

EARLY MOBILIZATION IN IN PATIENTS ON EXTRACOPOREAL MEMEBERANE OXYGENATION

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SEARCH STRATEGY

KEYWORDS SEARCHED: “adult intensive care unit” OR “ICU” OR “critical care” OR “critical care unit” and “early mobility” OR early ambulation OR “early mobilization” OR “early rehabilitation” and “ECMO OR “Extracorporeal membrane oxygenation”.

Records without duplicates and in English only(n = 85)

Records excluded (n = 47)

Full-text articles assessed for eligibility (n = 38)

Full-text articles excluded (n = 30)

Studies fully read and analysed with CASP (n = 8)

Relevant Studies included(n = 4)

BACKGROUND:
ECMO: Extracorporeal membrane oxygenation (ECMO) is a critical intervention for patients with severe heart or lung failure unresponsive to standard treatments, providing temporary cardiorespiratory support (Polastri et al., 2024).

Prolonged Bedrest Risks: Due to the critical condition and treatment requirements, such as sedation and ECMO cannula management, patients often face extended immobility, increasing vulnerability to complications (Salna,Abrams, & Brodie, 2020).

High Prevalence of ICU-AW: Intensive care unit-acquired weakness (ICU-AW), a condition of muscle weakness without other identifiable causes, affects approximately 80% of ECMO patients due to prolonged bedrest (Chen et al., 2022).

Impact and Mitigation: ICU-AW significantly worsens patient outcomes, but early mobilization or physical rehabilitation within the first five days of critical illness can help prevent or reduce its severity (Hayes et al., 2018).

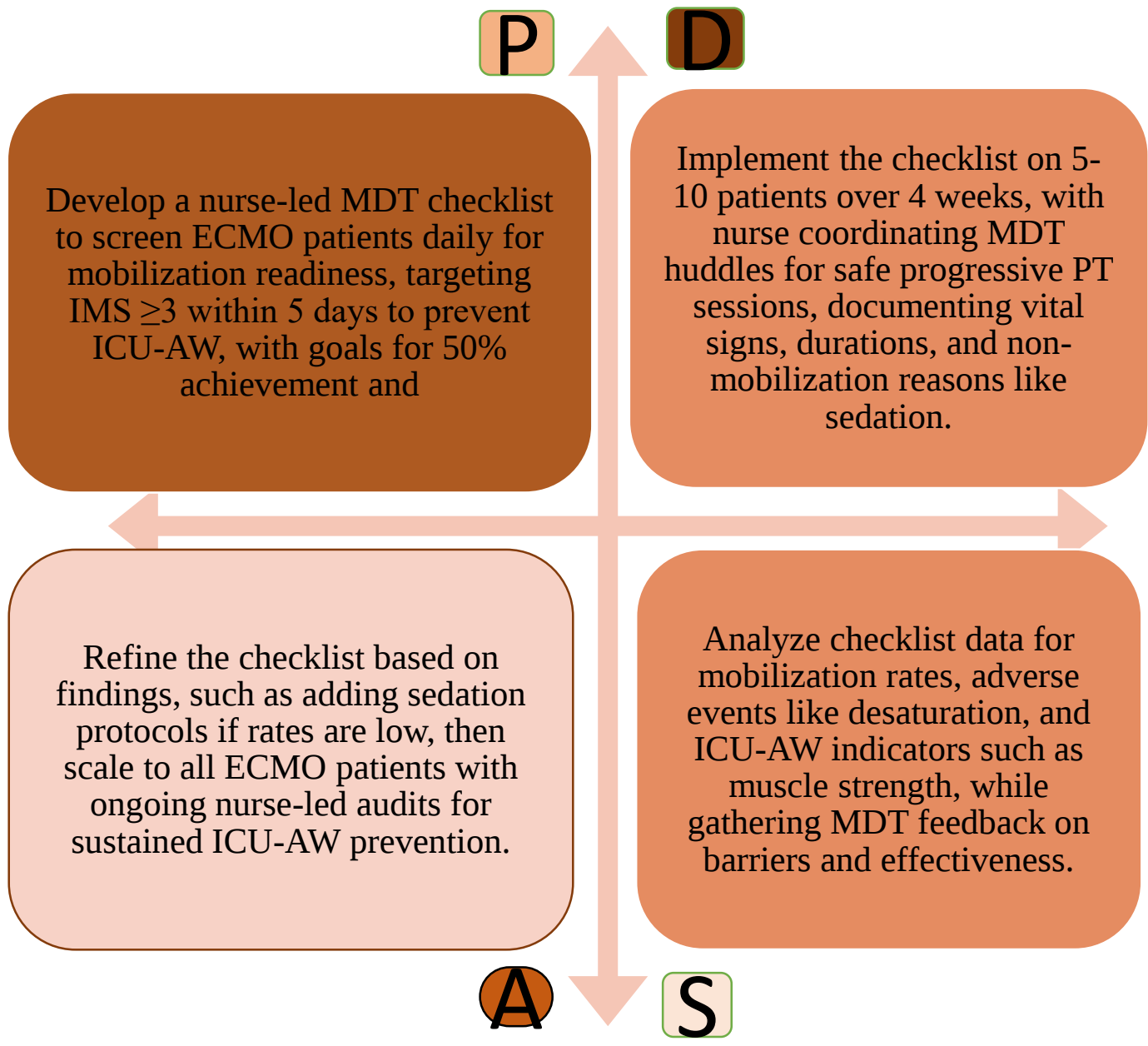
Benefits of Early Mobilization: Early mobilization, including physical therapy or rehabilitation, enhances circulation, muscle function, ventilation, and alertness, delivering physiological benefits to critically ill patients (Anekwe et al., 2019, Ferreira et al., 2019)

