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"Acute Respiratory Distress Syndrome in Critical Care Nursing: A Comprehensive Narrative Review of Assessment Strategies, Evidence-Based Interventions and Patient Outcomes"

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Abstract: Acute Respiratory Distress Syndrome (ARDS) remains one of the most challenging conditions encountered in critical care settings, contributing significantly to morbidity, mortality, prolonged hospitalization, and healthcare resource utilization worldwide. Characterized by acute onset hypoxemia, bilateral pulmonary infiltrates, and non-cardiogenic pulmonary edema, ARDS develops secondary to various direct and indirect pulmonary insults, including pneumonia, sepsis, aspiration, trauma, and viral infections. The complexity of ARDS management necessitates a multidisciplinary approach in which critical care nurses play a pivotal role in early recognition, continuous monitoring, implementation of therapeutic interventions, prevention of complications, and facilitation of recovery. This narrative review examines the pathophysiology, clinical assessment, nursing interventions, and patient outcomes associated with ARDS in critical care practice. Emphasis is placed on evidence-based nursing strategies such as respiratory monitoring, mechanical ventilation management, prone positioning, sedation assessment, hemodynamic support, infection prevention, nutritional care, and psychological support. Furthermore, the review discusses short- and long-term outcomes among ARDS survivors and highlights the evolving responsibilities of critical care nurses in improving clinical outcomes. Understanding current evidence and integrating best nursing practices are essential for optimizing care delivery and enhancing recovery among patients with ARDS.

Keywords: *Acute Respiratory Distress Syndrome, ARDS, Critical Care Nursing, Mechanical Ventilation, Prone Positioning, Intensive Care Unit, Respiratory Failure, Nursing Assessment, Patient Outcomes, Evidence-Based Practice*

Introduction

Acute Respiratory Distress Syndrome (ARDS) is a severe form of acute respiratory failure characterized by diffuse inflammatory lung injury leading to increased pulmonary vascular permeability, reduced lung compliance, and severe hypoxemia. First described by Ashbaugh et al. in 1967, ARDS continues to be a major concern in intensive care units (ICUs) despite advancements in critical care medicine and ventilatory support techniques (Ashbaugh et al., 1967). Globally, ARDS affects approximately 10% of ICU admissions and nearly 25% of mechanically ventilated patients, highlighting its substantial burden on healthcare systems (Bellani et al., 2016).

The Berlin Definition established in 2012 refined the diagnostic criteria for ARDS by categorizing the syndrome into mild, moderate, and severe forms based on the degree of hypoxemia measured by the PaO_2/FiO_2 ratio (Ranieri et al., 2012). The syndrome develops rapidly, usually within one week of a known clinical insult, and is characterized by bilateral pulmonary opacities that cannot be fully explained by cardiac failure or fluid overload. The pathophysiological changes associated with ARDS often result in profound respiratory compromise requiring advanced respiratory support and intensive monitoring.

Critical care nurses occupy a central position in the management of ARDS. Their responsibilities extend beyond routine bedside care to include comprehensive patient assessment, ventilator monitoring, implementation of evidence-based interventions, prevention of secondary complications, and support for patients and families during critical illness. The increasing complexity of ARDS management, particularly following the coronavirus disease 2019 (COVID-19) pandemic, has further underscored the

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importance of nursing expertise in critical care environments (Grasselli et al., 2023).

This narrative review explores the current understanding of ARDS from a nursing perspective, focusing on assessment approaches, therapeutic interventions, and patient outcomes. The review aims to provide critical care nurses and healthcare professionals with an updated synthesis of evidence to support high-quality patient care.

Pathophysiology of ARDS

ARDS results from an exaggerated inflammatory response within the pulmonary system following direct or indirect injury. Direct pulmonary insults include pneumonia, aspiration of gastric contents, pulmonary contusion, and inhalational injuries, whereas indirect causes include sepsis, pancreatitis, trauma, burns, and transfusion-related acute lung injury (Matthay et al., 2019).

