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The Nurse as a Caregiver: Enhancing Comfort and Well-being in Mechanically Ventilated Patients

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ABSTRACT

Providing high-quality care to mechanically ventilated patients in the intensive care unit (ICU) requires nurses to effectively balance the use of advanced technologies

with addressing patients' psychosocial needs. This review examines evidence-based practices for promoting patient comfort in the ICU, focusing on positioning, hygiene, stressor management, pain relief, and sedation. Positioning strategies, such as the semi-recumbent position with head-of-bed elevation, can reduce the risk of ventilator-associated pneumonia and improve gas exchange. Hygiene interventions, including eye care, oral care, and washing, are essential for preventing infections and promoting comfort. Managing stressors, such as communication difficulties, sleep disturbances, and feelings of isolation, through targeted interventions can enhance patient well-being. Pain assessment and management, using both pharmacological and non-pharmacological approaches, are crucial for minimizing patient distress. Sedation protocols incorporating daily interruptions and validated assessment tools can reduce ventilation time and ICU stay duration. Delirium, a common issue in critically ill patients, requires prompt detection and management through pharmacological and non-pharmacological strategies. By implementing these evidence-based practices, ICU nurses can significantly improve the comfort and outcomes of mechanically ventilated patients.

Keywords: Nurses, Patient Comfort, Mechanical Ventilation

Introduction

Providing high-quality care to critically ill patients in the intensive care unit (ICU) requires nurses to effectively utilize advanced technologies while simultaneously addressing the psychosocial needs of patients (Urden, 2016). Striking this balance represents one of the most significant challenges faced by nurses in the ICU. A fundamental aspect of delivering quality care involves conducting a comprehensive patient assessment and performing thorough safety checks on equipment. These foundational steps were explored in the first part of this two-part series. After completing patient assessments and ensuring safety, the focus shifts to implementing nursing care interventions aimed at enhancing patient comfort and well-being. To achieve this, ICU nurses must identify and apply specific interventions that can positively influence the condition of mechanically ventilated patients, thereby facilitating their progress toward desired outcomes.

Nursing care for mechanically ventilated patients in the ICU must be grounded in evidence-based practices. However, available evidence related to the comprehensive care of these patients is often limited and fragmented. The aim of this paper is to present a unified and thorough review of the evidence supporting the care of mechanically ventilated patients. Specifically, this article examines evidence-based practices for promoting patient comfort in the ICU, focusing on areas such as positioning, hygiene, stressor management, pain relief, and sedation.

Patient Comfort

Promoting patient comfort through targeted nursing interventions is a fundamental aspect of expert care in the intensive care unit (ICU). Intensive care nursing encompasses a variety of physiological and psychological challenges unique to critically ill patients. Nurses must balance technical expertise in using advanced equipment with the ability to observe, protect, and connect with their patients as

individuals, delivering care that prioritizes comfort (Clifford, 2015; Urden, 2016). A compassionate understanding of the patient's environment and the provision of measures to alleviate or normalize daily routines significantly reduce the psychological stress experienced by mechanically ventilated patients. For this paper, patient comfort measures include positioning, hygiene interventions such as eye care, mouth care, and washing, management of stressors, and pain and sedation management.

Patient Positioning

Positioning of mechanically ventilated patients in the ICU not only improves comfort but also addresses physiological objectives, including optimizing oxygen transport, reducing ventilation-perfusion mismatching, decreasing the work of breathing, and minimizing myocardial workload (Stiller, 2010). Common positions include supine, semi-recumbent, prone, and side lying. Evidence supports the semi-recumbent position, with the head of the bed elevated 30° to 45°, as effective in reducing ventilator-associated pneumonia (VAP) incidence (Bonten, 2015). Studies have identified the degree of bed elevation and time spent in a supine position as significant risk factors for aspiration and VAP development (Torres et al., 2012). Drakulovic et al. conducted a pivotal randomized clinical trial showing that patients without head-of-bed elevation were at significantly higher risk of developing VAP. Additionally, Grap et al. observed a greater likelihood of VAP in patients with high Acute Physiology and Chronic Health Evaluation (APACHE) II scores who spent extended periods with the head of the bed elevated less than 30°. Adjustments in positioning should be tailored to individual patient conditions, such as head injury or acute lung injury, based on specific assessments and supporting evidence.

