

Boston-area researchers develop new delirium severity measure for older adults

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A new method for measuring delirium severity in older adults has been developed by researchers from Harvard, Brown, and UMASS. The new scoring system, CAM-S, is based on the Confusion Assessment Method (CAM) and standardizes the measurement of delirium severity for both clinical and research uses. Details of this study are published in *Annals of Internal Medicine*.

Delirium is defined as the sudden onset of confusion or change in [mental status](#) that is often brought about by [physical illness](#), surgery, or hospitalization. Delirium is a common and often costly condition that is a leading complication among older adults who are hospitalized. In fact, studies suggest that delirium in adults ages 65 and older is associated with [hospital mortality rates](#) of up to 33%, with estimated annual healthcare costs of more than \$182 billion per year.

"Currently, the CAM is the most widely used tool in the world to screen for delirium," says Sharon K. Inouye, M.D., M.P.H., Director of the Aging Brain Center at the Harvard Medical School (HMS)–affiliated Hebrew SeniorLife Institute for Aging Research (IFAR) in Boston and HMS Professor of Medicine. "Our study is the first to develop and test this important new methodology, and to demonstrate the validity and reliability of the CAM-S, a novel approach to measure delirium severity."

The team developed and validated the CAM-S in two groups of patients. The first was a group of 300 patients 70 years of age or older who were

scheduled for major surgery as part of the Successful Aging after Elective Surgery (SAGES) study. The second group was part of the Project Recovery study and included 919 older adults (70 or older) who were admitted to the [hospital](#) on the medical service. Researchers developed the CAM-S from the 4-item short form and 10-item long form versions of the CAM, and examined the impact of the CAM-S scores on hospital and post-hospital [clinical outcomes](#).

CAM-S scores displayed a strong association with all clinical outcomes including length of hospital stay, nursing home placement, functional and cognitive decline, death, and hospital and post-hospital costs. The study found that length of hospital stay increases with the degree of delirium severity measured by the CAM-S short form from seven days for no delirium symptoms to 13 days for patients with severe delirium; the CAM-S long form showed similar increases in length of stay from six days to 12 days between no and severe symptom groups.

Additionally, mean hospital costs increase with the degree of delirium severity measured by the CAM-S short form from \$5,100 for patients without delirium symptoms to \$13,200 for those with severe symptoms. Similar results were seen across all levels of the CAM-S long form scores with mean costs increasing from \$4,200 to \$11,400 across delirium symptom groups ranging from none to severe.

Dr. Inouye concludes, "Our findings demonstrate that the CAM-S provides a new standardized severity measure with high inter-rater reliability, and a strong association with clinical outcomes related to delirium. We believe that this measure holds great promise to improve understanding of the effects of delirium on clinical care, prognosis, pathophysiology, and response to treatment. Ultimately, we hope that this measure will help to prevent the effects of this devastating condition and improve quality of life for [older adults](#)."

Provided by Hebrew SeniorLife Institute for Aging Research

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