

# Researchers develop scoring tool to measure severity of delirium

March 31 2022

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Delirium is a serious change in brain function that affects up to 64% of older medical patients and up to 50% of older surgical patients. It can manifest as sudden confusion, agitation, memory loss or hallucinations and delusions. Estimated to cost the U.S. health care system as much as \$182 billion annually, delirium is linked with longer hospital stays, complications and increased risks of dementia and death.

While there are more than 30 instruments currently available for identifying [delirium](#) in patients, few exist to assess its severity. Now,

scientists at Beth Israel Deaconess Medical Center (BIDMC) and Hebrew SeniorLife have developed a novel measure of delirium severity that could help improve patient-centered care for delirium. In a paper published in *JAMA Network Open*, the team reported that the tool—called the DEL-S delirium severity score—provides severity measures that are significantly associated with clinically relevant outcomes, including length of hospital stay and hospital costs.

"Many clinicians recognize that simply characterizing delirium as either present or absent is insufficient to evaluate and manage delirium clinically," said corresponding author Sarinnapha M. Vasunilashorn, Ph.D., a researcher in the Division of General Medicine at BIDMC and assistant professor of medicine at Harvard Medical School. "The ability to rate delirium severity is key to providing optimal care for [older adults](#), and such ratings would allow clinicians to target patients with severe delirium, monitor their response to treatment and ultimately provide more appropriate patient-centered care."

Building on their prior delirium severity instruments, such as the CAM-S, the team used state-of-the-art measurement approaches, such as patient self-reported items and finely graded observer ratings, combined with input from delirium experts who identified key indicators of delirium severity. The delirium severity score has both a six-item short form version, which may be preferred for [clinical use](#), and a 17-item long form version, preferred for research [clinical research](#) or reference standard ratings.

To develop and assess the delirium severity score, the researchers enrolled adults aged 70 years or older who were admitted or transferred to medical or surgical services at BIDMC between October 2015 and March 2017. Within 48 hours of hospital admission, delirium was assessed with daily, in-person interviews using cognitive testing and previously validated tools. Medical records were then reviewed by an

experienced research physician. Of the 352 patients enrolled, 69 (20%) developed delirium (167 delirium-days of 1190 daily ratings in all patients).

The researchers next quantified delirium severity using the short-form and long-form versions of the delirium severity score and reported that patients with the highest delirium severity scores had [longer hospital stays](#), greater in-hospital costs, higher medical costs and mortality up to one-year after hospital stay compared with patients with the lowest severity scores.

"The findings suggest that the delirium severity score is associated with adverse clinical outcomes," said senior author Sharon K. Inouye, MD, MPH, director of the Aging Brain Center at the Marcus Institute for Aging Research of Hebrew SeniorLife, a clinical scientist in the Division of Gerontology at BIDMC and professor of medicine at Harvard Medical School. "The delirium severity score will help to optimize delirium management clinically with important financial and quality of care implications. Moreover, it may provide a useful outcome measure for clinical trials or biomarker studies in delirium."

**More information:** Sarinnapha M. Vasunilashorn et al, Psychometric Properties of a Delirium Severity Score for Older Adults and Association With Hospital and Posthospital Outcomes, *JAMA Network Open* (2022). [DOI: 10.1001/jamanetworkopen.2022.6129](https://doi.org/10.1001/jamanetworkopen.2022.6129)

Provided by Beth Israel Deaconess Medical Center

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