Josh Baxt
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Study: New Brain Health Platform Gives Physicians New Tools to Precisely Assess Dementia Risk

Researchers at the University of Miami Miller School of Medicine have developed the Brain Health Platform, an advanced series of tests to determine a patient's dementia risk. The platform combines three measures: a Resilience Index (RI), a Vulnerability Index (VI), and a Number-Symbol Coding Task (NSCT). When combined, these metrics help triangulate a patient's risk of developing Alzheimer's and other neurological conditions. The work was recently published in the *Journal of Alzheimer's Disease*.

"Nothing like this has ever been done before," James E. Galvin, M.D., M.P.H., said of the Brain Health Platform.

“There was a need to precisely assess people’s risk,” said James E. Galvin, M.D., M.P.H., professor of neurology, director of the Comprehensive Center for Brain Health, and senior author on the paper. “By combining resilience, which measures brain health, vulnerability, which measures brain ‘unhealth,’ and NSCT, which measures decision-making and problem-solving, we can stratify a person as being at high, low, or intermediate risk of developing Alzheimer’s. Nothing like this has ever been done before.”

The platform is designed to take a snapshot of a patient’s brain health at that moment, providing actionable information to personalize care. The RI focuses on modifiable factors, such as their physical activity, nutritional intake, cognitive and leisure activities, and mindfulness. Patients are given several brief questionnaires to determine their score.

The VI includes 12 factors that are easily found in the patient’s electronic medical record, such as gender and history of heart disease, diabetes, and depression. The NSCT is a simple cognitive test that can be done with pen and paper or on a computer. Altogether, these assessments take around 20 minutes to complete and can be done while waiting for an appointment.

“The Brain Health Platform was designed to support the average practitioner, who can now take the evidence we have accumulated over the last 20 years and apply it in clinical practice,” said Dr. Galvin. “It can be difficult to assess a patient’s brain health, especially the first time you meet. We created a tool that helps physicians do that.”

Gathering Individualized Brain Health Data

In the study, the research team evaluated 230 participants: 71 healthy controls, 71 with mild cognitive impairment, and 88 with diagnosed dementia. The team, including a biostatistics collaborator at Florida Atlantic University, found that participants with abnormal scores on the platform had a greater than 95% probability of being impaired. This accuracy could help physicians provide precision care and prevention plans and direct patients to clinical trials.

“The platform takes each patient’s information and gives us a comprehensive readout on that individual's brain health,” said Dr. Galvin. “Quite often, we have to take the results from studies of large groups of people and figure out how that might apply to an individual, which is really challenging. Here, we’re applying that person’s unique data to their individualized brain health and risk profile and their personalized care plan. This should really help improve care because it is tailored and specific to that person.”

To simplify the readout, the platform generates a 3D visualization, which plots an individual’s scores against all the other data previously collected to give physicians a graphical understanding of their patient’s brain health.

“Physicians can easily see where this patient is, cognitively, compared to people who are healthy or others with mild cognitive impairment or dementia,” said Michael Kleiman, Ph.D., a postdoctoral researcher in the Comprehensive Center for Brain Health and first author on the paper. “This allows us to place their current cognitive risk, as well as their likelihood of developing cognitive impairment in the future.”

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Dr. Galvin discussed his latest study during a *Newswise* event with invited journalists on November 16.

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