claudication). Patients should be advised to walk as far as their claudication permits, resting until pain subsides, then resume their walking, for a total of 1 hour per day. Pentoxifylline and nafronyl can increase walking distance by up to 60 meters, but their effect is unclear when combined with exercise. Smoking cessation has no clear effect on pain-free or total walking distance, but is associated with fewer failed revascularization procedures and may be associated with slower progression of claudication.

Richard Neill, MD
University of Pennsylvania
Philadelphia
E-mail: rneill@mail.med.upenn.edu

Bupropion or Patch for Smoking Cessation?

Jorenby DE, Leischow SJ, Nides MA, et al. A controlled trial of sustained-release bupropion, a nicotine patch, or both for smoking cessation. N Eng J Med 1999; 340:685-91.

Clinical question **Is the nicotine patch, bupropion, or concurrent use of both most effective for smoking cessation?**

Background Although millions of people attempt to quit smoking each year, only 6% have long-term success. Both the nicotine patch and bupropion are moderately effective for smoking cessation. This study compares the efficacy of bupropion and the nicotine patch used individually and in combination for smoking cessation.

Population studied The study subjects were 18 years old or older, smoked at least 15 cigarettes per day, weighed more than 100 pounds, and were motivated to quit smoking. They were recruited from media advertisements in Arizona, California, Nebraska, and Wisconsin. Exclusion criteria included serious medical conditions, seizure or dermatologic disorders, major depression, prior use of bupropion, drug or alcohol abuse, and regular use of other tobacco products.

Study design and validity This study was a double-blind placebo-controlled trial sponsored by Glaxo-Wellcome (the makers of bupropion). Subjects were randomized into 1 of 4 groups: (1) bupropion 150 mg orally (once daily for 3 days, then twice daily for 60 days) plus placebo patch; (2) nicotine 21-mg patch for 8 weeks, then 14 mg for 1 week, followed by 7 mg for 1 week, plus placebo pill; (3) bupropion and nicotine patch; or (4) placebo patch and a placebo pill. The target quit date was 8 days after starting bupropion, or the first day of using the patch. Subjects attended weekly 15-minute counseling sessions and were followed up in clinic 4 times to assess smoking status and carbon monoxide levels during the 1-year study period.

Two factors may have enhanced smoking cessation rates. Subjects were volunteers recruited through advertisements and may have been more highly motivated to quit smoking. Their motivation to quit may also have been increased by the use of frequent counseling sessions and carbon monoxide testing to confirm self-reports of smoking cessation. This rigorous surveillance may limit the generalizability of these results.

Outcomes measured The primary outcomes were abstinence rates at 6 and 12 months after starting treatment. Withdrawal symptoms, body weight, and Beck Depression Inventory scores were also measured.

Results Nearly one third of all subjects discontinued treatment or were lost to follow-up. To avoid the error of inflating quit rates in the treatment groups, these dropouts were appropriately classified as smokers. The bupropion and patch combination and bupropion alone demonstrated 12-month quit rates of 35.5% (odds ratio [OR] = 3.0; confidence interval [CI], 1.8 - 4.9) and 30.3% (OR = 2.3; CI, 1.4 - 3.9), respectively. These rates differed significantly from the nicotine patch group (16.4%; OR = 1.1; CI, 0.6 - 1.8), and placebo group (15.6%.) No statistically significant difference was found between the bupropion and patch combination and bupropion alone treatments, or between the nicotine patch and placebo gropups. The 6-month quit rates were comparable with the 12-month results.

Despite an initial rise in withdrawal symptoms in all groups during the first week, all treatment groups had smaller changes in symptoms than did the placebo group throughout the study. There were no differences in either body weight or Beck Depression Inventory scores after 7 weeks. Insomnia was the most common adverse effect reported in the treatment groups. Skin reactions at the patch site were highest in the 2 groups receiving the nicotine patch.

Recommendations for clinical practice **It is clear from this study that using bupropion alone or in combination with the nicotine patch achieves higher smoking cessation rates than using the patch alone or placebo (number needed to treat = ~6). Although adding the patch to bupropion resulted in a slightly higher quit rate, this difference was not significant. The fact that these patients were volunteers and received weekly counseling and carbon monoxide testing may have enhanced these rates. Cessation rates with these therapies may differ in clinical practice.**

Kevin Y. Kane, MD
Mark R. Ellis, MD, MSPH
Columbia, Missouri
E-mail: kanek@health.missouri.edu