Cochrane for Clinicians

Putting Evidence into Practice

These are summaries of reviews from the Cochrane Library.

This series is coordinated by Corey D. Fogleman, MD, Assistant Medical Editor.

A collection of Cochrane for Clinicians published in *AFP* is available at http://www.aafp.org/afp/cochrane.

CME This clinical content conforms to AAFP criteria for continuing medical education (CME). See CME Quiz Questions on page 149.

Author disclosure: No relevant financial affiliations.

The Effect of Statins on Dementia and Cognitive Decline

CHRISTOPHER W. BUNT, MD, FAAFP
Medical University of South Carolina, Charleston, South Carolina

ANDREW J. HOGAN, MD
U.S. Naval Hospital Guantanamo Bay, Guantanamo Bay, Cuba

Clinical Question

Do statins prevent dementia or cognitive decline?

Evidence-Based Answer

Statins given in later life to patients at risk of vascular disease do not prevent dementia or cognitive decline compared with placebo. Adverse effects are similar between groups.[1] (Strength of Recommendation: A, based on consistent, good-quality patient-oriented evidence.)

Practice Pointers

In 2015, the prevalence of dementia in the U.S. population older than 65 years was approximately 11%. The estimated worldwide cost of dementia will reach $1 trillion by 2018; thus, prevention strategies are critical.[2] There is a close association between dementia and cardiovascular disease, and because statins have secondary preventive effects for cardiovascular disease,[3] it has been posited that they may also help prevent dementia. Several observational studies have reported a slight benefit for statin use in the prevention of dementia.[4-6] This Cochrane review addressed whether statins are effective for the primary prevention of dementia or cognitive decline.[1]

The authors of this review examined two randomized controlled trials with 26,340 participants 40 to 82 years of age, including 11,610 persons 70 years or older.[1] One trial compared simvastatin (Zocor) with placebo over five years; the other compared pravastatin (Pravachol) with placebo over 3.2 years. All of the participants in both study populations had a moderate to high vascular risk. The cognitive assessments used in these two studies were heterogeneous and had different end points, including changes in performance on the Mini-Mental State Examination (which is copyright restricted and requires a fee for the form and administering the test), the Stroop Color and Word Test, and the Picture-Word Learning test, among others.

There were no differences in the number of patients who developed dementia or cognitive decline between those taking statins or placebo. Although both studies evaluated cognitive decline, only the simvastatin study examined the incidence of dementia. Among the 20,536 participants in the simvastatin study who were randomized to treatment or placebo, 31 new cases of dementia developed in each arm of the study. Both studies were at low risk of bias, and there were no differences in the number of adverse effects leading to discontinuation.

An analysis from the Agency for Healthcare Research and Quality cites the availability of only low-quality, discordant evidence to link statin use and prevention of cognitive decline.[7] In its most recent clinical guideline, the American Academy of Neurology does not address statin use to prevent dementia.[8]

The practice recommendations in this activity are available at http://www.cochrane.org.

The opinions and assertions herein are those of the authors, and should not be construed as official or as those of the Department of the Air Force, the Department of the Navy, the Uniformed Services University of the Health Sciences, or the Department of Defense.

REFERENCES

1. McGuinness B, Craig D, Bullock R, Passmore P. Statins for the prevention of dementia. *Cochrane Database Syst Rev.* 2016;(1):CD003160.
2. Hebert LE, Weuve J, Scherr PA, Evans DA. Alzheimer disease in the United States (2010-2050) estimated using the 2010 census. *Neurology.* 2013;80(19):1778-1783.
3. Stone NJ, Robinson JG, Lichtenstein AH, et al. 2013 ACC/AHA guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults: a report of the American College of Cardiology/

American Heart Association Task Force on Practice Guidelines [published corrections appear in *J Am Coll Cardiol*. 2015;66(24):2812 and *J Am Coll Cardiol*. 2014; 63(25 pt B):3024-3025]. *J Am Coll Cardiol*. 2014;63(25 pt B):2889-2934.

4. Wong WB, Lin VW, Boudreau D, Devine EB. Statins in the prevention of dementia and Alzheimer's disease: a meta-analysis of observational studies and an assessment of confounding. *Pharmacoepidemiol Drug Saf*. 2013;22(4):345-358.
5. Swiger KJ, Manalac RJ, Blumenthal RS, Blaha MJ, Martin SS. Statins and cognition: a systematic review and meta-analysis of short- and long-term cognitive effects. *Mayo Clin Proc*. 2013;88(11):1213-1221.
6. Song Y, Nie H, Xu Y, Zhang L, Wu Y. Association of statin use with risk of dementia: a meta-analysis of prospective cohort studies. *Geriatr Gerontol Int*. 2013; 13(4):817-824.
7. Williams JW, Plassman BL, Burke J, Benjamin S. Preventing Alzheimer's disease and cognitive decline. *Evid Rep Technol Assess (Full Rep)*. 2010;193:1-727.
8. Doody RS, Stevens JC, Beck C, et al. Practice parameter: management of dementia (an evidence-based review). Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*. 2001; 56(9):1154-1166.

