

## Bupropion Abuse

Bupropion is a unique monocyclic antidepressant and smoking cessation agent that is used off-label for anxiety, bipolar disorder, and attention deficit hyperactivity disorder. It blocks dopamine and norepinephrine reuptake. Bupropion is structurally similar to stimulants such as amphetamine but is generally recognized as possessing low abuse potential. Studies conducted decades ago found that bupropion did not have reinforcing effects or produce amphetamine-like euphoria at therapeutic doses. As such, bupropion has been considered a safe antidepressant in patients with stimulant abuse disorder.

Interestingly, there are case reports of bupropion use to achieve nonmedical psychoactive effects. Patients with pre-existing psychiatric disorders or substance use disorders may be more likely to abuse bupropion. Of 17 published cases, eight involved crushing tablets and snorting them (insufflation), three cases were of parenteral use, one case of both insufflation and parenteral administration and five cases of ingesting supratherapeutic doses. In addition, 67 cases were identified in an 11-year review of bupropion insufflation exposures in adults reported to the California Poison Control System (*Clin Toxicol* 2014;52:969-72).

Outside of case reports and the California study, information on bupropion abuse is limited. To learn more about bupropion abuse, researchers at the Maryland Poison Center performed a study of bupropion exposures in the U.S. coded as intentional abuse using national poison center data over a 14-year period (*J Addict Med* 2016;10:357-62). Exposures in persons aged 13 years and older involving bupropion as the only substance and followed to a known medical outcome were included. There were 975 bupropion abuse cases in the study, of which 66.2% were male. Teens and young adults in their 20s accounted for two-thirds of cases. There was a three-fold increase in abuse cases between 2000 and 2012, with a small drop in 2013. New England states had the highest per-capita rates. The route was ingestion in three-fourths of cases; other routes included insufflation in 17%, parenteral in 1.7% and other/unknown in 1.7%. In 30 additional cases, more than one route was involved, mainly ingestion and insufflation. Most frequent clinical effects were tachycardia, seizures, agitation/irritable, hallucinations/delusions and tremors. While one-third of patients experienced seizures, a relationship between route and frequency of seizures was not observed. Close to half of patients required admission for medical care, while just over one-third were treated and released from the emergency department. Approximately 60% of patients experienced serious toxicity (moderate or major effects) and there were four deaths. Since this study excluded cases involving other substances, the actual number of cases of abuse is likely higher and it is unclear how often bupropion is abused with other drugs.

Abuse of bupropion has potentially serious consequences. For some patients in whom bupropion therapy is being considered, risk of abuse should be weighed against bupropion's benefits.

Wendy Klein-Schwartz, Pharm.D., MPH, FAAC  
Professor Emeritus  
University of Maryland School of Pharmacy



### Did you know?

#### Crushing bupropion tablets leads to dose dumping.

Insufflation and intravenous administration of bupropion bypass first pass metabolism in the liver. Since the dose of drug in sustained and extended release formulations is often higher than immediate release, this results in immediate availability of high doses. These factors may potentially produce higher blood bupropion concentrations than observed with the oral route.

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