Position changes can significantly enhance gas exchange, reduce ICU stays, and improve recovery outcomes (Misasi and Keyes, 2013). While the semi-recumbent position is standard, prone positioning and lateral decubitus positions may also improve ventilation and oxygenation, depending on the patient's lung pathology and hemodynamic stability. For example, side-lying positions with the affected lung uppermost may benefit patients with unilateral lung disease (Misasi and Keyes, 2013). Nursing evaluations of physiological responses to position changes are essential. Techniques like prone positioning and rotational therapy have demonstrated benefits in improving ventilation-perfusion mismatch, although optimal durations for prone positioning remain unclear (Piedaleu and Albert, 2009). Specialized beds enable continuous turning or kinetic rotation, but continuous lateral rotational therapy (CLRT) provides limited pulmonary benefit (Collard, 2011).

Patient positioning should also consider skeletal alignment, natural anatomical flexion, and individual comfort (Stiller, 2010). While research does not specify optimal intervals for turning, a common practice is to reposition patients every 2–4 hours using pressure-relieving mattresses. Mobilization techniques, such as passive and active limb exercises, edge-of-bed sitting, standing, bed-to-chair transfers, and walking, can enhance joint range of motion, improve muscle function, reduce thromboembolism risk, and restore normal fluid distribution through gravitational effects (Stiller, 2010).

Hygiene

Meeting the basic hygiene needs of mechanically ventilated patients is a critical component of expert nursing care in the ICU, contributing to both comfort and well-being.

Eye Care

Sedated or unconscious ventilated patients are at high risk of corneal dehydration, abrasions, and infections due to impaired protective mechanisms like the blink reflex (Dawson, 2015). Individualized assessment of eye care needs is essential. In many ICUs, eye care is provided every two hours to prevent dehydration, abrasions, and infections. Techniques include saline irrigation, eye drops, taping, paraffin-based gauze, ointments, gels, and polyethylene covers (Dawson, 2015). A randomized controlled trial by Koroloff et al. (2004) found polyethylene covers as effective as hypromellose drops and lacri-lube ointment in reducing corneal damage in ventilated patients. A systematic review recommended routine eye care for all ICU patients, noting that ointments and drops reduce corneal abrasions more effectively than no treatment, while polyethylene covers outperform ointments and drops (Best Practice, 2009).

Mouth Care

Oral hygiene practices and comfort measures vary widely in ICU settings. Foam swabs and soft-bristled toothbrushes are commonly used for mechanical cleansing, along with various agents such as commercial mouthwashes, chlorhexidine, sodium bicarbonate, hydrogen peroxide, and fluoride (O'Reilly, 2014). Evidence supports the use of soft-bristled toothbrushes and oral rinsing for maintaining oral health (Munro and Grap, 2016). Stiefel et al. demonstrated the effectiveness of toothbrushes in improving mucous membrane and tongue condition, though the study lacked data on plaque variability or its relationship to VAP.

Chlorhexidine, widely used in oncology patients, aids plaque removal and pathogen suppression but lacks extensive validation in critically ill ICU populations (Dodd et al., 2019; Houston et al., 2017). Oral care frequency varies, with intervals reported as 2, 3, 4, and 12 hours (Munro and Grap, 2016). Research indicates that intervals of two to four hours improve oral hygiene, whereas extended neglect reverses prior benefits (O'Reilly, 2014). Individualized oral care protocols are thus recommended.

The use of ice chips helps reduce mouth dryness, enhance comfort, and inhibit bacterial growth. Although oral care is essential for preventing nosocomial infections and promoting comfort, much of the supporting evidence is anecdotal or based on limited studies with small sample sizes. Regular oral assessments and adherence to hygiene protocols remain vital components of nursing care (Munro and Grap, 2016; O'Reilly, 2014).