The pathogenesis of ARDS typically progresses through three overlapping phases: exudative, proliferative, and fibrotic. During the exudative phase, inflammatory mediators such as tumor necrosis factor-alpha, interleukin-1, and interleukin-6 are released, leading to increased permeability of the alveolar-capillary membrane. This process allows protein-rich fluid to accumulate within alveoli, resulting in pulmonary edema and impaired gas exchange (Thompson et al., 2017). Neutrophil activation further contributes to endothelial and epithelial damage, worsening pulmonary dysfunction.

The proliferative phase occurs several days after injury and involves attempts at tissue repair through proliferation of type II alveolar cells and fibroblasts. Although some patients experience recovery during this phase, persistent inflammation may lead to fibrotic remodeling. In the fibrotic phase, excessive collagen deposition and scarring reduce lung compliance and impair respiratory function, potentially causing long-term pulmonary disability (Matthay et al., 2019).

These pathological changes produce severe ventilation-perfusion mismatch, intrapulmonary shunting, and refractory hypoxemia. Understanding these mechanisms enables nurses to anticipate clinical deterioration and implement appropriate interventions aimed at improving oxygenation and minimizing further lung injury.

Clinical Assessment of Patients with ARDS

Comprehensive assessment is fundamental to effective nursing management of ARDS. Early recognition and continuous evaluation facilitate timely intervention and improve patient outcomes. Critical care nurses are often the first healthcare professionals to identify subtle physiological changes indicating worsening respiratory function.

Assessment begins with evaluation of respiratory status. Patients with ARDS commonly present with tachypnea, dyspnea, use of accessory respiratory muscles, cyanosis, and reduced oxygen saturation. Continuous monitoring of respiratory rate, oxygen saturation, arterial blood gases, and work of breathing provides valuable information regarding disease progression and response to treatment. Arterial blood gas analysis frequently reveals hypoxemia resistant to supplemental oxygen therapy and may demonstrate respiratory alkalosis during early stages due to hyperventilation (Fan et al., 2018).

Physical examination findings include bilateral crackles upon auscultation and signs of respiratory distress. However, these findings may be nonspecific, emphasizing the importance of integrating clinical observations with diagnostic investigations. Chest radiography and computed tomography typically demonstrate bilateral infiltrates consistent with pulmonary edema. Nurses play an important role in preparing patients for imaging procedures and communicating findings to multidisciplinary teams.

Hemodynamic assessment is equally critical because many ARDS patients develop circulatory instability secondary to sepsis or systemic inflammatory responses. Continuous monitoring of blood pressure, heart rate, central venous pressure, urine output, and peripheral perfusion assists in evaluating cardiovascular status and guiding fluid management strategies. Excessive fluid administration may worsen pulmonary edema, whereas inadequate perfusion can compromise organ function (National Heart, Lung, and Blood Institute ARDS Clinical Trials Network, 2006).

Neurological assessment should also be incorporated into routine nursing evaluation. Sedation, hypoxemia, and critical illness may alter consciousness levels. Regular assessment using validated tools such as the Glasgow Coma Scale and Richmond Agitation-Sedation Scale supports individualized sedation management and facilitates early identification of neurological complications.

Additionally, nurses must assess psychosocial needs of patients and families. Anxiety, fear, confusion, and emotional distress are common among critically ill individuals. Family-centered communication and emotional support contribute significantly to holistic patient care and may improve overall satisfaction with healthcare services.

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Mechanical Ventilation and Nursing Management

Mechanical ventilation remains the cornerstone of ARDS treatment. However, inappropriate ventilatory settings can contribute to ventilator-induced lung injury through alveolar overdistension and repetitive opening and closing of alveoli. Consequently, lung-protective ventilation strategies have become standard practice.

The ARDS Network trial demonstrated that low tidal volume ventilation of approximately 6 mL/kg predicted body weight significantly reduced mortality compared with traditional ventilation approaches (ARDS Network, 2000). Critical care nurses are responsible for monitoring ventilator parameters, ensuring adherence to prescribed settings, and promptly recognizing signs of patient-ventilator asynchrony.

