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Appraisal

Critically Appraised Papers

Early goal-directed mobilisation in the intensive care unit is feasible and safe, and increases both the level and duration of activity

Synopsis

Summary of: Hodgson CL, Bailey M, Bellomo R, Berney S, Buhr H, Denehy L, et al. A binational multicenter pilot feasibility randomized controlled trial of early goal-directed mobilization in ICU. *Crit Care Med*. 2016;44:1145-1152.

***Question*:** Is a program of early goal-directed mobilisation in the intensive care unit feasible and safe, and does it change activity level or duration? ***Design*:** Randomised, controlled trial with partial blinding of outcome assessors. ***Setting*:** Five intensive care units in Australia and New Zealand. ***Participants*:** Inclusion criteria were: age > 18 years and anticipated mechanical ventilation for at least 48 hours. Exclusion criteria included: intensive care unit readmission; severe acute brain injury; conditions or orders precluding mobilisation; inability to follow verbal commands; previous dementia diagnosis; prior inability to walk without physical assistance; or imminent death. Randomisation of 50 participants allocated 29 to an intervention group and 21 to a control group. ***Interventions*:** During the stay in intensive care, participants in the intervention group received 30 to 60 minutes of daily goal-directed mobilisation by a physiotherapy mobility team. Exercise intensity was titrated to maximise active participation at the highest functional level for as long as possible. Participants in the control group received usual care. ***Outcome measures*:** The primary outcomes collected during intensive care stay comprised the highest level of activity, assessed using the Intensive Care Unit mobility scale (scores range from 0 to 10, with higher scores representing better mobility) and the duration of daily activity. The secondary outcomes that related to the safety and feasibility of the intervention were serious adverse events, time from admission to randomisation, and time from admission to first mobilisation. Other secondary outcomes included physical function, diagnosis of intensive care unit-acquired weakness at discharge from intensive care, duration of mechanical ventilation, and length of stay. ***Results*:** Data were available on 47 participants at hospital discharge. After adjustment for baseline variables, compared with usual care, those in the intervention group achieved a higher level of activity (MD 1.9, 95% CI 0.5 to 3.3). In the 7 days after randomisation, compared with usual care, those in the intervention group participated in a greater duration of activity (median 20 minutes/day (IQR 0 to 40) versus 7 minutes/day (IQR 0 to 15), $p = 0.002$). As an indication of feasibility in the intervention group, time from admission to randomisation and admission to first mobilisation group were median 3 (IQR 2 to 6) and 3 (IQR 2 to 4) days, respectively. No serious adverse events occurred in conjunction with the intervention. There were no between-group differences in the other secondary outcomes. ***Conclusion*:** Within intensive care, a program of early goal-directed mobilisation led by a physiotherapist was feasible, safe and increased both the level and duration of activity.

[95% CIs calculated by the CAP Editor]

Provenance: Invited. Not peer reviewed.

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Commentary

As critical care clinicians, we yearn for well-conducted trials that test our common instinct that early mobilisation may improve survivorship. This study by Hodgson and colleagues offers the opportunity to quench our thirst. We applaud their successful implementation of a multicentre pilot trial that enrolled and intervened early, measured the intervention exposure with detail, and conducted comprehensive outcome assessments. Can this pilot study effectively translate into a large randomised, controlled trial? We answer emphatically yes. With the opportunity to use these pilot data to guide future trial design, there are several areas to focus on. First, should trials of early mobilisation include a rigorous analgesia and sedation protocol? In this study, 20 to 25% of patients were unable to exercise in the first 4 days. By day 7, 46% of total intensive care unit arousal assessments met criteria for light sedation. As mental status may be the most common obstacle to early mobilisation, a standardised approach to sedation might be necessary, including evaluations of fidelity.[1] Second, will this level of intervention satiate vocal proponents of early mobilisation who often tout walking in the intensive care unit as the benchmark of quality? The intervention group achieved a mean Intensive Care Unit mobility score somewhere between standing and active transfer by day 7. At discharge from intensive care, 66% of patients were walking, including those walking with assistance. How does this compare with previous trials? It is hard to tell, as few previous trials have been so transparent. The data are illuminating and emphasise our patients' significant weakness. Finally, we need more familiarity with the Intensive Care Unit mobility score as an outcome – including understanding how to analyse data from this ordinal scale and what constitutes a meaningful difference.[2] Although the moniker 'early goal directed' drums up painful thoughts of negative confirmatory trials in sepsis resuscitation, the opportunity to further study early mobilisation – with excellent trial conduct like this – must not be missed.

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