU demand even more significant. Older adults present a fragility characteristic of their age because of the physiological changes this implies. For example, their physiological function is reduced by their multiple acute and chronic morbidities and by their medical or surgical, outpatient, or inpatient management [6]. PICS encompasses the cognitive, physical, social, and/or psychiatric dysfunctions that persist after hospital discharge; these dimensions are interrelated, and more than half of the patients admitted to ICU will have repercussions in one of the axes, as mentioned above [9].

The factors associated with this syndrome can be divided according to their temporality. On the one hand, there are the patient's pre-existing factors, defined as those present before admission to ICU. These include previously diminished cognitive reserve, addictions such as excessive alcohol consumption, comorbidities, and lack of control of chronic diseases [8]. On the other hand, there are the factors of hospitalization in ICU, which involve the duration of delirium in ICU, presence of severe sepsis or systemic inflammatory response syndrome, prolonged use of mechanical ventilation, considered as more than 7 days, prolonged sedation, dysglycemia and the use of psychotropic drugs [7,9,10]. However, we found protective factors such as the educational level, which translates into greater cognitive reserve and is associated with lower rates of dementia and depression [8]. Another factor is an early mobilization to avoid post-discharge physical deterioration, affecting approximately one-third of ICU patients. It is associated with prolonged mechanical ventilation, sepsis, systemic inflammatory response syndrome, multiorgan failure, and a more extended hospital stay in ICU [9,10]. The deterioration of mental status after ICU stay is associated with female sex, depression, anxiety or pre-existing post-traumatic stress disorder, and alcoholism [11]. Hypoglycemia and hypoxia heighten the risk of cognitive impairment and mood disorders like major depressive disorder in patients who recover from the ICU [12].

Cognitive decline has been observed to occur on average in 25% of patients who survive the ICU [13]. A UK study showed that 22% of patients still needed help with their daily routines after a year of being discharged from the ICU. Also, 28% of patients from the same study said their annual income was negatively affected due to the ICU stay and the recovery which followed. A U.S. study showed that half of the patients who recovered from the ICU had higher unemployment rates [13]. The manifestations of PICS vary in duration of symptoms as it can last from months to years post-recovery. Symptoms include limited mobility, depressed mood, inability to maintain continued sleep, sexual dysfunction, and decreased cognitive function. The patient's family members were reported to be both physically and mentally affected. Up to 30% of family members experience complicated grief, anxiety, depression, and lack of sleep [14].

## Etiology & Pathophysiology

Over the last 25 years, intensive care medicine has evolved due to medical innovations and improved practice guidelines [11]. Improving intensive-care treatment has led to increased survival among intensive-care patients. However, this is without its complications. The increase in survival among intensive


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care patients has led to the development of post-intensive care syndrome and difficulty returning to the original level of pre-ICU function among the survivors [15]. PICS is multifactorial and multifaceted, consisting of physical impairments, cognitive deficits, and mental health problems in ICU survivors and their families [9,11,16-19]. Complications are more common in septic ICU patients and endure for years post-ICU. The risk factors for PICS depend partly on which cognitive, psychiatric, and physical domains are affected the most [9,18]. Impairment in one area is frequently associated with a decline in the performance of another [9]. Physical symptoms are observed in about 30% to 50% of critical illness patients within three to six months post-critical illness [15,18]. Muscle deconditioning, critical illness polyneuropathy, myopathy, and critical illness neuromyopathy are the four categories of acquired weakness in intensive care units [11]. They manifest as neuromuscular weakness, exhaustion, loss of appetite, weight loss, weak hand grip, inability to perform a six-minute walk performance test, and decreased significance of functional status [11,15,16]. In addition, it increases the mortality rate five years after ICU discharge [15].

