

## NAD<sup>+</sup> Supplementation in Mouse AD Model

The National Institutes of Health announced on February 6 that a group of researchers at the National Institute on Aging (NIA; Baltimore, MD) had published the results of a study of nicotinamide riboside (a form of vitamin B3) supplementation in mouse models of Alzheimer disease (AD). Nicotinamide riboside acts on the brain by normalizing levels of nicotinamide adenine dinucleotide (NAD<sup>+</sup>). The brains of mice after treatment showed reduced tau and less evidence of DNA damage than did those of untreated mice.

Hou and colleagues from the NIA, as well as researchers from the University of Aarhus (Denmark), Johns Hopkins University School of Medicine (Baltimore, MD), and the University of Copenhagen (Denmark), published “NAD<sup>+</sup> supplementation normalizes key Alzheimer’s features and DNA damage responses in a new AD mouse model with introduced DNA repair deficiency” on February 20 in the *Proceedings of the National Academy of Sciences* (2018;115:E1976–E1885).

The researchers developed a DNA repair-deficient mouse model that mimics major features of human AD, including phosphorylated tau pathologies, synaptic dysfunction, neuronal death, and cognitive impairment. Treatment with nicotin-

amide riboside resulted in less tau pathology but had no effect on amyloid- $\beta$  peptide accumulation. The treated mice showed reduced DNA damage, neuroinflammation, and apoptosis of hippocampal neurons, as well as increased activity of the SIRT3 protein in the brain. In the hippocampus, treatment seemed to either clear existing DNA damage or prevent it from spreading further. In a battery of behavioral tests, treatment improved cognitive function and restored hippocampal synaptic plasticity. The authors concluded that these findings “suggest a pivotal role for cellular NAD<sup>+</sup> depletion upstream of neuroinflammation, phosphorylated tau, DNA damage, synaptic dysfunction, and neuronal degeneration in AD.” They pointed to the potential for therapeutic interventions that raise NAD<sup>+</sup> levels.

“The pursuit of interventions to prevent or delay Alzheimer’s and related dementias is an important national priority,” said Richard J. Hodes, MD, director of the NIA. “We are encouraging the testing of a variety of new approaches, and this study’s positive results suggest 1 avenue to pursue further.”

*National Institutes of Health*  
Proceedings of the National Academy of Sciences

## What Patients Want to Know Before Imaging

In an article e-published on February 13 ahead of print in *Radiology*, Pahade et al. from the Yale University School of Medicine (New Haven, CT), Cincinnati Children’s Hospital Medical Center (OH), the University of Alabama at Birmingham, the Massachusetts General Hospital/Harvard Medical School (Boston), Indiana University (Indianapolis), and Stanford University School of Medicine (CA) reported on a study designed to explore what information patients and caregivers found useful before an imaging examination, how and from whom they preferred to receive such information, and how those preferences related to several patient-specific variables. The study focused on the results of a 24-item survey administered at 3 pediatric and 3 adult hospitals, with 1,542 surveys (1,161 completed, 381 partial) returned. Respondents had a mean age of  $46.2 \pm 16.8$  years. The ordering provider was reported most often (64%) as a source of preimaging information and was the preferred source. Scheduled MR or nuclear medicine examinations and increased levels of education were associated with higher rates of reports of having received information about the imaging examination. Half of respondents sought information themselves. Respondents rated preexamination information as of the highest importance and assigned the

lowest importance to information on alternative radiation-free imaging procedures.

On February 13 the Radiological Society of North America released a press release focusing on the study’s findings. Lead author Jay K. Pahade, MD, from the Yale University School of Medicine, said in the release that the results indicate that “1 in 5 people are showing up for the exam without any information about the test they are getting. This is an important finding in today’s health care system, where we want more patient engagement and involvement.” He added that “these results show that what we as radiologists think patients value is not necessarily what they actually value. Our study found that patients value basic information related to the test more than information related to the radiation dose, so we should probably shift our focus to providing that. In the radiology realm, we need to take more ownership over the entire imaging process. One big gap has been in the preimaging part of that process, and the data show we have work to do in closing that gap.”

Radiology  
*Radiological Society of North America*