

Running head: EARLY MOBILIZATION AND RECOVERY OF PATIENTS IN ICU



Early mobilization and recovery in mechanically ventilated patients in the ICU Name
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Background of Topic

Millions of patients get discharged from intensive care units in many hospitals after surviving critical illnesses. However, many suffer from complications and disabilities that present as a result of the therapeutic measures administered in the intensive care units (ICU). According to Hodgson et al. (2015), these ICU-acquired complications and disabilities contribute to poor recovery for most patients after discharge from the units. Majority of the disabilities and complications such as neuromuscular dysfunction appear due to reduced physical activity and start within the initial days of ICU admission. Many researchers in the field of critical care have come up with several modalities that can help to minimize these ICU-acquired complications in order to hasten recovery after discharge. One of these strategies includes early mobilization of the ICU-patients as early as possible.

According to a study by Herridge et al. (2011), patients who survive ICU exhibits reduced functional ability after being discharged. The study aimed at following up survivors of acute respiratory distress syndrome after discharge from ICU in order to find out their recovery status. The researchers found out that these patients developed persistent reduced physical activity ability and exercise limitations even after five years' post-discharge from ICU. Hence it indicates that patients admitted to ICU definitely suffer a loss in physical and neurological functions. Also, Herridge et al. (2011), suggest that this reduced muscular function may result from persistent weakness, physical impairments as well as neuropsychological impairments.

In addition, the reduced physical mobility due to the critical conditions leads to associated illnesses, which in turn increases the costs of treatment. The ICU acquired illnesses prolongs hospital stay as well as recovery period. Additionally, it will require the use of extra treatment modalities to treat both the initial disease and the acquired illness. The prolonged stay also increases the cost of healthcare services to the patient, family, hospital and the country as a whole (Needham et al., 2010). Besides, Herridge et al. (2011) indicate that these co-existing diseases lead to poor clinical outcomes post-discharge from the ICU, an aspect that further raises the cumulative costs in the long-run. These huge costs including the poor health status of individuals pose challenges among the caregivers. These challenges include emotional impacts and financial constraints.

All these challenges and adverse effects experienced by patients discharged from ICU as well as the caregivers need effective interventions. These interventions should address the issue of ICU-acquired illnesses and its associated impacts. Several ICU teams and researchers have suggested the utilization of early mobilization and rehabilitation as a promising intervention to these ICU associated challenges (Hodgson et al., 2015). Therefore, this paper explores the concept of early mobilization and recovery in ICU patients especially those under mechanical ventilation.

Description of topic

Early mobilization of mechanically ventilated patients undergoing ICU care has shown to effectively lower the incidence of neuromuscular dysfunction after discharge. According to the work of Needham et al. (2010), most survivors of ICU experience neuromuscular weakness as result of prolonged bed rest and heavy sedation. Sedation in particularly mechanically ventilated patients increases the chances of neuromuscular weakness due to immobility. Therefore, mobilization of mechanically ventilated patients has historically shown to have beneficial outcomes in improving

the physical ability of these patients. Even though this concept has shown promising results, it has not got accepted in many ICU settings. Increased research and widespread awareness among intensivists will help to increase its use in reducing ICU associated neuromuscular impairment among patients.

In addition, a study by Schweickert et al. (2009), indicate that immobilization of mechanically ventilated patients secondary to use of sedatives potentiate the problems of neuromuscular weakness. These researchers conducted a study which found out that a combination of daily interruption of physical and occupational therapy with sedation provided good efficacy in lowering neuromuscular complications. Additionally, Schweickert et al. (2009) suggest that clinicians working in ICU and the hospitals should develop protocols geared towards minimizing sedation and instead replace it with early mobilization of mechanically ventilated patients. Physical therapy in the earliest times of admission into ICU promotes improved patient outcomes and recovery. Also, in an observational study by Schweickert et al. (2009), mechanically ventilated patients in a respiratory ICU undergoing physical therapy, showed that the intervention was safe, feasible and promoted a more rapid return to independent mobility. Besides, increased early mobilization of ICU patients with respiratory failure shortened the ICU stay and overall hospital stay. Hence early physical therapy improves patient outcomes and hastened recovery among individuals admitted in ICU.