During critical illness, particularly sepsis, there is a massive and overwhelming immune response leading to the release of acute phase proinflammatory responses such as cytokines, chemokines, and adrenergic responses that mobilizes massive release of myeloid-derived suppressor cells (MDSCs), which are immature monocytes and neutrophils. These immature cells initiate immune responses as well as the resolution of inflammation. However, the immature neutrophils have decreased effector capability, creating an immunosuppressive state [17]. In addition, the monocytic MDSCs produce large amounts of interleukin-10 (IL-10), which deactivates innate and immune cells and also impairs the antigen presentation abilities of the immune cells as evidenced by low surface expression of human leukocyte antigens - DR (HLA-DR). The decreased expression of HLA-DR on the surface of monocytes is a strong marker for an immunosuppressive state resulting in increased risk for nosocomial infections and mortality [9,17]. Unfortunately, the immature cells linger in the circulatory systems for up to six weeks after the onset of sepsis, leading to the expansion of early progenitor cells with the resulting lymphopoiesis and hematopoiesis, which explains the resultant chronic lymphopenia and anemia in ICU survivors.

Neuromuscular disorders are other mechanisms commonly related to PICS. These conditions include critical illness polyneuropathy (CIP) and myopathy (CIM) and may become evident when the Medical Research Council (MRC) score is less than 48. CIP and CIM are significant contributors to intensive care acquired weakness, which affects both short-term and long-term outcomes of the patient and increases mortality in these patients. Even though diaphragmatic dysfunction has no association with increased mortality in two years, it worsens prognosis when it co-exists with limb weakness. CIP and CIM are debilitating among ICU survivors. It affects strength development, endurance, physical performance, and quality of life. These symptoms can persist for over five years, and some will never recover. Septic ICU patients are most at risk [15,17].

Renal and/or pulmonary dysfunction, widespread among critically ill patients, are other contributing factors to PICS development. Acute kidney injury (AKI) is generally reversible, depending on the severity. However, recent evidence has shown that it can progress to chronic kidney disease and end-stage renal disease, especially in ICU patients. In addition, AKI has also been associated with ICU patients' adverse cardiovascular and acute coronary events. Two main mechanisms of kidney damage are suspected to be involved in the above pathological process and include tubular and vascular damage due to proinflammatory cytokines release with resultant interstitial fibrosis and CKD [15,17]. On the other hand, massive insult or injury on the distance airspaces of the lung during critical illness is responsible for the pathogenesis of ARDS, one of the main contributors to PICS development. The resolution and repair of the injured lung tissues involve type II alveolar cells that migrate, proliferate, and differentiate with fibroblasts influx to reconstruct the denuded basement membrane [15]. Excessive extracellular matrix deposition, remodeling, and inappropriate, substantial, and persistent inflammation may result in residual pulmonary damage, adding to the patient's long-term physical impairment.

Finally, cognitive impairment is observed in approximately 40% of patients suffering from PICS [11,9,16-19]. It presents as reduced memory, poor executive function, weakened language, inattention, and progressive dementia [16]. Hyperglycemia, hypoglycemia, blood glucose variations, delirium, and in-hospital acute stress symptoms have all been recognized as potential risk factors for chronic cognitive impairment following critical illness [11,19]. Others include sepsis, mechanical ventilation, shock, hypoxia, and acute respiratory function [18]. These mainly affect concentration, memory, attention, rapidity of mental processing, and executive function. It can be observed before and during the period of critical illness. There is significant evidence that ICU patients with delirium are at a higher risk of long-term cognitive impairment outcomes [11]. Moreover, the key mental disorders that comprise PICS include depression, anxiety, and PTSD [11,18]. Depression affects around 30% of critical illness survivors, anxiety affects 70%, and PTSD affects 10-50% of critically ill patients [11]. If possible, every patient with suspected PICS should have a comprehensive mental assessment [11,19]. Davydow et al., in their systematic review, found that female gender was a significant predictor of PTSD after ICU care in two of seven investigations [20]. Preexisting sadness, anxiety, and PTSD, as well as a lower education level and alcohol addiction, all enhance the likelihood of ICU-acquired mental illness [11].

## Clinical Presentation

Post-ICU syndrome presents with a constellation of symptoms pertaining to various health problems that seem to commonly


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occur after recovery from a life-threatening critical illness requiring ICU admission. It encompasses physical impairments, cognitive deficits, and psychological consequences that plague the months to years of the survivors of intensive care [21].

Physical symptoms commonly include muscle weakness, known as ICU acquired weakness (ICU-AW), also known as critical illness polyneuropathy causing difficulty in performing daily activities, chronic pain affecting the quality of life, joint contractures impacting mobility, impaired pulmonary function and exercise tolerance [13,14,22-25].

