

Dietary Guidelines Head North

Minnesota Medical Association is covering issues related to food and nutrition in the September/October issue of *Minnesota Medicine*. We noticed the article in your March/April issue by James J. DiNicolantonio, Zoe Harcombe and James O'Keefe, "Problems with the 2015 Dietary Guidelines for Americans: An Alternative."

We thought it was very well done and offered very useful information. We would like to reprint it for our Minnesota readers. Thank you.

Kim Kiser

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Over-Prescribed Medications/ Under-Appreciated Risks

I read with interest the review article from *Missouri Medicine* (May/June 2016), entitled "Over-Prescribed Medications, Under-Appreciated Risks: A Review of the Cognitive Effects of Anticholinergic Medications in Older Adults" by Daniel M. I. Britt and Dr. Gregory Day from Washington University in St. Louis.

This article discusses an important topic, the cognitive effects of anticholinergic medications in older adults. The authors point to a number of previous studies showing an association between cognitive impairment and use of anticholinergic medications and summarize with the consensus finding that older adults taking anticholinergic medications are at higher risk for cognitive impairment and dementia.

Our recent report in the *Journal of the American Medical Association - Neurology* entitled "Association between Anticholinergic Medication Use and Cognition, Brain Metabolism, and Brain Atrophy in Cognitively Normal Older Adults" supports Mr. Britt and Dr. Day's conclusion of an association of anticholinergic medication use in older adults with both decreased cognition and increased risk for dementia in older adults.

Further, our study was the first to provide *in vivo* measures of structural and functional brain changes in that may underlie the observed association. Our study examined older adults (mean age = 73.3 years) who were cognitively normal at the time of baseline exam from a consortium study on neuroimaging measures in Alzheimer's disease (AD) called the Alzheimer's Disease

Neuroimaging Initiative (ADNI), as well as a secondary cohort of cognitively normal older adults from the Indiana Memory and Aging Study (IMAS; mean age = 70.3 years). Both cohorts underwent cognitive testing of memory and executive function and structural magnetic resonance imaging (MRI) to measure brain volume. The ADNI participants also underwent baseline functional neuroimaging with positron emission tomography (PET) using [¹⁸F]FDG to examine brain glucose metabolism and longitudinal clinical follow-up (mean follow-up period = 32.1 months). We then compared cognition, brain glucose metabolism and volume, and risk of conversion to a diagnosis of mild cognitive impairment (MCI) or AD over the follow-up period between older adults taking one or more anticholinergic medications (AC+) to those not taking anticholinergic medications (AC-). Similar to previous reports, we found significantly lower memory and executive function in AC+ older adults relative to AC- older adults, as well as a 2.5x increased risk of conversion to MCI and/or AD (which increases to a more than 7x increased risk in those that are also amyloid positive) in AC+ older adults relative to AC- older adults.

Further, we found reduced brain glucose metabolism and greater atrophy across the whole brain, as well as more specifically in the temporal lobe, a region important for memory and other types of cognition. Overall, we concluded that use of anticholinergic medications should be discouraged in older adults if alternatives are available, although additional longitudinal prospective studies are needed to fully understand the role of anticholinergic medications on cognitive impairment and associated brain pathology.

The article published by Mr. Britt and Dr. Day raises important and timely issues about the use of anticholinergic medications in older populations, and I feel is an excellent resource for researchers and clinicians who are concerned about or interested in the use of anticholinergic medications in these populations.

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