ALZHEIMER'S ASSOCIATION **Update**

Highlights of Alzheimer's Association news and events of interest to the medical and scientific community.

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Prevention and prevalence take center stage at AAIC 2014

More than 4300 researchers, physicians, and other health care professionals from 75 countries gathered in Copenhagen, Denmark, July 13-17, to attend the Alzheimer's Association International Conference® (AAIC®). Participants at the world's largest gathering of Alzheimer's and dementia professionals had hundreds of sessions from which to choose over the five-day conference, including 425 oral sessions and more than 1600 poster sessions, plus a full day of pre-conference sessions.

The 26th AAIC was opened by Her Royal Highness Princess Benedikte of Denmark. "Nobody knows better than this audience the impact of the illness on the individual affected and their family," she said. "How encouraging it is that we have thousands of brilliant minds advancing Alzheimer's and dementia research around the world. It is because of this work and the partnership with the Alzheimer's Association that the international research community will defeat Alzheimer's."

Alzheimer's Association President and CEO Harry Johns echoed this sentiment. "The world's dementia research community is the ultimate source of the solutions for the more than 40 million people worldwide who already have Alzheimer's today–with the numbers projected to surpass 100 million altogether too soon, that is, if not for the success that we know you can have as a result of your ingenuity, capability and commitment," said Johns.

"At the Alzheimer's Association, our role, and our commitment, in research is to facilitate your work," added Johns." We do it in many ways—direct funding, convening and collaborating as a partner in our sector, with government, and [with] industry, and supporting increased research funding, data sharing, and regulatory improvements to produce new interventions and treatments."

Johns credited Prime Minister David Cameron of the United Kingdom for his leadership in convening the G8 Summit on Dementia in 2013 and the leaders of the G8 for setting objectives very similar to the one in the U.S. National Plan to Address Alzheimer's, which has set a goal of achieving prevention and effective treatment by 2025. He also recognized Dennis Gillings, PhD, chair of the World Dementia Council that emerged following the G8 dementia summit. Gillings was appointed World Dementia Envoy by Prime Minister Cameron.

Awards

Steven G. Younkin, MD, PhD, professor of neuroscience and pharmacology at Mayo Clinic's campus in Jacksonville, Florida, and Kári Stefánsson, MD, DrMed, president and chief executive officer of deCODE genetics in Reykjavik, Iceland, were honored with the Khalid Iqbal, PhD, Lifetime Achievement Award in Alzheimer's Disease Research and the Inge Grundke-Iqbal, PhD, Award, respectively.

"Through their significant contributions to the field of Alzheimer's and dementia research, these two scientists have had a positive impact on the Alzheimer's effort worldwide," said Maria Carrillo, PhD, vice president of medical and scientific relations at the Alzheimer's Association. "We honor their commitment to the Alzheimer's cause and the important work they've done to help change the trajectory of the disease."

Younkin's current research focuses on the complex genetics of Alzheimer's disease (AD). Better understanding of AD genetics may help identify new approaches for developing effective, disease-modifying therapies. Stefánsson has published numerous articles on the genetics of common/complex diseases and has been among the leaders in the discovery of variants in the sequence of the human genome that are associated with the risk of common/complex diseases.

Selim Zilkha and Mary Hayley, of Los Angeles, California, were presented with the Jerome H. Stone Philanthropy Award for Alzheimer's Research. Together, the couple has played a transformational role in promoting and advancing global Alzheimer's research through investments totaling more than $30 million to the Keck School of Medicine of the University of Southern California.

"Through their efforts, Selim and Mary have a made an extraordinary impact on the advancement of Alzheimer's research," said Johns. "Not only has their generosity led to the establishment of new programs that support Alzheimer's researchers, [but] their example [also] is inspiring a new generation of philanthropists to take action to end this disease, and we are sincerely grateful to them for all they have done."

Prevention and risk reduction

Miia Kivipelto, MD, PhD, of the Karolinska Institutet, Stockholm, Sweden, and the National Institute for Health and Welfare, Helsinki, Finland, reported on the results of the Finnish Geriatric Intervention Study to Prevent Cognitive Impairment and Disability (FINGER), a randomized controlled trial of 1260 participants age 60 to 77 with modifiable risk factors for cognitive impairment and Alzheimer's.