Cognitive deficits include poor generalized cognitive performance, impaired memory and attention, decreased mental processing speed, and dementia-like illness [26-28]. In addition, long-term cognitive impairment and poor executive function could be predicted by the cause of ICU admission, such as ARDS, sepsis, and duration of delirium during the ICU stay [29,30].

Psychiatric conditions such as depression and anxiety commonly manifest in the aftermath of the recovery from critical illness. Other psychiatric conditions include acute stress disorder, post-traumatic stress disorder, sleep disturbances, and sexual dysfunctions [31]. Risk factors for psychological impairment in post-ICU syndrome are multifactorial and depend on patient characteristics, the severity of the disease, and ICU variables [27,31].

## Prevention Strategies

Given post-intensive care syndrome's effects on patients and their families, action must be taken to avoid it and contribute to raising patients' and their family's quality of life [32]. A team effort is necessary for the prevention of PICS to be successful. If not, handling a family member's long-term issues may fall mostly on family members. ICU survivors who encounter PICS require ongoing treatment; therefore, prompt assessments and detection by medical personnel are crucial and urgently required [36]. The emphasis should be on PICS prevention and risk factor minimization during ICU care because there are currently few viable therapeutic options available for PICS that have already manifested. Consequently, measures to manage delirium, avoid the use of benzodiazepines, and limit deep and prolonged sedation may lessen cognitive impairments; measures to improve nutritional intake and hasty mobilization may enhance physical function; and measures to encourage early family involvement may enhance the mental health of ICU survivors [9].

For PICS prevention, several interventions have been recommended. The "ABCDEF" bundle of recent recommendations aims to stop long-term cognitive impairment, delirium, and physical deterioration in the ICU [10]. This multidimensional approach is essential to preventing PICS efficiently and effectively. Also, effective communication techniques and the necessity to offer caregivers and families handout materials that can help prevent and treat PICS need to be emphasized. Avoiding hypoglycemia and hypoxemia during the ICU stay, which is associated with the presence of encephalopathy and delirium, having access to cellphones and tablets for direct communication, keeping ICU diaries that family members can read, and participating in support groups with patients' friends and family can all help to reduce the symptoms of PICS. Implementing the ABCDEF bundle has shown that it can decrease the incidence of delirium, the use of physical restraint, the readmission rate to the ICU, and discharge to a facility other than home [10,33].

## Diagnostic Approach

While the diagnosis of PICS is primarily based on a comprehensive evaluation of clinical signs, symptoms, and patient history, several diagnostic methods may be employed to assess and confirm the presence of this syndrome [34,35]. First, gathering a detailed medical history, including the duration of ICU stay, the severity of illness, and treatment received, helps provide insight into the potential risk factors and timeline of PICS development. This will aid in understanding the whole clinical context and guide further diagnostic investigations. Then, a thorough physical exam has to be conducted to evaluate the patient's overall functionality. Neurologic assessment should focus on detecting signs or symptoms suggestive of PICS, such as muscle weakness, cognitive deficits, or psychological distress [34,36].

Comprehensive psychological and neuropsychological assessments can be conducted to evaluate cognitive function, emotional well-being, and mental health status. These assessments may include interviews, questionnaires, and specialized neuropsychological tests. Self-reported questionnaires (i,e., ICU Syndrome Checklist-20) may be used to capture the diverse symptoms, quality of life, and experiences associated with PICS [37,38].

Standardized psychological assessment tools, such as the Hospital Anxiety and Depression Scale (HADS) or the Impact of Event Scale-Revised (IES-R), may be utilized to screen for anxiety, depression, or post-traumatic stress disorder (PTSD) symptoms commonly associated with PICS [36,39]. These tools provide quantitative measures of psychological distress. Moreover, cognitive impairments should be evaluated using tools such as the Montreal Cognitive Assessment (MoCA) or the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS). These tests assess various domains of cognitive function, including memory, attention, executive functions, and language. Finally, evaluating functional abilities is essential to assess physical impairments in PICS. Standardized scales like the Barthel Index or the Functional Independence Measure (FIM) can be used to measure activities of daily living (ADLs) and functional capacity [39-41]. As sleep disturbances are common in PICS, polysomnography (PSG) can be used to assess sleep architecture, identify sleep-related breathing disorders, and quantify sleep


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disturbances such as sleep fragmentation or obstructive sleep apnea [34,42].

