Cochrane for Clinicians

Putting Evidence into Practice

These are summaries of reviews from the Cochrane Library.

The series coordinator for *AFP* is Corey D. Fogleman, MD, Lancaster General Hospital Family Medicine Residency, Lancaster, Pa.

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 732.

Author disclosure: No relevant financial affiliations

▶ **See Cochrane Journal Club:** Cranberries for preventing urinary tract infections (http://www.cochranejournalclub.com/cranberries_for_preventing_utis-clinical/).

Are Cranberry Products Effective for the Prevention of Urinary Tract Infections?

WILLIAM E. CAYLEY, JR., MD, MDIV
University of Wisconsin, Eau Claire, Wisconsin

Clinical Question

Should cranberry products be recommended for the prevention of urinary tract infections (UTIs)?

Evidence-Based Answer

Cranberry products are not effective and should not be recommended for the prevention of UTIs. (Strength of Recommendation: B, based on inconsistent or limited-quality patient-oriented evidence.)

Practice Pointers

Cranberry products have been used for many years to treat and prevent UTIs. Biochemical research suggests that cranberry products might prevent UTIs by altering the levels of hippuric acid in urine, or by preventing bacterial adhesion to the uroepithelial cells in the wall of the bladder. Cranberry products include juice, syrup, capsules, and tablets, but there is no consensus about which form or dose might be the most effective for UTI prevention. A 2008 Cochrane review found two good-quality randomized controlled trials (RCTs) that suggest drinking cranberry juice may decrease the number of symptomatic UTIs over a 12-month period in women,[1] and a 2012 meta-analysis added 11 additional RCTs and concluded that cranberry-containing products are associated with a small protective effect against UTIs.[2]

In this Cochrane review, the authors of the 2008 review sought to update the evidence for the effectiveness of cranberries in the prevention of UTIs in susceptible populations (e.g., women with recurrent UTIs, patients with a neuropathic bladder or spinal injury, older adults) and to incorporate trials of cranberry products for UTI prevention in children. Fourteen additional good-quality trials were added that changed the overall conclusion. Across all populations of patients studied (i.e., women with recurrent UTI, older men and women, adults or children needing catheterization, pregnant women, and children with a susceptibility to UTIs), the use of cranberry products was not associated with a reduced risk of UTIs when compared with placebo (relative risk [RR] = 0.86; 95% confidence interval [CI], 0.71 to 1.04). Two studies of women with recurrent UTIs (RR = 1.31; 95% CI, 0.85 to 2.02) and one study involving children (RR = 0.69; 95% CI, 0.32 to 1.51) failed to demonstrate a difference between cranberry products and antibiotic prophylaxis in reducing the risk of repeat UTIs. Three studies that compared various doses of cranberry products (RR = 1.12; 95% CI, 0.75 to 1.68) and three studies that compared high-dose cranberry products with placebo (RR = 1.02; 95% CI, 0.79 to 1.31) all failed to demonstrate any difference in the rate of UTIs.

Reports of adverse effects and adherence were highly variable. To maintain the level of cranberry intake theorized to be necessary for UTI prevention, a patient would need to consume 150 mL of cranberry juice twice daily, a potentially prohibitive regimen because of cost, taste, or concerns about calories. Guidelines published in 2010 recommended that cranberry products be considered alongside antibiotics as prophylaxis for recurrent infections.[3] However, family physicians should counsel their patients that the most current evidence fails to demonstrate sufficient effectiveness of cranberry products in preventing UTIs.

SOURCE: Jepson RG, Williams G, Craig JC. Cranberries for preventing urinary tract infections. *Cochrane Database Syst Rev.* 2012;(10):CD001321.

The practice recommendations in this activity are available at http://summaries.cochrane.org/CD001321.

REFERENCES

1. Jepson RG, Craig JC. Cranberries for preventing urinary tract infections. *Cochrane Database Syst Rev.* 2008;(1):CD001321.
2. Wang CH, Fang CC, Chen NC, et al. Cranberry-containing products for prevention of urinary tract infections in

susceptible populations: a systematic review and meta-analysis of randomized controlled trials. *Arch Intern Med.* 2012;172(13):988-996.

3. Epp A, Larochelle A, Lovatsis D, et al.; Society of Obstetricians and Gynaecologists of Canada. Recurrent urinary tract infection [published correction appears in *J Obstet Gynaecol Can.* 2011;33(1):12]. *J Obstet Gynaecol Can.* 2010;32(11):1082-1090.

