

# Management of $\gamma$ -hydroxybutyrate intoxication and withdrawal

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## 1 $\gamma$ -Hydroxybutyrate (GHB) induces euphoria and relaxation

Also known as liquid ecstasy or “G,” GHB and its analogues (e.g.,  $\gamma$ -butyrolactone) are GHB- and  $\gamma$ -aminobutyric acid-B (GABA<sub>B</sub>) receptor agonists within the central nervous system.<sup>1–3</sup> Synthetic GHB is a tasteless, colourless liquid used for purported anabolic effects,<sup>1,2</sup> increasing relaxation and euphoria, enhancing sexual experiences or as an agent in drug-facilitated sexual assaults.<sup>1</sup> It is detectable in urine for 5–12 hours after ingestion, but is not included on standard toxicology screens.<sup>2,3</sup> Confirmatory testing with gas chromatography–mass spectrometry requires consultation with provincial toxicology laboratories.<sup>2</sup>

## 2 Tolerance can develop within several days of continuous use<sup>1,3,4</sup>

Doses of GHB range from 500 mg to 5 g, often taken in “capfuls.”<sup>2,4</sup> Given a serum half-life of 20–30 minutes,<sup>2</sup> people who have developed a tolerance may require doses every 30 minutes to prevent withdrawal symptoms.<sup>2,5</sup>

## 3 Poisoning can develop rapidly

Toxicity is dependent on dose — doses of 20–30 mg/kg may be stimulating, while doses of 40–60 mg/kg can lead to myoclonus, respiratory depression, bradycardia and coma.<sup>3</sup> Acute intoxication generally resolves in 6–8 hours with supportive management and airway stabilization.<sup>2,5</sup>

## 4 Withdrawal from GHB may be fatal if unrecognized

Withdrawal can manifest within 1–6 hours following cessation.<sup>2–4</sup> Initial symptoms include diaphoresis, tachycardia and anxiety, and may rapidly progress to hallucinations, delirium, seizures or death if not appropriately managed.<sup>1,2,4</sup> Withdrawal can persist up to 15 days despite treatment.<sup>2,4</sup>

## 5 Benzodiazepines are first-line therapy for GHB withdrawal

Specific choice of benzodiazepine depends on patient factors, including comorbidities, age and hepatic function. Diazepam doses of up to 300 mg/d have been used.<sup>4</sup> Adjuncts targeting the GABA<sub>B</sub> receptor, such as baclofen, initially dosed at 10 mg 3 times daily, may potentiate the effects of benzodiazepines.<sup>1,2</sup> Benzodiazepine resistance has been reported.<sup>1,5</sup> Clinicians should consider transitioning to phenobarbital and monitoring in a high-acuity unit if withdrawal symptoms worsen despite escalating benzodiazepine doses.<sup>1,4,5</sup>

## References

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