

## Pre-ICU cognitive status associated with post-ICU disability



Among older adults, any impairment (even minimal) in pre-intensive care unit cognitive status was associated with an increase in post-ICU disability over the six months after a critical illness, and that the relative increase in post-ICU disability was comparable between those with minimal and moderate cognitive impairment, according to new research published in *Annals of the American Thoracic Society*.

"Relative to intact cognition, moderate impairment was associated with more than double the likelihood of a new nursing home admission at hospital discharge," says the study. "However, pre-ICU cognitive impairment was not associated with mortality from ICU admission through six months of follow-up."

Cognitive impairment is common among older adults, yet little is known about the association of pre-ICU cognitive status with outcomes relevant to older adults maintaining independence after a critical illness. Many ICU survivors suffer from physical, cognitive, and mental health impairments after discharge, which can result in disability. Disability, defined as dependence in carrying out activities essential to independent living, can have devastating consequences for older adults, as it is associated with increased mortality, institutionalisation, and greater use of home care services.

In previous studies of health outcome prioritisation, "maintaining independence" was ranked as the most important health outcome by a majority (76%) of older persons, with staying alive ranked a distant second. Since a patient's values and preferences are the foundation of shared decision-making in the ICU, understanding that a loss of functional independence is more likely in those with cognitive impairment may help inform conversations about goals of care and treatment decisions.

In the current study, researchers sought to evaluate the relationship between pre-ICU cognitive status and three distinct outcomes over the six months following a critical illness: disability, incident nursing home admission at hospital discharge, and all-cause mortality.

In this prospective cohort study, 754 persons aged 70 years or more were monitored from March 1998 to December 2013 with monthly assessments of disability. Cognitive status was assessed every 18 months, using the Mini-Mental State Examination (range, 0–30), with scores classified as 28 or higher (cognitively intact), 24–27 (minimal impairment), and less than 24 (moderate impairment).

The analytic sample included 391 ICU admissions. The mean age was 83.5 years. The prevalence of moderate impairment, minimal impairment, and intact cognition (the comparison group) was 17.3, 46.2, and 36.5%, respectively. In the multivariable analysis, moderate impairment was associated with nearly a 20% increase in disability over the six-month follow-up period (adjusted relative risk [ARR], 1.19; 95% confidence interval [CI], 1.04–1.36), and minimal impairment was associated with a 16% increase in post-ICU disability (ARR, 1.16; 95% CI, 1.02–1.32).

In addition, moderate impairment was associated with more than double the likelihood of a new nursing home admission (adjusted odds ratio, 2.37; 95% CI, 1.01–5.55). Survival differed significantly across the three cognitive groups (log-rank  $P = 0.002$ ), but neither moderate impairment (adjusted hazard ratio, 1.19; 95% CI, 0.65–2.19) nor minimal impairment (adjusted hazard ratio, 1.00; 95% CI, 0.61–1.62) was significantly associated with mortality in the multivariable analysis.

"Prior research has demonstrated that it is feasible to detect cognitive impairment in the ICU using validated tools administered to proxy informants. While these tools may not provide a precise assessment of cognitive function, our results suggest that ascertaining any degree of cognitive impairment may be informative, given the comparable effect sizes of minimal and moderate cognitive impairment," the study authors write.

With the ageing of the population, the number of persons with cognitive impairment has been increasing; by 2050, between 11 and 18.5 million adults will have some degree of cognitive impairment in the U.S. Hence, the number of older adults presenting to the ICU with pre-existing cognitive impairment will only increase.

According to the authors, understanding the expected increase in post-ICU disability and potential implications for independence may inform advance care planning discussions with cognitively impaired older patients and their families in the outpatient setting.

Source: [Annals of the American Thoracic Society](#)

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