

Aging and Cognition in Down Syndrome

Hobbs Discovery Grant

BY JAN ROSEMERGY

Although Down syndrome is the most common genetic cause of intellectual disability, it has received less research attention than autism and other less common disorders. Thanks to advances in medical care, most especially corrective surgery for heart defects, life expectancy for individuals with Down syndrome has increased to 50 to 60 years. Unfortunately, over 50% of adults with Down syndrome develop dementia by age 60. This makes age-related dementia in older adults with Down syndrome an urgent public health concern.

Paul Newhouse, M.D., known nationally for his research on aging and cognition, is now exploring an innovative therapeutic approach for dementia in Down syndrome, thanks to a VKC Nicholas Hobbs Discovery Grant. Newhouse is Jim Turner Professor of Cognitive Disorders and professor of Psychiatry, Pharmacology, and Medicine.

Newhouse was recruited to Vanderbilt to direct the Center for Cognitive Medicine in the Department of Psychiatry. The Center for Cognitive Medicine conducts research and clinical activities that focus on disorders of cognition (memory, thinking, and learning). A major focus is on the aging brain. The Center also studies late-life cognitive disorders, including Mild Cognitive Impairment (MCI) and Alzheimer disease. MCI is the stage when others notice that an individual is developing mild memory or thinking problems. Many persons with MCI go on to develop Alzheimer disease.

In 2012, Newhouse published study findings in *Neurology* that suggested wearing a nicotine patch may help improve memory loss in older adults with mild cognitive impairment. Nicotine stimulates cholinergic receptors in the brain that are important for thinking and memory, and it may have neuroprotective effects. People with Alzheimer disease lose some of these cholinergic receptors.

Newhouse and VKC director Elisabeth Dykens, Ph.D., are conducting a memory treatment research study for adults with Down syndrome. The study will examine the treatment of memory using low-dose nicotine patches.

Earlier research has shown that brain changes characteristic of Alzheimer disease occur prior to symptoms of memory loss. This suggests that for treatments to be effective, they must begin early. This study will focus on adults with Down syndrome ages 35 and over who are non-smokers and have only mild changes in memory, behavior, and functional independence. The study will involve 6 visits to evaluate medical status, level of functioning, cognitive status, and changes in cognitive ability, memory, attention, and brain wave activity. Treatment will be a 1-month trial of low-dose, FDA-approved nicotine patches. Interested families may contact (615) 322-2082, asante.kamkwala@vanderbilt.edu.