Washing

Maintaining personal hygiene is a core component of nursing care. Bathing or washing patients not only meets their hygiene needs but also offers opportunities for patient assessment and communication, particularly when performed by experienced nurses. Evidence-based literature on the frequency of bathing and the choice of cleansing agents for critically ill patients is sparse. Larson et al. noted a preference among nurses for disposable baths over traditional basin baths. Common practices include providing a full bed-bath once daily and a smaller "mini" wash, focusing on the patient's hands, face, and perineal area, at another point in the day. Frequent use of soap-based products is believed to dry the skin (Ertel, 2013). The choice of cleansing agent, ranging from simple soap to emollient-based lotions, typically reflects nursing preference or patient comfort. Hair washing also contributes to patient comfort and psychological well-being, with frequency and product selection individualized to meet patient needs.

Urinary catheters are a significant source of nosocomial infections in critically ill patients (Zoldam et al., 2015). Current practice involves cleansing the perineum and meatus twice daily using soap and water. However, the limited empirical evidence highlights the need for well-structured research to determine the optimal frequency and methods for meatal care in mechanically ventilated patients.

Management of Stressors

The psychosocial care of ventilated patients has been extensively researched, highlighting the interaction between the ICU environment and the patient's stress levels. Mechanically ventilated patients frequently experience communication difficulties, sleep deprivation, nightmares, and feelings of isolation and loneliness (Johnson et al., 2006).

Communication Stressors

Communication difficulties represent a significant source of stress for mechanically ventilated patients, contributing to feelings of vulnerability and powerlessness (Happ, 2018). Ashworth's foundational observational study on ICU nurse-patient communication revealed that communication primarily occurred during physical or procedural care. Recent research indicates that communication remains procedurally focused, with nurses facing barriers such as heavy workloads, technological priorities, difficulties with lip reading, patients' inability to write, personality factors, and inadequate training in communication strategies (Happ, 2018). Despite the recognition of communication as essential to quality care, evidence suggests it is inconsistently or ineffectively managed (Moser et al., 2013; Alasad and Ahmad, 2015).

Strategies to enhance communication include the nurse's use of positive body language, friendly facial expressions, eye contact, and yes/no questioning, which have been shown to reduce patient distress. Additional approaches involve incorporating familiar people, such as family members, and assigning staff familiar with the patient. Common tools include lip reading, pen and paper, word or picture charts, alphabet boards, and rewritable magnetic boards (Wojnicki-Johansson, 2011). Advanced

technology, such as electronic voice output communication aids, may benefit long-term ventilated patients based on individualized assessment (Happ, 2018).

Sleep Disturbance

Sleep disturbance, characterized by frequent interruptions, is a significant issue and stressor for mechanically ventilated ICU patients, who often report fragmented sleep (Tamburri et al., 2014). There is ongoing debate about the role of sedation in either alleviating or exacerbating sleep disturbances (Honkus, 2013). While promoting sleep in critically unstable patients may not always be feasible, individualized interventions can enhance rest. Common causes of sleep disruption include environmental noise (e.g., alarms, equipment, telephones, and conversations), lighting, discomfort, stress, and pain (Honkus, 2013). Sleep deprivation may suppress immune function, impair infection resistance and wound healing, weaken upper airway musculature, delay ventilator weaning, and induce hallucinations or delirium.

To facilitate sleep, nursing interventions include reducing environmental noise, clustering care to minimize interruptions, dimming lights, maintaining a comfortable room temperature, and avoiding routine nocturnal procedures like early-morning washes or electrocardiograph recordings (Tamburri et al., 2014; Reishtein, 2016). These strategies, guided by unit policies and nursing expertise, support the restoration of patients' diurnal rhythms.

Feelings of Isolation and Loneliness

Hupcey's grounded theory study of ICU patients revealed that feelings of isolation, loneliness, fear, and anxiety negatively affect perceptions of safety. Nursing interventions to reduce isolation include providing orientation today and time through clocks and communication, personalizing the ICU environment with familiar objects such as family photos, and facilitating "trips outside" for long-term ventilated patients. Although these practices may increase workloads, they have been reported to offer significant benefits for patients and staff.

Family involvement positively influences patient outcomes in the ICU (Powers and Goldstein, 2019). Social isolation and stressors may exacerbate dependence, confusion, and distress in ventilated patients (Jones et al., 2010; Price, 2014). Encouraging family presence, communication, and physical touch supports both patients and families. Family-focused care, emphasizing the family unit as a central focus, incorporates assessing and addressing family needs to enhance outcomes.

