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Appraisal

Critically Appraised Papers

A randomised trial of an intensive physiotherapy program for patients in intensive care

Synopsis

Summary of: Moss M, Nordon-Craft A, Malone D, Van Pelt D, Frankel SK, Warner ML, et al. A randomized trial of an Intensive Physical Therapy Program for Acute Respiratory Failure Patients. *Am J Respir Crit Care Med*. 2016;in press.

Question: In adults admitted to an intensive care unit, does a program of intensive physiotherapy improve long-term physical functional performance compared with a program of standard care physiotherapy? ***Design:*** Randomised, controlled trial with 1:1 allocation. Assessors were blinded, but clinicians and participants were not. ***Setting:*** Five medical centres located in Denver, Colorado, United States of America. ***Participants:*** Inclusion criteria were: aged ≥ 18 years and requiring mechanical ventilation for ≥ 5 days (changed to ≥ 4 days after 78 participants were enrolled). Exclusion criteria included: recent myocardial infarction, significant language barrier, severe physical or cognitive impairment limiting physiotherapy participation and unlikely to survive 6 months. Randomisation of 120 participants allocated 59 to intensive physiotherapy and 61 to standard care. ***Interventions:*** On the first day of awakening, the participants were randomised to either intensive physiotherapy (breathing techniques, range of motion, strengthening and core mobility/strength exercises, functional mobility retraining) or standard physiotherapy (range of motion, positioning, functional mobility retraining), delivered by distinct study teams for up to 28 days. Following this, physiotherapy intervention was at the treating team's discretion. Intensive physiotherapy comprised 30-minute sessions (ICU) or up to 60-minute sessions (wards) 7 days weekly, with up to 60-minute home/outpatient sessions three times weekly. The standard program comprised 20-minute sessions, three times weekly until discharge home. ***Outcome measures:*** The primary outcome measure was the short form of the Continuous Scale Physical Functional Performance Test score, measured 4 weeks following enrolment. Secondary outcomes included ICU and hospital-free days 4 weeks following enrolment, discharge to home, hospital mortality and institution-free days 90 and 180 days following enrolment. Functional tests, including the Timed Up and Go Test, Berg Balance Test and Short Form-36 Health Survey, were performed on those who returned for outpatient assessment. ***Results:*** Compared with standard care, those receiving intensive intervention received a higher total duration of physiotherapy (MD 322 minutes, 95% CI 254 to 390) and more sessions (MD 6.3 sessions, 95% CI 4.4 to 8.2). Physical functioning assessments were available for 89/104 (86%) participants 4 weeks following enrolment. There were no significant differences in the Continuous Scale Physical Functional Performance Test (mean difference −1.9, 95% CI −13.0 to 9.2) or any of the secondary outcomes. There were no differences in the primary outcome when participants were grouped according to pre-existing comorbidities or age tertiles. ***Conclusion:*** Intensive physiotherapy did not improve long-term physical functional performance compared with standard physiotherapy.

[95% CIs calculated by the CAP Editor]

Provenance: Invited. Not peer-reviewed.

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Commentary

Survivors of acute respiratory failure requiring intensive care unit (ICU) admission and mechanical ventilation frequently suffer enduring impairments of physical function.[1] To date, no trial, including that of Moss and colleagues, which commenced an intervention during hospitalisation, has impacted performance-based measures of physical function after hospital discharge. The authors are to be applauded for conducting a trial with high treatment fidelity, and that achieved separation and sample size, as these elements have not always been achieved in rehabilitation trials.[2,3] However, the results must be viewed with caution. Firstly, the primary outcome (Physical Functional Performance Test score) is not validated in critical illness survivors. The test exhibited a substantial floor effect at the primary time point, with a completion rate of 33% of participants. This increased to 48% at 3 months and 43% at 6 months. Furthermore, as measured by the short form of the Continuous Scale Physical Functional Performance Test score, two participants achieved functional independence on completion of physiotherapy treatment (both in the control group), despite 50% of participants being discharged home. Secondly, a significant between-group difference in age was observed and, although not significant, the intervention group were weaker, had lower bed mobility scores and completed less available rehabilitation days in ICU than the standard care arm, suggesting important differences may have been present at randomisation. Thirdly, although described as an early intervention, intensive treatment was not initiated until a median of 8 days (IQR 6 to 11). Despite the results of this and other rehabilitation trials for critical illness survivors, these studies consistently report a perilous state of physical function beyond hospital discharge.[1,2] It is important that we continue to seek interventions to improve these outcomes. However, the results of the AVERT trial[3] are a salient reminder that we don't yet understand the who, when and how of rehabilitation for survivors of critical illness.

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