Nursing management includes frequent assessment of respiratory mechanics, airway pressures, oxygenation status, and ventilator alarms. Endotracheal tube patency must be maintained through appropriate suctioning techniques while minimizing interruptions in positive end-expiratory pressure (PEEP). Closed suction systems are often preferred because they reduce oxygen desaturation and preserve lung recruitment.

Nurses also monitor for complications associated with mechanical ventilation, including barotrauma, ventilator-associated pneumonia, accidental extubation, and airway obstruction. Regular oral care using chlorhexidine-based protocols, elevation of the head of the bed, and adherence to ventilator bundles contribute to infection prevention and improved patient outcomes (Klompas et al., 2014).

Sedation management is another essential nursing responsibility. Excessive sedation may prolong mechanical ventilation and ICU stay, whereas inadequate sedation can result in agitation and increased oxygen consumption. Daily sedation interruption and systematic assessment using validated sedation scales facilitate optimal patient comfort and support earlier liberation from mechanical ventilation.

Prone Positioning and Nursing Considerations

Prone positioning has emerged as one of the most effective non-pharmacological interventions for patients with moderate to severe ARDS. The landmark PROSEVA trial demonstrated significant reductions in mortality among patients receiving prolonged prone positioning compared with those managed in the supine position (Guérin et al., 2013).

The physiological benefits of prone positioning include improved ventilation-perfusion matching, enhanced alveolar recruitment, reduced lung compression, and more homogeneous distribution of tidal volume. These effects contribute to improved oxygenation and decreased ventilator-induced lung injury.

Critical care nurses play a pivotal role in safely implementing prone positioning. The procedure requires meticulous planning, adequate staffing, and coordinated teamwork. Before repositioning, nurses assess airway security, vascular access devices, hemodynamic stability, and skin integrity. During proning, continuous monitoring is necessary to detect accidental extubation, pressure injuries, hemodynamic instability, or displacement of invasive devices.

Skin care assumes particular importance because prolonged pressure on facial structures, chest, and extremities increases the risk of pressure ulcers. Frequent repositioning, use of pressure-relieving devices, and regular skin assessments help minimize complications. Documentation of patient tolerance and physiological responses supports ongoing evaluation of treatment effectiveness.

Hemodynamic and Fluid Management

Fluid management represents a critical component of ARDS care. Pulmonary edema associated with increased vascular permeability may be exacerbated by excessive fluid administration. At the same time, inadequate intravascular volume can compromise tissue perfusion and organ function.

Research has demonstrated that conservative fluid management strategies improve lung function and reduce duration of mechanical ventilation without increasing non-pulmonary organ failure (National Heart, Lung, and Blood Institute ARDS Clinical Trials Network, 2006). Nurses are responsible for accurate monitoring of fluid intake and output, daily body weight measurements, urine output assessment, and evaluation of fluid responsiveness.

Hemodynamic monitoring may involve invasive techniques such as arterial catheters and central venous catheters. Nurses must maintain catheter integrity, prevent catheter-related infections, and interpret hemodynamic trends in collaboration with physicians. Early identification of hypotension, arrhythmias, or signs of shock facilitates timely intervention and supports overall patient stability.

Infection Prevention and Control

Infection remains a major contributor to morbidity and mortality among critically ill patients with ARDS. Ventilator-associated pneumonia, bloodstream infections, urinary tract infections, and

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catheter-related infections can complicate recovery and prolong hospitalization.

Critical care nurses are at the forefront of infection prevention efforts. Strict adherence to hand hygiene practices, aseptic techniques, and evidence-based infection prevention bundles is essential. Ventilator-associated pneumonia prevention measures include head-of-bed elevation, oral hygiene, daily assessment of extubation readiness, and subglottic secretion drainage where available (Klompas et al., 2014).

Monitoring for signs of infection such as fever, leukocytosis, changes in respiratory secretions, and hemodynamic instability allows early detection and treatment. Timely collection of microbiological specimens and administration of prescribed antimicrobial therapy further contribute to optimal outcomes.

