**EARLY MOBILISATION IN ICU**

INTRODUCTION

The greatest level of medical care, intensive care is reserved for seriously sick patients with possibly treatable, life-threatening diseases. Critical sickness or injury is described by the Centers for Medicare & Medicaid Services as "acutely affecting one or more vital organ systems to the extent that there is a high possibility of imminent or life-threatening deterioration in the patient's condition." ³Critical care, often known as intensive care, is a multidisciplinary and interprofessional specialty created especially for the management of patients who already have or are at imminent risk of organ failure. Intensive care medicine is defined by its ability to temporarily restore several failing organ systems, especially the lungs, cardiovascular system, and kidneys, and to replace those functions if necessary.¹

Globally, people recover from serious illnesses and leave an ICU facility, however it has been shown that patients experience weakening, perhaps as a result of their protracted term of immobilization.² The phrase used to characterize the deterioration of physical, mental, and cognitive issues is post-intensive care syndrome. A safe strategy for enhancing functional outcomes is early mobility of critically ill patients. In the intensive care unit, physical exercise that is done with an intensity that can cause physiological changes is referred to as mobilization. The use of physical activity as soon as the second to fifth day following the beginning of a serious sickness or injury is known as early mobilization.¹

WHY EARLY MOBILISATION

For a large percentage of ICU survivors, long-term care in the ICU is always accompanied with difficulties. Physical deconditioning, weariness, loss of function, and a poor quality of life have all been linked to prolonged periods of inactivity. Early rehabilitation in the ICU may lessen the risk of acquiring intensive care unit-acquired frailty, according to a systematic review and meta-analysis (ICUAW). Patient non-responsiveness (n = 50; 24.4%) and hemodynamic instability (n = 42; 20.5%) are reportedly the most frequent obstacles to early mobilization. The study also suggests a strong positive correlation between the kind of ventilation and patient movement away from the bed.³

According to a retrospective cohort analysis of patients who survived a prolonged ICU stay, the capacity to ambulate was associated with a higher likelihood of being discharged. highlighting the significance of mobility training in institutions providing long-term acute care.¹

Below is a gist of the system-wise complications of prolonged immobility.

* In the Respiratory system, it causes retention of secretions, reduced respiratory excursion, pneumonia, and atelectasis.
* Cardiovascular complications include orthostatic hypertension, deep vein thrombosis, hypovolemia, and embolization.
* Gastrointestinal complications include decreased motility, constipation, and ileus.
* Musculoskeletal complications include muscle shortening, weakness, and wasting which would, in turn, cause functional denervation, joint contractures, bone demineralization, and heterotrophic ossification.
* Neurological system is affected by polyneuropathies due to reduced microcirculation at the nerve.
* Endocrine system-related complications include Hyperglycemia with insulin resistance and catabolism.
* Integumentary system, can cause pressure ulcers.
* Psychology of the person is affected causing depression and delirium.

PHYSIOLOGICAL EFFECTS

The acute physiological effects of early mobilization are summarized below

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| **SYSTEMS** | **PHYSIOLOGICAL EFFECTS** |
| Pulmonary System | Increased Regional ventilationIncreased regional diffusionIncreased Regional perfusionIncrease tidal volumeIncrease efficiency of respiratory mechanicsReduce airflow resistanceIncrease flow ratesIncrease zone 2 (Area of ventilation-perfusion matching)Increase or decrease Breathing frequencyIncrease flow ratesIncrease strength and quality of a coughIncrease mucociliary transport and airway clearanceIncrease distribution and function of pulmonary immune factor |
| Cardiovascular System | Increase venous returnIncrease stroke volumeIncrease heart rateIncrease myocardial contractilityIncrease stroke volume, heart rate and cardiac outputIncrease coronary perfusionIncrease circulating blood volumeIncrease chest tube drainage |
| Peripheral Circulatory Effects | Reduced peripheral vascular resistanceIncrease blood flowIncrease peripheral tissue oxygen extraction |
| Lymphatic System | Increase pulmonary lymphatic flowIncrease pulmonary lymphatic drainage |
| Hematologic System | Increase circulatory transit timesReduce circulatory stasis |
| Neurological System | Increase arousalIncrease cerebral electrical activityIncrease stimulus to breatheIncrease sympathetic stimulationIncrease postural reflexes |
| Endocrine System | Increase release, distribution, and degradation of catecholamines |
| Genitourinary System | Increase glomerular filtrationIncrease urinary output |
| Gastrointestinal System | Increase gut motilityReduce constipation |
| Integumentary System | Increase cutaneous circulation for thermoregulation |
| Multisystemic Effects | Reduce effects of anesthesia and sedationReduce deleterious cardiopulmonary effects of surgeryReduce the risk of loss of gravitational stimulus and exercise stimulus |

Prescription of Early Mobilization

Step 1-

* Determining the causes of the deficiencies in oxygen transport
* Knowing the etiology of the disorder or condition
* Variables that are external to the patient's treatment
* Patient-related intrinsic factors
* Relative immobility

Step 2-

* Identifying the precise sort of mobilization or exercise required to treat the lack of oxygen transport, and then determining the exact demand for mobilization

Step 3-

* Matching the sort of exercise or mobilization method is chosen to the patient's ability to carry oxygen.

Step 4-

* Adjust the dosage, or the intensity, to the patient's safe oxygen transport limitations.

Step 5-

Incorporating these movements with body positions

* Mobility drills for the thorax
* ROM workouts (Active, passive, and active-assisted)
* Synchronizing respiratory control with movement
* Supplied by oneself or others while coughing

 Step 6-

* Instead of using a set amount of time, keep track of oxygen transfer and its indices.

 Step 7-

* As regularly and safely as the subject or patient may bear it, repeat this mobilization.

 Step 8-

* As long as the patient can tolerate the effects of the mobilization stressor, keeping oxygen transport as the benchmark, and continuously monitoring vital signs, the strength of the mobilization stimulus can be raised.

Early Mobilization Intervention

Every day of the week or five days a week can be used for early mobilization. These are some of the stated approaches that fall under the umbrella of early mobilization, active techniques are favored more than passive ones and contribute more to the prevention of complications:

* Range of motion, passive and active
* Active turning to the side
* Exercise in bed
* Sitting at the bedside²
* Moves back and forth between the chair and the bed
* Ambulation
* Resistance training
* Electrical Stimulation

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