Interventions for Preventing Falls Among Older Adults Living in the Community

DONNA COHEN, MD, MSc, and ASHLEY MORRISON, MD, *Lancaster General Hospital Family Medicine Residency Program, Lancaster, Pennsylvania*

Clinical Question

Are interventions for preventing falls effective for older adults living in the community?

Evidence-Based Answer

Structured exercise programs and home safety interventions reduce both the rate and the risk of falling among community-dwelling adults 65 years and older, whereas multifactorial assessment and intervention programs reduce the rate of falls but not the risk of falling. Vitamin D supplementation does not reduce the rate of falls or risk of falling in all patients. Education about fall prevention does not significantly reduce the rate or risk of falling.[1] (Strength of Recommendation: B, based on inconsistent or limited quality patient-oriented evidence.)

Practice Pointers

One out of every three persons 65 years and older falls each year, and falling once doubles a person's chances of falling again.[2] One out of every five such falls causes a serious injury, such as broken bones or a head injury.[3] In addition, falls have a large economic impact on society. The average cost of hospitalization for a fall-related injury among persons older than 65 years is more than $17,000, not including indirect costs such as loss of productivity.[4] Identified risks include lower body weakness, poor balance, home hazards, vitamin D deficiency, and medication use.[3]

This updated systematic review included 159 randomized controlled trials with 79,193 participants, all of whom were older adults (generally defined as age 65 years and older) living in the community.[1] In this review, the risk of falling refers to the likelihood that a person will experience a fall within one year, whereas the rate of falls is the mean number of falls per year. Group exercise programs, consisting of two or more components of exercise, significantly reduced the rate of falls (rate ratio [RaR] = 0.71; 95% confidence interval [CI], 0.63 to 0.82), as did multicomponent home exercise programs (RaR = 0.68; 95% CI, 0.58 to 0.80). The components of the group and home-based exercise programs included balance training, strength and resistance training, walking, and tai chi. Overall, exercise interventions also significantly reduced the risk of fracture (relative risk [RR] = 0.34; 95% CI, 0.18 to 0.63). Multifactorial interventions, which assess an individual's risk of falling and then develop a treatment plan to reduce the identified risks, were also shown to reduce the rate of falls (RaR = 0.76; 95% CI, 0.67 to 0.86).

Home safety assessment and modification interventions were effective in reducing the rate of falls (RaR = 0.81; 95% CI, 0.68 to 0.97). These home safety interventions were more effective in persons at higher risk of falling and when delivered by an occupational therapist. An intensive educational program for family physicians that included face-to-face education by a pharmacist on how to conduct medication reviews and feedback on prescribing, along with incorporating active patient involvement, significantly reduced the risk of falling (RR = 0.61; 95% CI, 0.41 to 0.91).

Vitamin D supplementation did not reduce the rate of falls or risk of falling in all patients. However, subgroup analysis showed that it was effective when administered to those participants who began the study with low vitamin D levels (RaR = 0.57; 95% CI, 0.37 to 0.89). Similarly, trials testing interventions that only provided education about fall prevention did not significantly reduce the rate or risk of falling.

Potential sources of bias included under- or overreporting of fall events, lack of blinding to intervention, and attrition bias. In a large number of trials included in the review, the impact of the risk of bias was found to be mostly low or unclear. It is important to note that the findings are not generalizable to older persons with dementia, because most of the trials excluded those with cognitive impairment. Two of the trials testing resistance training reported adverse effects. One included musculoskeletal injuries, which improved within three weeks, and the other showed a higher risk of injury involving back or knee pain related to exercise (RR = 3.6; 95% CI, 1.5 to 8.0).

Current guidelines by the American Geriatrics Society recommend a multifactorial fall risk assessment followed by interventions tailored to each patient's risk factors coupled with an appropriate exercise program.[2] This systematic review supports those recommendations.

The practice recommendations in this activity are available at http://www.cochrane.org.

REFERENCES

1. Gillespie LD, Robertson MC, Gillespie WJ, et al. Interventions for preventing falls in older people living in the community. *Cochrane Database Syst Rev.* 2015;(4):CD007146.
2. American Geriatrics Society. Clinical practice guideline: prevention of falls in older persons. http://www.americangeriatrics.org/health_care_professionals/clinical_practice/clinical_guidelines_recommendations/prevention_of_falls_summary_of_recommendations. Accessed March 21, 2016.
3. Centers for Disease Control and Prevention. Older adult falls. http://www.cdc.gov/homeandrecreationalsafety/falls/adultfalls.html. Accessed March 21, 2016.
4. Roudsari BS, Ebel BE, Corso PS, Molinari NA, Koepsell TD. The acute medical care costs of fall-related injuries among the U.S. older adults. *Injury.* 2005;36(11):1316-1322. ■