STUDY	SAMPLE	INTERVENTION	FINDINGS	LIMITATION
Safety and potential benefits of physical therapy in adult patients on extracorporeal membrane oxygenation support. - Ferreira et al. (2019) - Systematic review	1,208 studies found in the databases search. 20 studies involving 317 subjects met all the eligibility criteria.	- Physical therapy (PT) is the use of different techniques and physical exercises to reduce the deleterious effects of immobility. 259 patients treated with PT during ECMO support and 58 no PT.	Safety: 12 studies reported no complications during PT. No severe events like cannula displacement. Feasibility: PT was feasible with experience team. PT outcomes	- Risk of selection bias and difficult to fully assess the effect of an intervention. - The number of experienced staff needed to safely mobilize a patient was not mentioned.
Feasibility, safety, and resource utilization of active mobilization of patients on extracorporeal life support. - Braune et al. (2020) - Prospective observational study - University Hospital and ECLS Referral Centre, Germany	115 patients enrolled treated on ECLS.	- This study evaluated the feasibility and safety of active mobilisation(AM) in ECLS patients by a multi-professional team. - Active mobilization (IMS ≥ 3) was achieved in 37.4% of patients (43/115) at least once.	Safety: 3 out of the 332 AM session by the 43 patient had major bleeding eventful. Feasibility: AM was feasible with experience team (IQR 3-4). PT	- Single center with specific expertise in the care of ECLS - Risk of bias due methodology employed.
Early mobilization during extracorporeal membrane oxygenation for cardiopulmonary failure in adults: factors associated with intensity of treatment. - Abrams et al.,2022 - Retrospective Study - New York-Presbyterian Hospital.	177 patients out 511 patients who were supported with ECMO met the eligibility to be enrolled.	- The study aimed to identify factors associated with achieving higher-intensity PT among ECMO patients - It evaluated the safety and feasibility of mobilization, particularly with femoral cannulation.	Safety: Of the 2,706 active PT sessions, adverse events occurred in 2% (59 sessions). Feasibility: EM was feasible with experience team. PT	- The data are weighted more heavily toward the bridge to transplant population. - It single-center design, which restricts generalizability .

Discussion: A systematic review of studies by Abrams et al. (2022), Ferreira et al. (2019), and Braune et al. (2020) concluded that early physical therapy (PT) and mobilization, including early mobilization (EM), are feasible and safe for patients on extracorporeal membrane oxygenation (ECMO) support, irrespective of cannulation type. These studies, supported by experienced ECMO teams, reported infrequent complications associated with mobilization, indicating its safety and practicality. In contrast, Rivera et al. (2024) found that the evidence for high-intensity or active physical rehabilitation and mobilization (PR&M) in patients on extracorporeal life support (ECLS) shows uncertain effects on patient-important outcomes and safety. All reviewed studies highlighted a scarcity of robust data on early mobilization to prevent intensive care unit-acquired weakness (ICU-AW) in ECMO patients, noting that most available evidence stems from case reports, observational studies, or retrospective analyses, which are prone to bias. The complexity of ECMO patient management may contribute to the limited number of studies employing rigorous methodologies, such as randomized controlled trials (RCTs) or meta-analyses, prompting recommendations for future research with stronger methodological designs.

Conclusion: In conclusion, reviewed studies largely affirm the feasibility and safety of physical therapy (PT) and early mobilization (EM) in ECMO patients to prevent ICU-acquired weakness from immobilization deconditioning, with infrequent complications regardless of cannulation type, when supported by multi-professional teams.

Recommendation: ICU-AW is prevalent among ECMO population and can result in limited physical function, increased length of ICU and hospital stay, increased medical care costs, and decreased quality of life. Adapting early (PT) or EM progressively by developing a check list defining the actives and roles of the multi-professional team will help in addressing safety concerns around mobilizing the ECMO population.



References



Link: <https://qrco.de/bgIzGv>