According to Herridge et al. (2011), the aspect of early mobilization of ICU patients acts as one of the effective interventions in lowering healthcare costs for patient, family and the hospital. The intervention prevents occurrence of preventable ICU associated complications such as loss of neuromuscular function as well as psychological deterioration. Minimizing such complications shortens the recovery time and hence the expenses incurred as hospital bills. Besides it improves the ability of the patients to remain independent after discharge from the hospital, which lower burden of care for the caregivers. Thus, early physical therapy for mechanically ventilated as well other ICU patients provide an effective way of minimizing costs of healthcare.

Indications for early mobilization

Early mobilization as an intervention for reducing neuromuscular deterioration and improving recovery is indicated for almost all patients admitted in ICU. However, before initiating this intervention several considerations have to be put in place to avoid causing further damage or fatal complications. Hodgson et al. (2014) indicate that clinicians in ICU need to utilize safety criteria to determine when the intervention can be implemented for a patient. Some of these safety considerations before initiating physical therapy include respiratory, cardiovascular, neurological considerations among others. Clinicians need to assess the patients' status in relation to these safety considerations as a way of determining the suitability for starting physical therapy and early mobilization.

In respiratory consideration, prior to each session of mobilization, the healthcare professional should ensure artificial airways are correctly positioned and secured. Also, should check oxygen connection and availability of a reserve in case of it will be needed during the mobilization exercise. Endotracheal intubation is not contraindicated; however, patients with endotracheal tube should have a fraction of inspired oxygen (FIO₂) of less than 0.6 for respiratory safety purposes (Hodgson et al., 2014).

Physical exercise and therapies are indicated for patients with stable cardiovascular system since the exercises can potentiate fatal adverse effects. Hence the clinicians need to assess the

patients' status before commencing the exercises. In neurological considerations, patients intended to undergo early mobilization should be neurologically stable and should be calm and restless. Other considerations that permit initiation of early mobilization include patients with drains, arterial and venous catheters, ICU acquired weakness. However, to consider a patient fit for early physical exercises, all these parameters need to be assessed prior to in order to prevent adverse effects (Hodgson et al., 2014).

Additionally, patients who receive sedatives tend to have long hours of immobility. Therefore, according to Schweickert et al. (2009), early mobilization is highly recommended for patients who receive sedatives. Healthcare workers attending to these patients can interrupt sedation period with physical and occupational therapy. Studies show that initiation of these mobilization exercises from the start of a critical illness and on patients under mechanical ventilation results in quick return to pre-morbid and independent functional state. Besides, these patients have shorter duration of ICU stay as compared with those who do not receive this intervention of early mobilization.

Contraindications of early Mobilization

Although early mobilization is an effective therapy that is used in combination of other interventions for ICU patients, there are several factors that deter its implementation. Not all patients and at any point of time in the day qualify for early mobilization. Several factors such as respiratory, cardiovascular and neurological among others determine the suitability for early mobilization. According to research by (Hodgson et al., 2014), there are several contraindications for commencing early mobilization for ICU patients including those on mechanical ventilation. Respiratory factors that contraindicate this intervention include FIO₂ more than 0.6. Also, patients with persistent saturation of oxygen below 90% and respiratory rate more than 30 breaths per minute do not qualify for early mobilization since there is reduced oxygen availability to body tissues.

Cardiovascular contraindications for early mobilization include patients with hypertensive emergencies since exercise increases the crisis and its associated complications. Additionally, patients with bradycardia and tachycardia are not allowed to undergo early mobilizations. Besides, patients with DVT or at risk of DVT cannot undergo this therapy since the thrombus can dislodge to vital areas of the body causing fatal consequences. Patients with shock of any cause and those with cardiac ischemia cannot undergo early mobilization as it will worsen the existing issues (Hodgson et al., 2014).