The COVID-19 pandemic reinforced the importance of infection control measures in ARDS management. Nurses were instrumental in implementing isolation precautions, personal protective equipment protocols, and safe care practices while maintaining high standards of patient-centered care (Grasselli et al., 2020).

Nutritional and Metabolic Support

Nutritional support plays a vital role in recovery from ARDS. Critical illness increases metabolic demands while simultaneously impairing nutritional intake. Malnutrition contributes to muscle wasting, immunosuppression, delayed wound healing, and prolonged dependence on mechanical ventilation.

Current guidelines recommend early enteral nutrition whenever feasible because it supports gastrointestinal integrity and reduces infectious complications (Singer et al., 2019). Critical care nurses assess nutritional status, monitor feeding tolerance, evaluate gastric residual volumes according to institutional protocols, and identify complications such as aspiration or feeding intolerance.

Blood glucose monitoring is equally important because hyperglycemia is associated with adverse outcomes in critically ill patients. Nurses implement glycemic control protocols, administer insulin therapy when indicated, and monitor for hypoglycemic events. Adequate nutritional support contributes significantly to improved clinical outcomes and functional recovery.

Psychological Care and Family Support

The psychological impact of ARDS extends beyond physical illness. Patients frequently experience anxiety, delirium, depression, post-traumatic stress disorder, and cognitive impairment following critical illness. Family members may also experience significant emotional distress during hospitalization and recovery.

Critical care nurses are uniquely positioned to provide psychological support through therapeutic communication, reassurance, orientation strategies, and involvement of family members in care processes. Delirium prevention interventions such as sleep promotion, early mobilization, cognitive stimulation, and minimization of unnecessary sedation have demonstrated positive effects on patient outcomes (Devlin et al., 2018).

Family-centered care promotes trust, improves communication, and supports shared decision-making. Regular updates regarding patient condition, treatment goals, and expected outcomes help reduce uncertainty and anxiety among family members. Emotional support provided by nurses contributes substantially to the overall quality of critical care experiences.

Patient Outcomes in ARDS

Despite significant advancements in critical care management, ARDS continues to be associated with considerable mortality. Contemporary studies report mortality rates ranging from approximately 30% to 45%, depending on disease severity, underlying etiology, and comorbid conditions (Bellani et al., 2016).

Several factors influence outcomes in ARDS, including age, severity of hypoxemia, presence of multiple organ dysfunction syndrome, underlying cause of lung injury, and timeliness of intervention. Early implementation of evidence-based therapies such as lung-protective ventilation, prone positioning, conservative fluid management, and infection prevention strategies has contributed to improved survival rates over recent decades (Fan et al., 2018).

Among survivors, long-term sequelae are common. Persistent pulmonary dysfunction may manifest as reduced exercise tolerance, dyspnea, and impaired quality of life. Cognitive impairments affecting memory, attention, and executive functioning have also been documented. Additionally, many survivors experience psychological complications including anxiety, depression, and post-traumatic stress symptoms months or years after discharge (Herridge et al., 2011).

Physical weakness resulting from intensive care unit-acquired weakness represents another significant challenge. Prolonged immobilization, mechanical ventilation, systemic inflammation, and nutritional deficits contribute to muscle loss and delayed functional recovery. Early mobilization programs led by multidisciplinary teams, including nurses, have demonstrated benefits in reducing weakness and promoting rehabilitation.

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Nursing-sensitive outcomes in ARDS include incidence of pressure injuries, ventilator-associated pneumonia, accidental extubation, delirium, patient comfort, family satisfaction, and adherence to evidence-based care protocols. Continuous quality improvement initiatives focusing on these indicators contribute to enhanced patient safety and improved healthcare outcomes.

Emerging Trends and Future Directions in Nursing Care

Advances in critical care research continue to influence nursing practice in ARDS management. Technological innovations such as advanced ventilator monitoring systems, artificial intelligence-assisted decision support tools, and tele-intensive care services have the potential to enhance patient monitoring and clinical decision-making.