Along with neuropsychological assessment tools, evaluating muscle strength, mobility, organ functioning, and potential structural brain lesions is crucial. Manual muscle testing (MMT) or dynamometry can help quantify muscle strength and identify muscle weakness associated with PICS. Mobility testing can provide insights into functional mobility limitations, including measures like the Timed Up and Go (TUG) test or the 6-Minute Walk Test (6MWT) [34,35,39]. Spirometry may be conducted in individuals with respiratory muscle weakness or persistent lung impairments following ICU admission to evaluate pulmonary function. In some cases, neuroimaging (i.e., CT, MRI) may be utilized to assess structural abnormalities or identify brain-related pathologies associated with PICS, such as stroke or brain atrophy [42,43].

Other additional tests to assess post-ICU syndrome include markers of inflammation (CRP, procalcitonin) and liver/kidney function tests, which can provide valuable information about any residual organ dysfunction following ICU care [43,44]. Also, malnutrition or nutritional deficiencies are common in PICS, and evaluating body mass index (BMI), dietary assessments, or biochemical markers (e.g., albumin, prealbumin) can help identify nutritional deficits and guide appropriate interventions. PICS may also have cardiovascular implications. Therefore, EKG, echocardiography, or stress tests may be used to assess cardiac function, identify arrhythmias, or evaluate the presence of cardiac abnormalities [45].

It is important to note that PICS is a multifaceted condition, and the diagnostic process involves an integrated approach, considering multiple domains of impairment [38-40]. Due to the diverse nature of PICS, an interdisciplinary medical team, including intensivists, pulmonologists, neurologists, psychiatrists, psychologists, physiotherapists, and occupational therapists, may be necessary to comprehensively understand the individual's condition and tailor the diagnostic approach accordingly.

## Therapeutic Strategies

The most effective and successful way to manage post-ICU syndrome is to avoid it before it even begins by immediately initiating preventative methods once a patient is transferred to the ICU. However, if post-ICU syndrome begins, the remedies and their efficacies are limited; consequently, over 50 US hospitals have started implementing the ABCDEF bundle of care [13,46]. Focusing on patient recovery and outcomes, this evidence-based intervention aims to improve patient care through the following factors:

i. Assessing, Managing, and Preventing Pain: the gold standard is the 1-10 self-reported numerical rating scale, but if unable to communicate, utilize the Behavioral Pain Scale (BPS) & Critical-Care Pain Observation Tool (CPOT). BPS is subdivided into facial expressions, ventilator compliance, and upper limb movements. CPOT also studies facial expression and ventilator compliance but adds muscle tension, vocalization (if non-intubated), and body movements [47].

ii. Both Spontaneous Awakening Trials & Breathing Trials: these require stopping any analgesic or sedative, and these interruptions consequently decrease the number of days in ICU care and mechanical ventilation [46,47].

iii. Choice of analgesics & sedatives: according to the 2018 PADIS (Prevention and Management of Pain, Agitation/Sedation, Delirium, Immobility, and Sleep Disruption in Adult Patients in the ICU) guidelines, opioids have been shown to worsen sedation, respiratory depression, delirium, immunosuppression and could lengthen ICU stay and worsen outcome in post-ICU patients [48]. Because of such, "multimodal analgesia" is recommended to optimize patient outcomes by modulating patient pain, decreasing opioid use, and implementing non-opioid analgesics in combination with regional anesthesia (nitrous oxide) and additional non-pharmacologic interventions except in critically ill patients. Non-opioid analgesics include nonsteroidal anti-inflammatory drugs (NSAIDs), acetaminophen, lidocaine, ketamine, neuropathic agents, and nefopam. In addition, nonpharmacologic interventions such as mind-body medicine (hypnosis), relaxation techniques, massage therapy, music, and cold therapy are suggested for critically ill patients.

iv. Delirium assessment, prevention, and management: methods such as Confusion Assessment Method for ICU (CAM-ICU) & Intensive Care Delirium Screening Checklist (ICDSC) are frequently used [46,47].