Impact of Industry Sponsorship on Research Outcomes

DEAN A. SEEHUSEN, MD, MPH, and KELLY G. KOREN, MD, *Fort Belvoir Community Hospital, Fort Belvoir, Virginia*

Clinical Question

Are research studies sponsored by industry more likely to have favorable results and conclusions than studies without industry sponsorship?

Evidence-Based Answer

Drug and medical device studies sponsored by the manufacturers tend to have more favorable effectiveness and harm findings and more favorable conclusions than studies with other funding sources. The source of funding should be considered when evaluating the implications of any clinical trial. (Strength of Recommendation: C, based on consensus, disease-oriented evidence, usual practice, expert opinion, or case series.)

Practice Pointers

Because industry-funded research has the potential to change practice guidelines, mechanisms to reduce bias, such as mandatory study registries and increasingly stringent limitations on conflicts of interest, have been instituted.[1] Yet, industry-sponsored research still may have bias in areas such as study design, subject selection, and data analysis. In this Cochrane review, investigators assessed a total of 48 papers that evaluated original research studies for evidence of bias. The main outcomes of interest were favorable results and favorable conclusions in industry- vs. non–industry-sponsored studies.

When investigators evaluated the results of industry- vs. non–industry-sponsored studies, 14 papers that covered 1,588 studies were pooled for analysis. Industry-sponsored studies more often had favorable effectiveness results compared with non–industry-sponsored studies (relative risk [RR] = 1.24; 95% confidence interval [CI], 1.14 to 1.35). Three papers that evaluated the harm results of 561 studies also found that more favorable harm results were reported by industry-sponsored studies (RR = 1.87; 95% CI, 1.54 to 2.27).

Three papers that evaluated 151 drug studies looked at effectiveness results of trials sponsored by the test treatment manufacturer vs. those sponsored by the manufacturer of the comparator treatment. In two of the papers, studies sponsored by the manufacturer of the test treatment were more likely to favor that treatment (RR = 4.64; 95% CI, 2.08 to 10.32).

When investigators examined the conclusions of industry-sponsored vs. non–industry-sponsored studies, 21 papers that evaluated 120 medical device studies and 3,821 drug studies were pooled for analysis. The industry-sponsored studies had favorable conclusions more often than the non–industry-sponsored studies (RR = 1.31; 95% CI, 1.20 to 1.44). Similar results were seen within studies sponsored by test treatment companies vs. comparator treatment companies. Study conclusions were more likely to be favorable when the manufacturer of the test treatment was the sponsor than when a comparator was the sponsor (RR = 5.90; 95% CI, 2.79 to 12.49).

Industry sponsorship also appeared to influence how study results were interpreted. Five papers found less concordance between the study effectiveness results and conclusions among industry-sponsored studies (RR = 0.84; 95% CI, 0.70 to 1.01). For example, industry-sponsored studies were more likely than non–industry-sponsored studies to conclude that corticosteroids were safe.[2] One possible reason for more favorable results among industry-sponsored studies is a high rate of built-in biases. Nine papers assessed potential risks of bias, including sequence generation, allocation concealment, blinding, and loss to follow-up. Four of the nine papers found no difference between industry- and non–industry-sponsored studies, and the remaining five papers found less risk of bias among industry-sponsored studies.

Given the expense of conducting clinical trials, industry sponsorship will likely continue to be a major source of funding for medical research. Practicing physicians should be cautious when evaluating the results of industry-sponsored studies and should also seek data from studies that are not sponsored by industry. These results highlight the need for objective, non–industry-sponsored summaries of recent research that help identify an overly positive spin of trial results by authors.

SOURCE: Lundh A, Sismondo S, Lexchin J, Busuioc OA, Bero L. Industry sponsorship and research outcome. *Cochrane Database Syst Rev.* 2012;(12):MR000033.

The practice recommendations in this activity are available at http://summaries.cochrane.org/MR000033.

The views expressed in this article are those of the authors and do not reflect the official policy or position of the U.S. Government, Department of the Army, Department of the Navy, or the Department of Defense.

REFERENCES

1. Lo B, Wolf LE, Berkeley A. Conflict-of-interest policies for investigators in clinical trials. *N Engl J Med.* 2000;343(22):1616-1620.
2. Nieto A, Mazon A, Pamies R, et al. Adverse effects of inhaled corticosteroids in funded and nonfunded studies. *Arch Intern Med.* 2007;167(19):2047-2053. ■