

## Predictors of long-term outcomes in ICU patients with acquired muscle weakness



Clinical scores on admission may predict recovery of health-related quality of life, participation, physical activity and cognitive function of individuals with ICU-acquired muscle weakness (ICUAW), according to results of the General Weakness Syndrome Therapy (GymNAST) study.

"The present study describes the outcomes of individuals with ICUAW at 12 months after discharge from inpatient rehabilitation. The main result is that health-related quality of life, participation and physical activity were still very limited 12 months after discharge from rehabilitation," study authors write. "Less than half of our followed patients reached good health-related quality of life, participation and physical activity (44%, 38% and 24%, respectively)."

ICUAW is characterised by a profound weakness that is greater than normally expected from prolonged bed rest, and is therefore defined as clinically detected weakness in critically ill patients in whom there is no plausible aetiology other than critical illness. ICUAW often affects the peripheral as well as the respiratory muscles, limits the activities of daily living, and delays rehabilitation and recovery.

Longitudinal studies have described the recovery of critically ill people with relatively short ICU stay; however, few studies have been conducted examining critically ill people with ICUAW after long ICU stay (e.g., longer than 21 days of ICU treatment)

The GymNAST cohort study included 150 participants with ICUAW (30% female). Researchers measured health-related quality of life using the EQ-5D, participation using the Reintegration of Normal Living Index, physical activity using the Physical Activity Scale for Individuals With Physical Disabilities, and basal cognitive function using the Montreal Cognitive Assessment (MoCA) at 6 months, and the Clock Drawing Test 6 and 12 months after discharge from postacute treatment.

From the initially 150 recruited participants, the researchers were able to follow 51 (34%) at six months and 50 (33%) at 12 months after their postacute inpatient treatment. The best predictors of the results at 1 year after discharge include:

- Health-related quality of life - the best predictors were the time until regaining walking ability (OR=0.96, OR per day, 95% CI 0.93 to 0.99) and the mean MoCA score on admission to the postacute ICU and rehabilitation units (OR=1.25, 95% CI 1.02 to 1.52)
- Participation - the best predictor was the MoCA sum score on admission to the postacute ICU and rehabilitation units (OR=0.85, 95% CI 0.72 to 1.00)
- Physical activity - the best predictor was the Apache sum score on admission to the postacute ICU and rehabilitation units (OR=1.68, 95% CI 0.89 to 3.13)
- Normal cognitive function - the best predictor was regaining walking function in rehabilitation (OR=8.0, 95% CI 0.49 to 13.69)

"The strong aspects of the GymNAST study are its prospective design and that various clinical assessments for individuals with ICUAW were used to predict patients' long-term outcomes," the authors note. "The present study might therefore provide new information about the long-term results of physical rehabilitation of individuals with ICUAW."

A potential limitation of this study is that the researchers could not include sedated or very agitated individuals because they were unable to perform the assessments. This reduces the possibility of generalising the results to the entire critically ill population.

According to the researchers, further studies should use a randomised controlled design including individuals with ICUAW with a defined reason for muscle weakness (i.e., defined diagnosis of critical illness myopathy and/or critical illness polyneuropathy) to investigate specific rehabilitation therapies to enhance recovery.

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Published on : Tue, 24 Jul 2018