Furthermore, according to Hodgson et al. (2014), neurological contraindications include patients under light or deep sedation since such exercises in these patients can cause neuromuscular and skeletal damage. Also, patients who are agitated, restless and fighting should not be given the therapy of early mobilization. Additionally, patients with high levels of delirium and cannot follow commands should not be mobilized as it can cause serious injuries. Besides, all patients with severe spinal cord injury, uncontrolled seizures and increased intra-cranial pressure should not any point be give physical therapy as may cause further injury. Other contraindications include patients with uncontrolled active bleeding from any site of body since physical exercise exacerbates bleeding. Additionally, those under active management of hypothermia and huge body wounds need to have minimal exercises if there is need.

Strategies that Work or don't Work

A thorough and comprehensive assessment of an ICU patient prior to a session of mobilization is one of the strategies that work best. Adequate assessment of the patient helps in

prevention of undesired outcomes and in promoting achievement of desired outcomes. A good assessment should include examination of all the systems of the patient and ensure that a patient can tolerate the exercises. The healthcare workers should assess the hemodynamic status, cognitive status, respiratory status, neurological status and others to ensure a safe mobilization exercise (Adler & Malone, 2012).

Moreover, the assessment should be continuous even during the mobilization sessions in order to identify a need for termination of the intervention. In addition, another strategy that works in reducing adverse events includes use of laboratory and physiologic data to determine the period to commence and terminate the physical therapy sessions (Adler & Malone, 2012). According to the work of Taito, Shime, Ota, & Yasuda (2016), development of inter-professional collaboration is an important strategy that helps in developing research and educational programs to address challenges of early mobilization. These programs help to reduce the obstacles of mobilizing mechanically ventilated patients as mentioned in the next paragraph.

Although early mobilization works well, there are impediments. These obstacles can be related to patients, structural barriers in the ICU and varying cultures of most ICUs. Also, there are process-related barriers that can impede early mobilization. Also, these obstacles vary depending on the healthcare worker's perceptions and hence the need for inter-professional collaboration (Taito et al., 2016).

Desired Outcomes with Use of early Mobilization

Early mobilization in mechanically ventilated patients and other ICU patients is desired to bring an improvement in physical condition of the patients. According to a study by Adler & Malone (2012), this intervention is desired to increase muscle strength of the patient, especially the skeletal muscles. The study indicates that the subject patients who were under mechanical ventilation for more than fourteen days exhibited a great improvement in muscle strength gain in both upper and lower extremities as measured by a score scale called manual muscle testing. Another desired outcome of early mobilization involves positive functional mobility. In this case, the functional mobility of the patient undergoing the intervention is measured using time to milestones of mobility. These mobility milestones include rolling in bed, moving from supine to sitting position, sitting on the edge of bed, standing and walking. In this study by Adler & Malone (2012), ICU patients under early mobilization showed accomplishment of these functional mobility outcomes as compared to those who did not participate in the intervention.

Improvement in symptoms and quality of life of the patients is another expected outcome of early mobilization. Patients who underwent this intervention showed improvement in their physical function at the time of discharge from the hospital as indicated in the work of. However, Adler & Malone (2012) also show that early mobilization can produce some undesired outcomes that can alter the recovery of the patient in ICU. These undesired events that can occur during mobilization include accidental disconnection of life support machines, tendon damage and dislodgement of ventilation equipment such as endotracheal tubes. Hence, safety measures such as a thorough prior assessment as suggested by Hodgson et al. (2014) and (Taito et al., 2016) should be put in place by healthcare workers providing the intervention to prevent occurrence of these undesired outcomes.

How professionals Promote early Mobilization

Health professionals promote early mobilization of mechanically ventilated patients and other ICU patients via several techniques. These include inter-professional collaboration as mentioned by Taito et al. (2016) to develop ICU cultures, processes and criteria, which ensure safety

of patients during sessions of mobilization. Also, the inter-professional teamwork helps to identify obstacles to early mobilization and hence develop strategies that reduce these barriers. In addition, healthcare professionals increase use of early mobilization by identifying safe measurements of neurologic status, respiratory, hemodynamic status among others to initiate the intervention. Besides, Adler & Malone (2012) and Hodgson et al. (2014) indicate that healthcare workers participate in prior and continuous assessment of patients' status in order to improve their safety in administering early mobilization.

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