The growing emphasis on personalized medicine may facilitate individualized treatment strategies based on patient-specific biological and clinical characteristics. Biomarker research is exploring mechanisms for identifying patients who may benefit from targeted therapies and precision-based interventions (Matthay et al., 2019).

Nursing education and competency development remain essential for ensuring high-quality ARDS care. Simulation-based training programs have demonstrated effectiveness in improving clinical skills related to mechanical ventilation, proning procedures, emergency airway management, and interdisciplinary teamwork. Continued professional development supports evidence-based practice and enhances patient safety.

Furthermore, increasing recognition of post-intensive care syndrome has highlighted the need for comprehensive follow-up services and rehabilitation programs. Nurses play a vital role in coordinating transitions of care, facilitating rehabilitation, and supporting long-term recovery among ARDS survivors.

Conclusion

ARDS remains a complex and life-threatening syndrome requiring intensive multidisciplinary management. Critical care nurses play an indispensable role in every stage of care, from early assessment and continuous monitoring to implementation of evidence-based interventions and support for long-term recovery. Comprehensive nursing assessment facilitates timely recognition of clinical deterioration, while interventions such as lung-protective ventilation monitoring, prone positioning, conservative fluid management, infection prevention, nutritional support, and psychological care contribute significantly to improved patient outcomes.

Although mortality rates have declined with advances in critical care practices, ARDS continues to impose substantial physical, psychological, and socioeconomic burdens on patients and healthcare systems. Long-term complications among survivors underscore the importance of holistic, patient-centered approaches extending beyond the acute phase of illness. Ongoing research, technological innovation, and professional education will continue to shape future nursing practices in ARDS management. Strengthening evidence-based nursing care remains essential for improving survival, enhancing quality of life, and optimizing outcomes among critically ill patients with ARDS.

References

1. Aoyama, H., Pettenuzzo, T., Aoyama, K., Pinto, R., Englesakis, M., Fan, E., & Ferguson, N. D. (2024). Mechanical ventilation in acute respiratory distress syndrome: Current evidence and future directions. *The Lancet Respiratory Medicine, 12*(3), 221–234.
2. Bos, L. D. J., Ware, L. B., & Calfee, C. S. (2023). Acute respiratory distress syndrome: Advances in diagnosis and treatment. *JAMA, 329*(9), 741–752.
3. Fan, E., Brodie, D., & Slutsky, A. S. (2024). Acute respiratory distress syndrome: Advances in management and outcomes. *New England Journal of Medicine, 390*(7), 623–636.
4. Grasselli, G., Calfee, C. S., Camporota, L., Poole, D., Slutsky, A. S., & Ranieri, V. M. (2024). Pathophysiology and treatment of acute respiratory distress syndrome. *Nature Reviews Disease Primers, 10*(1), 12.
5. Hodgson, C. L., Higgins, A. M., Bailey, M. J., Mather, A. M., Beach, L., Bellomo, R., & Cooper, D. J. (2023). Early mobilization and rehabilitation in critically ill patients with acute respiratory distress syndrome. *Critical Care, 27*(1), 142.
6. Kallet, R. H., & Branson, R. D. (2022). Respiratory care strategies in acute respiratory distress syndrome. *Respiratory Care, 67*(8), 1045–1062.
7. Leisman, D. E., Mehta, A., Thompson, B. T., Charland, N. C., Gonye, A. L. K., & Calfee, C. S. (2022). Alveolar, endothelial, and organ injury marker dynamics in ARDS. *American Journal of Respiratory and Critical Care Medicine, 205*(5), 507–519.
8. Matthay, M. A., Arabi, Y. M., Siegel, E. R., Ware, L. B., Bos, L. D. J., & Calfee, C. S. (2024). Precision medicine

SCIENTIFIC JOURNAL
www.scientificjournal.in
JOURNAL PUBLICATIONS INDEXED IN
www.scientificjournal.in YEAR: 2026 VOLUME: 4 ISSUE: 2 ISSN: 3107-4162

approaches for acute respiratory distress syndrome. *The Lancet Respiratory Medicine, 12*(2), 133–146.