Participants were divided into two groups; one received an intervention that included nutritional guidance, physical exercise, cognitive training, social activities, and management of heart health risk factors, while the second group received standard health advice. After two years, the intervention group performed significantly better on a comprehensive cognitive examination. In addition to performing better overall, the intervention group performed significantly better on specific tests of memory, executive function (complex aspects of thought such as planning, judgment, and problem-solving), and speed of cognitive processing. A seven-year follow-up study is planned.

"Researchers have previously observed a number of modifiable factors associated with increased risk of late-life cognitive impairment and Alzheimer's, but short-term studies focusing on single, isolated risk factors have had modest results, at best," said Keith Fargo, PhD, director of scientific programs and outreach at the Alzheimer's Association. "Longer larger, better controlled trials looking at modifying multiple risk factors - like the FINGER Study - have been needed. This new data is very encouraging, and we look forward to further studies to confirm and extend these findings."

A study of 329 cognitively normal middle-aged U.S. adults with a genetic predisposition for Alzheimer's or parental family history of AD found that participation in mentally stimulating activities in middle-age may help protect against the development of AD and other dementias later in life. The researchers found that study volunteers who reported more frequently participating in mentally stimulating activities including reading books and going to museums had higher scores on tests of memory and thinking abilities such as planning, judgment, and problem-solving than those who reported less frequent participation. Those who reported playing cards and games including puzzles scored higher overall than those participating in other mentally stimulating activities. Mentally stimulating activities were also associated with greater volume in several brain regions that often lose volume in AD.

Two studies reported at AAIC presented evidence that regular physical activity may reduce the risk of AD and other dementias. In one study, 280 U.S. adults with a median age of 81 completed a questionnaire on the frequency and intensity of exercise during their lifetime. After observing the participants for about three years, the researchers found that a history of moderate physical exercise in middle age was associated with a significantly decreased risk of mild cognitive impairment (MCI). In a second study, researchers examined the frequency and intensity of exercise of 1830 adults with normal cognition. The researchers found that light physical exercise in midlife and late-life was associated with a decreased risk of MCI, as was vigorous physical exercise in mid-life and moderate physical exercise in late-life.

While hypertension during midlife may increase risk for AD and other dementias, there is emerging evidence that its association with dementia risk may change over time. At AAIC, researchers presented results of a study following 625 older U.S. adults without dementia for up to 10 years and found that those whose high blood pressure began between ages 80-89 had a significantly lower risk of developing dementia compared with participants with no history of high blood pressure. Those with the onset of hypertension at age 90 or older had even lower dementia risk.

"In our study, high blood pressure is not a risk factor for dementia in the oldest old, but just the opposite," said Maria Corrada, MS, ScD, University of California, Irvine. "Developing hypertension at older ages may be beneficial for maintaining intact cognition." Although the mechanisms that may make hypertension helpful in these older individuals are unknown, higher blood pressure may help keep sufficient blood flow to the brain at older ages, said Corrada.

Global prevalence of Alzheimer's

At an AAIC plenary session, Kenneth Langa, MD, PhD, University of Michigan, Ann Arbor, said that while global prevalence of AD is projected to increase in the decades ahead as the planet's population ages, recent studies from the United States, the Netherlands, Sweden, and England suggest a decline in new and/or existing cases in those countries. A number of factors, especially rising levels of education and more aggressive treatment of cardiovascular risk factors such as hypertension and high cholesterol, may be leading to improved brain health and a consequent decline in new cases of Alzheimer's disease and other dementias in certain countries or regions of the world.

"Whether this trend will continue in the face of rising levels of obesity and diabetes, and whether it is also true in low- and middle-income countries, are key unanswered questions," said Langa. "The answers will have enormous implications for the extent of the future worldwide impact of Alzheimer's disease and dementia."

Claudia L. Satizabal, PhD, of Boston University School of Medicine, Boston, Massachusetts, and colleagues reported trends in new cases of dementia among participants in the Framingham Heart Study, an ongoing, long-term (since 1948), multi-generational cardiovascular health study of residents of Framingham, Massachusetts, that began tracking dementia among participants in 1975. Study researchers selected four sequential, non-overlapping, five-year periods from the last three decades and calculated new cases of dementia in those periods among participants age 60 and older. They found that, compared with the first five-year period, the second had 22% fewer new cases of dementia, the third had 38% fewer, and the fourth had 44% fewer. The reduction was strongest in participants ages 60-69, women, and individuals with higher educational levels, defined as having a high school diploma.

Researchers found a substantial improvement in educational achievement, management of blood pressure, and levels of HDL ("good") cholesterol, and a decline in