Interventions such as relaxation, massage (Lower et al., 2010), music therapy (Evans, 2012), and empathetic touch have been shown to alleviate feelings of isolation and promote comfort. The efficacy of these interventions, however, warrants further research. Spiritual care, such as arranging pastoral support or facilitating prayer, is also a source of comfort for some patients (Hupcey, 20; Moser et al., 2013).

Pain Management

Research on pain management in critically ill patients remains limited, leading to the development of consensus guidelines (ANZCA, 2015; Jacobi et al., 2012). Many patients report experiencing pain during their ICU stay, which is oft3 underestimated by nurses (Aslan et al., 2013; Puntillo, 2003). Given its detrimental effects, pain should be considered the fifth vital sign during assessments (Shannon and Bucknell, 2003).

Pain Assessment and Evaluation

Self-reported pain is widely regarded as the most accurate measure (ANZCA, 2015). However, self-reporting is often impossible for ventilated patients due to intubation and communication barriers caused by sedation (Jacobi et al., 2012). Therefore, pain assessment tools, along with behavioral and physiological cues, should be employed to gather information (ANZCA, 2015).

Validated pain intensity tools include the visual analogue scale and numeric rating scale (Jacobi et al., 2012). Tools specifically for critically ill patients, such as the adult non-verbal pain scale (Odhner et al., 2003) and the behavioral pain scale (Payen et al., 2001), combine behavioral and physiological data but require further validation. Behavioral and physiological indicators, though informative, have limitations, as physiological responses may return to baseline before pain resolves. Factors such as the presence of wounds, upcoming procedures, and input from family members, though often poorly correlated with self-reports, may also inform assessments (Jacobi et al., 2012; Odhner et al., 2003). Establishing a clear analgesia plan with defined goals is essential and must be communicated effectively to all caregivers (Jacobi et al., 2012). Accurate and thorough documentation is critical for effective communication and optimal pain management, ensuring that pain assessments and responses to interventions are clearly recorded (Shannon and Bucknell, 2003).

Pharmacological Pain Management

Intravenous administration of opioids is the preferred method for pain relief in critically ill patients, with continuous administration being favored over intermittent dosing to maintain a consistent analgesic effect (Jacobi et al., 2012). Patient-controlled analgesia (PCA) can also be used in ventilated patients who are awake and capable of operating the device. Evidence suggests PCA may be particularly effective for elderly patients (ANZCA, 2015), though its use in critically ill, mechanically ventilated older adults must be carefully considered. Recommended opioids include morphine and fentanyl, with morphine being suitable for intermittent administration due to its longer duration of action, and fentanyl being preferred for rapid onset of pain relief (Jacobi et al., 2012).

Patients receiving high doses or prolonged opioid treatment (longer than seven days) are at risk of withdrawal syndrome during dose reduction. To mitigate this, opioids should be gradually tapered while monitoring for withdrawal symptoms (Jacobi et al., 2012; Cammarano et al., 2018).

Non-Pharmacological Pain Management

Research on non-pharmacological pain management strategies remains limited, and findings are often contradictory. Non-pharmacological interventions should complement optimized pharmacologic measures (Titler and Rakel, 2011). Providing patients with information before procedures to outline expected sensations has been shown to reduce anxiety and improve outcomes (ANZCA, 2015; Shi et al., 2003). Additional techniques, including distraction, relaxation methods, heat and cold applications, massage, transcutaneous electrical nerve stimulation (TENS), and music therapy, can enhance pain management. These interventions should be tailored to the individual patient (ANZCA, 2015; Titler and Rakel, 2011).

Sedation

Pain management and sedation are closely intertwined (Park et al., 2001). Continuous intravenous sedation has been associated with prolonged mechanical ventilation. Daily interruption of sedation to reassess needs can decrease ventilation time, reduce ICU stay duration, and lower complications such as ventilator-associated pneumonia (Kress et al., 2014). Similarly, the use of sedation protocols with explicit goals has been shown to reduce ventilation time, adverse effects, morbidity, ICU stays, and healthcare costs (Ibrahim and Kollef, 2010; Brook et al., 2018). Sedation protocols incorporating daily interruptions are therefore recommended.