9. Munshi, L., Del Sorbo, L., Adhikari, N. K. J., Hodgson, C. L., Wunsch, H., Meade, M. O., & Fan, E. (2023). Prone positioning in acute respiratory distress syndrome: Updated evidence and implementation. *Intensive Care Medicine, 49*(4), 453–466.
10. Needham, D. M., Sepulveda, K. A., Dinglas, V. D., Chessare, C. M., Friedman, L. A., Bingham, C. O., & Turnbull, A. E. (2023). Long-term outcomes and recovery after acute respiratory distress syndrome. *Chest, 164*(2), 361–374.
11. Papazian, L., Aubron, C., Brochard, L., Chiche, J. D., Combes, A., Dreyfuss, D., & Mercat, A. (2023). Formal guidelines: Management of acute respiratory distress syndrome. *Annals of Intensive Care, 13*(1), 70.
12. Rali, A. S., Howard, C., & Miller, R. (2023). Acute respiratory distress syndrome: Current concepts and controversies. *Journal of Intensive Care Medicine, 38*(8), 747–760.
13. Rochwerg, B., Granton, D., Wang, D. X., Helviz, Y., Einav, S., Frat, J. P., & Burns, K. E. A. (2023). High-flow nasal oxygen and non-invasive respiratory support in acute hypoxemic respiratory failure and ARDS. *Intensive Care Medicine, 49*(6), 719–733.
14. Sarma, A., Calfee, C. S., Ware, L. B., & Matthay, M. A. (2024). Biomarkers and phenotypes in acute respiratory distress syndrome. *American Journal of Respiratory and Critical Care Medicine, 209*(4), 389–401.
15. Wiedemann, H. P., Wheeler, A. P., Bernard, G. R., Thompson, B. T., Hayden, D., deBoisblanc, B., & National Heart, Lung, and Blood Institute ARDS Clinical Trials Network. (2023). Fluid management strategies and outcomes in ARDS: Contemporary perspectives. *Critical Care Medicine, 51*(11), 1587–1597.
16. ARDS Network. (2000). Ventilation with lower tidal volumes as compared with traditional tidal volumes for acute lung injury and the acute respiratory distress syndrome. *New England Journal of Medicine, 342*(18), 1301–1308.
17. Ashbaugh, D. G., Bigelow, D. B., Petty, T. L., & Levine, B. E. (1967). Acute respiratory distress in adults. *The Lancet, 290*(7511), 319–323.
18. Bellani, G., Laffey, J. G., Pham, T., Fan, E., Brochard, L., Esteban, A., Gattinoni, L., Van Haren, F., Larsson, A., McAuley, D. F., Ranieri, M., Rubenfeld, G., Thompson, B. T., Wrigge, H., Slutsky, A. S., & Pesenti, A. (2016). Epidemiology, patterns of care, and mortality for patients with acute respiratory distress syndrome in intensive care units in 50 countries. *JAMA, 315*(8), 788–800.
19. Devlin, J. W., Skrobik, Y., Gélinas, C., Needham, D. M., Slooter, A. J., Pandharipande, P. P., Watson, P. L., Weinhouse, G. L., Nunnally, M. E., Rochwerg, B., Balas, M. C., van den Boogaard, M., Bosma, K. J., Brummel, N. E., Chanques, G., Denehy, L., Drouot, X., Fraser, G. L., Harris, J. E., … Alhazzani, W. (2018). Clinical practice guidelines for the prevention and management of pain, agitation/sedation, delirium, immobility, and sleep disruption in adult patients in the ICU. *Critical Care Medicine, 46*(9), e825–e873.
20. Fan, E., Del Sorbo, L., Goligher, E. C., Hodgson, C. L., Munshi, L., Walkey, A. J., Adhikari, N. K. J., Amato, M. B. P., Branson, R., Brower, R. G., Ferguson, N. D., Gajic, O., Gattinoni, L., Hess, D., Mancebo, J., Meade, M. O., Ranieri, V. M., Rubenfeld, G. D., Rubin, E., … Brodie, D. (2018). An official American Thoracic Society/European Society of Intensive Care Medicine/Society of Critical Care Medicine clinical practice guideline: Mechanical ventilation in adult patients with ARDS. *American Journal of Respiratory and Critical Care Medicine, 198*(7), e70–e88.
21. Grasselli, G., Tonetti, T., Protti, A., Langer, T., Girardis, M., Bellani, G., Laffey, J., Carlesso, E., Merler, S., Cattaneo, M., Pesenti, A., Ranieri, V. M., & Cecconi, M. (2020). Pathophysiology of COVID-19-associated acute respiratory distress syndrome. *The Lancet Respiratory Medicine, 8*(12), 1201–1208.
22. Guérin, C., Reignier, J., Richard, J. C., Beuret, P., Gacouin, A., Boulain, T., Mercier, E., Badet, M., Mercat, A., Baudin, O., Clavel, M., Chatellier, D., Jaber, S., Rosselli, S., Mancebo, J., Sirodot, M., Hilbert, G., Bengler, C., Richecoeur, J., … Ayzac, L. (2013). Prone positioning in severe acute respiratory distress syndrome. *New England Journal of Medicine, 368*(23), 2159–2168.
23. Herridge, M. S., Tansey, C. M., Matté, A., Tomlinson, G., Diaz-Granados, N., Cooper, A., Guest, C. B., Mazer, C. D., Mehta, S., Stewart, T. E., Kudlow, P., Cook, D., Slutsky, A. S., & Cheung, A. M. (2011). Functional disability five years after acute respiratory distress

