group had no significant change in either BMI or HbA1c. A major limitation of this study was its small sample size.

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Do probiotics prevent new-onset Clostridium difficile in adults taking antibiotics?

Evidence-Based Answer
Probiotics probably decrease the incidence of C difficile infection in adults taking antibiotics. (SOR: C, systematic reviews of RCTs with significant heterogeneity).

Three 2012 meta-analyses looked at probiotics and C difficile infection. The first included 20 RCTs that evaluated primary prevention of C difficile infection in 3,818 adult and pediatric patients taking antibiotics in hospitals and outpatient settings. Patients taking probiotics (including Lactobacillus, Bifidobacterium, Saccharomyces, and combinations thereof in a variety of doses) had a decreased incidence of C difficile infection compared with patients taking placebo or no treatment (risk ratio [RR] 0.34; 95% CI, 0.24–0.49). In subgroup analyses, results were similar in adults and children, lower and higher doses, and studies at low and high risk for bias. Data were missing for 5% to 45% of patients in 13 of the 20 RCTs evaluated.

The second meta-analysis included 7 RCTs with 1,374 patients and evaluated probiotics for primary prevention of C difficile infection in adult patients taking antibiotics. This meta-analysis only included probiotic preparations that have been studied in more than 1 randomized trial, including 3 trials on products using L acidophilus and L casei and 4 trials on S boulardii. Lower rates of C difficile infection were associated with probiotic use compared with placebo (RR 0.39; 95% CI, 0.19–0.79). Study design varied significantly between the RCTs, including length of treatment and follow-up, exclusion criteria, and C difficile diagnostic protocols.

The third meta-analysis included 82 RCTs with 11,811 patients of all ages and examined the prevention of any antibiotic-associated diarrhea with probiotic use (including Lactobacillus, Bifidobacterium, Saccharomyces, Enterococcus, and combinations thereof in a variety of doses). The incidence of C difficile infection was significantly decreased with probiotic use (14 trials, N not specified; RR 0.29; 95% CI, 0.17–0.48) compared with no treatment or placebo. However, some studies did not adhere to recommended testing for C difficile infection or had poor reporting.

The 2010 update from the 1994 Infectious Disease Society of America and the Society for Healthcare Epidemiology of America evidence-based guidelines for C difficile do not recommend probiotics to prevent primary C difficile infection, based on the limited literature showing benefit available through April 2009 (Recommendation C-III based on poor evidence from opinion, clinical expertise, descriptive studies, or expert committee report). The guidelines also pointed to a lack of standardization of probiotic products, variability in bacterial counts, and risk of bloodstream infection.

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