

Table I - Degree of recommendation, objectives and conclusions of the studies about early mobilization in patients using VAD

Author / Year	DR	Objective	Conclusion
Hodgson C <i>et al.</i> 2015 [12]	C	Investigate current mobilization practices, strength at discharge from the ICU and functional recovery at 6 months in patients admitted to the ICU, under mechanical ventilation.	The use of vasopressors and deep sedation were common. The main barriers reported in patients who did not receive early mobilization were intubation and sedation. The MRC-SS score was higher in patients who mobilized under mechanical ventilation.
Garzon-Serrano J <i>et al.</i> 2011 [7]	C	Assess the level of mobilization achieved and the barriers to progress to the next level of mobilization, performed by physiotherapists and nurses.	To ensure cardiovascular stability during mobilization, administration of vasopressors, volume, vasodilators and analgesics was maintained, as indicated in the safety studies. There were no adverse events associated with mobilization in this study.
Liu K <i>et al.</i> 2018 [15]	B	Determine the safety of early mobilization by assessing the incidence of adverse events, when performed by professionals who are not specialists in mobilization, and the degree of mobility evolves.	They found that early mobilization is safe, did not demonstrate significant adverse effects that required additional treatment and / or an increase in the dose of vasoactive drugs.
Wolfe KS <i>et al.</i> 2018 [20]	B	Evaluate the relationship between the use of vasoactive drugs and the result of weakness acquired in the ICU.	A total of 80 of the 172 patients demonstrated ICU Acquired Weakness (ICU-AW). In the multivariate analysis, the use of vasoactive drugs was associated with an increase of more than three times the chance of developing ICU-AW at hospital discharge, regardless of other risk factors established for ICU-AW.
Gardenghi G <i>et al.</i> 2017 [24]	C	To investigate the cardiorespiratory behavior of patients in the postoperative period of cardiac surgery receiving or not VADs during the cycle for upper limb, verifying the safety of the same regarding the eventual loss of radial arterial catheter.	The adoption of the upper limbs cycle was safe in the PO of cardiac surgery, without causing unfavorable changes in the studied cardiorespiratory parameters, even in individuals using VADs.
Boyd J <i>et al.</i> 2018.[25]	C	Investigate the safety of exercise rehabilitation in patients on mechanical ventilation and evaluate the recommendations of the ICU mobilization scale	In 809 mobilization opportunities, 260 did not occur due to hemodynamic instability, in 101 patients performed exercise in bed and in 448 out of bed. And in 299 care patients were using vasopressor support, there was an adverse event in a patient who was using moderate dose norepinephrine when placed on the tilt table. The article concludes that addiction to vasoactive medication should not be considered a reason to withhold exercise rehabilitation.
Pires-Neto R <i>et al.</i> 2013 [26]	C	To verify the physiological changes	The very early passive cycle ergometer exercise in sedated, critical, mechanically

		and the safety of an early intervention on the cycle ergometer (<72h of mechanical ventilation) in critically ill patients.	ventilated patients was considered safe and was not associated with significant changes in hemodynamic, respiratory conditions or metabolic variables, even in those who used vasoactive agents.
Hodgson C <i>et al.</i> 2016 [27]	A	Determine whether a specific intervention (EGDM) would result in a higher dose of early mobilization in the ICU and whether it could prevent ICU-AW and improve the function of patients.	Early mobilization with a goal was safe and feasible, resulting in an increase in active exercises and in the mobility milestones achieved in patients admitted to the ICU.
Genc A <i>et al.</i> 2014 [28]	C	To compare the effects of passive limb mobilization on hemodynamic and ventilatory parameters in patients without or with low doses of vasopressor.	There was an increase in preload due to increased venous return induced by mobilization. No significant changes between groups. An increase of more than 20% in heart rate was detected in three patients and an increase in mean arterial pressure in six patients.

DR = Degree of recommendation. ICU = Intensive Care Unit; MRC-SS = Medical Research Council Sum-Score; ICU-AW = Weakness acquired in the ICU; VAD = vasoactive drug; PO= Postoperative; EGDM = Early mobilization at the highest level of activity

Table II - Sample of patients with respective distribution in groups and type of intervention performed on a patient using VAD

Author/Year	No. of patients and distribution	Treatment
Hodgson C <i>et al.</i> 2015	N: 192 VAD: 127 (68%)	Mobilization was performed with exercises in bed, standing beside the bed or walking. On the third day, all mobilized patients were mechanically ventilated by an endotracheal tube.
Garzon-Serrano J, <i>et al.</i> 2011	N: 63 patients; 179 interventions; 131 interventions performed by nurses (50% of these patients with VADs), 48 interventions performed by physiotherapists (65% of these patients with VADs)	Level 1: Passive ROM for upper limbs and lower limbs, globally, and sitting on the bed. Level 2: includes transferring the patient to a chair via a mechanical lift and / or sitting by the bed. Level 3: standing by the chair or side of the bed. Level 4: activities include walking the patient.
Liu K <i>et al.</i> 2018	Patients admitted to the ICU: 839 selected patients: 232 587 sessions were conducted. The incidence of adverse events, among all rehabilitation sessions, was 2.2%.	Level 1: No mobilization or exercises in bed. Level 2: Patient with elevated SP, including cycle ergometer and active mobilization. Level 3: Bedside sedation. Level 4: Active transfer to the chair. Level 5: Static or walking gait.
Wolfe KS <i>et al.</i> 2018	Sample of 172 patients	The patients included in the study received physical and early occupational therapy within 72 hours of MV (early mobilization) or standard care as requested by the physician.
Gardenghi G, <i>et al.</i> 2017	N: 26 patients Control group without VAD: 13 patients VAD group: 13 patients All submitted to CS (myocardial revascularization and / or valve replacement) by median sternotomy.	It was performed in the 1st PO, cycle ergometer for upper limbs for 5 minutes, with parameters evaluated during the activity: HR, SPO2, dyspnea, upper limbs effort (Borg) and perfusion pressure (MAP).
Boyd J <i>et al.</i> 2018	Sample of 91 patients	Exercises in or out of bed, evolving in the mobility scale according to the patient's clinical condition.

Pires-Neto R <i>et al.</i> 2013	19 patients on mechanical ventilation, 13 patients using VADs	They performed only passive lower limbs cycle ergometer exercise for 20 minutes using a cycleelectric ergometer, evaluating the following variables: MAP, SBP, HR and SPO ₂ .
Hodgson C <i>et al.</i> 2016	There were 50 patients enrolled in the study, 21 patients in the control group and 29 patients in the intervention group.	The EGDM protocol included active functional activities, including walking, standing, sedestation and rolling. The patient could receive assistance from the team or equipment, but actively participated in the exercise at the highest functional level. EGDM starts at the highest level of activity that a patient can sustain and work to maximize activity.
Genc A <i>et al.</i> 2014	Total patients: 120. GROUP 1 did not receive vasopressor (38 patients) GROUP 2 received vasopressor dopamine < 10 µg/kg/min, noradrenaline / adrenaline <0.1 µg/kg/min (82 patients).	1 daily session of 10 repetitions of flexion-extension in each joint, both of upper and lower limbs.

VAD = Vasoactive Drug; ROM = Range of Motion; ICU = Intensive Care Unit; SP = supine position; MV = Mechanical Ventilation; CS = Cardiac Surgery; PO = Postoperative; HR = Heart Rate; SPO₂ = Peripheral Oxygen Saturation; MAP = Mean Arterial Pressure; SBP = Systolic Blood Pressure; EGDM = Early mobilization at the highest level of activity