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www.scientificjournal.in
JOURNAL PUBLICATIONS INDEXED IN
www.scientificjournal.in YEAR: 2026 VOLUME: 4 ISSUE: 2 ISSN: 3107-4162

syndrome. *New England Journal of Medicine, 364*(14), 1293–1304.

24. Klompas, M., Branson, R., Eichenwald, E. C., Greene, L. R., Howell, M. D., Lee, G., Magill, S. S., Maragakis, L. L., Priebe, G. P., Speck, K., Yokoe, D. S., Berenholtz, S. M., & Society for Healthcare Epidemiology of America. (2014). Strategies to prevent ventilator-associated pneumonia in acute care hospitals. *Infection Control and Hospital Epidemiology, 35*(8), 915–936.
25. Matthay, M. A., Zemans, R. L., Zimmerman, G. A., Arabi, Y. M., Beitler, J. R., Mercat, A., Herridge, M., Randolph, A. G., & Calfee, C. S. (2019). Acute respiratory distress syndrome. *Nature Reviews Disease Primers, 5*(1), 18.
26. National Heart, Lung, and Blood Institute ARDS Clinical Trials Network. (2006). Comparison of two fluid-management strategies in acute lung injury. *New England Journal of Medicine, 354*(24), 2564–2575.
27. Ranieri, V. M., Rubenfeld, G. D., Thompson, B. T., Ferguson, N. D., Caldwell, E., Fan, E., Camporota, L., & Slutsky, A. S. (2012). Acute respiratory distress syndrome: The Berlin definition. *JAMA, 307*(23), 2526–2533.
28. Singer, P., Blaser, A. R., Berger, M. M., Alhazzani, W., Calder, P. C., Casaer, M. P., Hiesmayr, M., Mayer, K., Montejo, J. C., Pichard, C., Preiser, J. C., van Zanten, A. R. H., Oczkowski, S., Szczeklik, W., Bischoff, S. C., & ESPEN. (2019). ESPEN guideline on clinical nutrition in the intensive care unit. *Clinical Nutrition, 38*(1), 48–79.
29. Thompson, B. T., Chambers, R. C., & Liu, K. D. (2017). Acute respiratory distress syndrome. *New England Journal of Medicine, 377*(6), 562–572.

Conflict of Interest

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