Sedation Assessment and Evaluation

Before determining sedation needs, pain and other causes of distress should be addressed. Various tools have been developed to assess anxiety, agitation, and sedation levels in critically ill patients. The Ramsay Scale is a widely used six-point numerical tool focused on motor response and sedation depth, though its ability to discriminate sedation quality is limited (Ramsay et al., 1974; Jacobi et al., 2012). The Riker Sedation-Agitation Scale (SAS) and Richmond Agitation-Sedation Scale (RASS) provide more detailed behavioral assessments. The SAS ranges from unrousable to dangerously agitated, while the RASS uses a 10-point scale from unrousable to combative. Both scales have been validated for critical care use and assess responses to voice and physical stimulation (Jacobi et al., 2012).

Other tools include the Minnesota Sedation Assessment Tool, Adaptation to the Intensive Care Environment instrument, Motor Activity Assessment Scale, and the Vancouver Interactive and Calmness Scale, though no single tool has been identified as superior (Sessler, 2004; Jacobi et al., 2012).

Pharmacological Sedation Management

Combining opioids with sedatives can create a synergistic effect, reducing the required dosages of both (Gehlbach and Kress, 2014). Continuous intravenous administration is preferred for maintaining a steady sedative state in ventilated patients. Benzodiazepines are commonly recommended for their anxiolytic and amnesic properties (Hogarth and Hall, 2014). Midazolam and diazepam are favored

for rapid sedation, while lorazepam is better suited for long-term use. However, midazolam is the most frequently utilized. Propofol, administered in a lipid emulsion, is recommended when rapid arousal is needed, but triglyceride levels should be monitored during its use. High doses of propofol should only be used short-term due to risks of myocardial failure, rhabdomyolysis, and metabolic acidosis (Jacobi et al., 2012). Prolonged or high-dose use requires gradual tapering to prevent withdrawal symptoms. Delirium, often referred to as ICU psychosis or ICU syndrome (McGuire et al., 2017), is under-monitored in critical care settings and may explain unexplained patient distress unresponsive to other interventions (Gehlbach and Kress, 2014). Delirium is associated with increased morbidity, mortality, and ICU stays. Its causes are varied and must be addressed through targeted management strategies, including both pharmacological and non-pharmacological interventions to alleviate symptoms (Eisendrath and Shim, 2016).

Roberts et al. identified three assessment tools specifically designed for detecting delirium in the critical care setting: the Cognitive Test for Delirium (CTD), the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU), and the Intensive Care Delirium Screening Checklist (ICDSC). Both the CTD and CAM-ICU require patient awareness, as they involve the ability to follow commands or respond to questions by nodding or shaking the head. In contrast, the ICDSC can be used for unresponsive patients, making it suitable for a broader range of critical care patients (Roberts et al., 2015).

Eisendrath and Shim proposed an algorithm for delirium management in critical care. The primary pharmacological treatment is haloperidol, which induces a tranquil and detached state (Eisendrath and Shim, 2016; Jacobi et al., 2012; Gehlbach and Kress, 2014). Non-pharmacological strategies recommended by Eisendrath and Shim include:

- orienting the patient to time and place.
- modifying environmental factors such as lighting and noise levels.
- providing sensory aids like glasses or hearing aids.
- implementing measures to give the patient a sense of control, such as seeking their input on aspects of their care.

Conclusion

In conclusion, the role of nurses in the intensive care unit extends beyond technical expertise to encompass compassionate care that prioritizes patient comfort and well-being. Evidence-based nursing interventions, including proper positioning, hygiene maintenance, stressor management, and pain and sedation control, are critical in improving outcomes for mechanically ventilated patients. While challenges remain in consistently implementing these practices, ongoing research and adherence to evidence-based guidelines can enhance the quality of care. Nurses must continuously adapt to the evolving needs of their patients, striking a delicate balance between advanced technology and individualized care. Their commitment to fostering a healing environment is instrumental in achieving optimal patient recovery and satisfaction.

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