v. Early mobility and exercise: it has been shown to decrease days of delirium & decrease peripheral muscle weakness and long-term physical dysfunction [46,47].

vi. Family engagement & empowerment: its goal is to identify the patient's wishes better, & actively work with the family by acknowledging and recognizing their worries, questions, and wishes and involving them in the patient's care [46,47].

vii. These guidelines' widespread use has proven exceptionally beneficial for ICU patient care. By focusing on different aspects of a patient's well-being, such as management of pain, breathing, analgesic and sedative use, delirium, physical condition, and family support, it has, as a whole, successfully accelerated recovery and mobility while decreasing short & long term physical and mental impairments [49]. Additionally, non-pharmacological practices like regularly orienting and reassuring the patient, opening the curtains during the day, using a clock and/or calendar, reducing environmental stimuli, and encouraging family visits have been shown to help reduce disorientation, anxiety, and delirium [50].


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## Prognosis

The overall prognosis of PICS can vary depending on several factors, including the underlying condition that necessitated ICU admission, the severity of the illness, and individual patient characteristics. As previously mentioned, the recovery rates for PICS can be influenced by multiple factors [51]. Some patients may experience a complete resolution of symptoms over time, while others may continue to have persistent or chronic symptoms. The recovery process can be gradual, and it is essential to note that individual experiences may vary significantly. It is not easy to provide specific percentages for recovery rates due to the complexity and heterogeneity of PICS cases. Regarding mortality outcomes, PICS is not directly associated with increased mortality [51,52]. However, the underlying conditions that led to ICU admission and the severity of the illness can impact overall mortality rates. Patients with more severe illnesses requiring ICU care are generally at higher mortality risk. Once patients have been discharged from the ICU, their mortality risk is determined by the underlying condition and any complications that may arise during recovery. Therefore, it is essential for individuals experiencing PICS to receive appropriate follow-up care to manage their underlying clinical conditions effectively [53].

It is important to stress that the recurrence of PICS symptoms after initial recovery is possible but not well-documented. Some patients may experience a relapse or exacerbation of symptoms, particularly during periods of physical or emotional stress [54]. However, the frequency and likelihood of recurrence remain uncertain, and further research is needed to understand this aspect of PICS more comprehensively [54,55].

The long-term prognosis for PICS varies widely and depends on individual factors such as overall health, pre-existing conditions, age, and access to follow-up care. Some patients may fully recover and regain their pre-ICU level of functioning, while others may experience long-term physical, cognitive, or psychological impairments [53,56]. These impairments can significantly impact a person's quality of life and may require ongoing management and support. It is important to note that PICS research is relatively new, and further studies are ongoing to understand its prognosis, risk factors, and effective management strategies [56]. Therefore, a multidisciplinary medical team should evaluate each patient's prognosis individually to avoid potentially irreversible consequences.

## Conclusion

This narrative review article highlights the significance of post-intensive care syndrome as a complex and multifaceted condition affecting patients undergoing ICU treatment. PICS encompasses a wide range of physical, cognitive, and psychological symptoms that can persist long after hospital discharge. Therefore, diagnosing PICS requires a comprehensive evaluation of symptoms and carefully assessing the patient's medical history. Prevention of PICS involves various strategies, including early mobilization, delirium management, and psychological support for both patients and their families. These interventions aim to mitigate the risk factors associated with PICS and promote recovery. Treatment strategies involve a multidisciplinary approach, targeting the specific symptoms experienced by each patient. Physical rehabilitation, cognitive therapy, and psychological counseling are commonly employed to address the functional impairments and psychological distress associated with PICS.

Despite the growing recognition of PICS, there is a need for further large-scale prospective studies to enhance our understanding of the condition, improve early detection, and enhance patient outcomes. Such studies would provide valuable insights into PICS's risk factors, pathophysiology, and long-term effects, ultimately guiding the development of more effective preventive and therapeutic interventions. In summary, PICS represents a significant challenge in critical care medicine, impacting ICU survivors' well-being and quality of life. Therefore, efforts to prevent and manage PICS should be intensified through collaborative research and the implementation of evidence-based interventions to improve patient outcomes and enhance their recovery journey.

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