

## FIVE THINGS TO KNOW ABOUT ...

**Bupropion abuse and overdose**

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**Bupropion is a commonly used antidepressant and smoking cessation aid**

Bupropion is used widely as a smoking cessation aid and antidepressant and is available in immediate- and extended-release preparations. It blocks neuronal reuptake of dopamine and norepinephrine and antagonizes acetylcholine at neuronal nicotinic receptors.<sup>1</sup> At therapeutic doses, bupropion is generally well-tolerated; however, common adverse effects include dry mouth, nausea, agitation and insomnia.<sup>1</sup>

**Clinicians should remain vigilant for signs of bupropion misuse**

Bupropion abusers report that they easily obtained the drug from physicians under the pretense of seeking an antidepressant or smoking cessation aid.<sup>3</sup> Emerging reports also highlight bupropion misuse in correctional facilities.<sup>5</sup> Bupropion toxicity should be considered in patients presenting with new-onset seizures of unknown cause, particularly in the context of suspected substance abuse. Nonhealing skin ulcers may reflect surreptitious injection of crushed tablets.

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**Bupropion abuse is a growing public health problem**

Although bupropion shares some structural and pharmacologic properties with amphetamine, early research suggested the drug did not produce any psychostimulant effects.<sup>1</sup> However, clinical experience and an increasing number of case reports describe bupropion abuse,<sup>2</sup> including recreational ingestion, nasal insufflation of crushed tablets and, more recently, intravenous injection.<sup>3</sup> Bupropion abusers report receiving a “high” similar to cocaine abuse, but of lesser intensity.<sup>4</sup>

**Seizures are a hallmark of toxicity**

Bupropion lowers the seizure threshold, even at therapeutic doses of 150–450 mg/d.<sup>1</sup> Acute overdose typically produces seizures within a few hours after ingestion, although seizure onset may be delayed up to 24 hours in patients who ingest extended-release preparations.<sup>6</sup> The median dose associated with seizures is about 4.4 g.<sup>6</sup> Other reported signs of toxicity include lethargy, tremor, vomiting and agitation.<sup>7</sup> Associated cardiac toxicity includes sinus tachycardia, and massive overdose can cause widening of the QRS complex, ventricular dysrhythmias and cardiovascular collapse.<sup>8</sup> Death can occur. Although reported data are limited, they suggest that less than 0.5% of reported cases of bupropion overdose result in death.<sup>9</sup>

**Management of bupropion overdose is largely supportive**

For all cases of bupropion overdose, seizures should be anticipated and a poison control centre consulted. Treatment with activated charcoal should be considered for patients presenting within 60 minutes of ingestion in whom the risk of aspiration is low.<sup>10</sup> Whole bowel irrigation may be considered for patients with large ingestions of sustained-release preparations.<sup>11</sup> Seizures can usually be managed with benzodiazepines alone,<sup>2</sup> but some patients may require barbiturates or propofol.<sup>11</sup> Phenytoin is unlikely to work and should not be administered.<sup>12</sup> In patients with life-threatening cardiovascular toxicity, intravenous lipid emulsion may be helpful, although evidence for its use is very limited.<sup>7</sup>

See references, Appendix 1, [www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.131534/-/DC1](http://www.cmaj.ca/lookup/suppl/doi:10.1503/cmaj.131534/-/DC1)

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