# MDMA (Ecstasy) Toxicity: Management

MDMA (3,4-methylenedioxymethamphetamine) also called "ecstasy" or "Molly", is a synthetic sympathomimetic drug that acts by a mechanism similar to that of amphetamines. Its use is commonly associated with party-goers at dance clubs, music festivals, and electronic dance music concerts. Toxicity from MDMA can have a wide range of effects, including profound hyponatremia leading to altered mentation, tachycardia and hypertension to a sometimes dangerous degree, rhabdomyolysis, and serotonin syndrome. Management of acute toxicity first begins with ABCs (Airway, Breathing, Circulation). Once the patient is stable, various treatment modalities may be employed depending on the patient's symptomatic presentation. Of note, there is no single "antidote" for MDMA toxicity.




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**Airway Management**
Guy-being-intubated
Airway management should be among the first considerations when treating MDMA toxicity. Specifically, patients who are obtunded with a Glasgow Coma Scale (GCS) <8 should be intubated, as profound obtundation to this degree is associated with inability to protect the airway.

**Management of Hypertension**
Hiker-BP
As one of the more common clinical manifestations of MDMA toxicity is severe hypertension, blood pressure management is essential in preventing potentially catostrophic sequellae such as myocardial infarction, aortic dissection, and intracerebral hemorrhage. Importantly, the hypertension seen in MDMA toxicity is mediated by both central and peripheral components of the nervous system. The central component is mediated by activation of the CNS at the level of the thalamus, and the peripheral component is mediated by action at adrenergic receptors in both cardiac muscle and vasular smooth muscle tissue.

**Benzodiazapines**
Benz-dice
Benzodiazapines are a first-line treatment for hypertension associated with MDMA toxicity. Benzodiazapines exert their action by activating GABA receptors in the central nervous system, leading to CNS depression and hence dampening the central component of MDMA toxicity that leads to hypertension.

**Nitroprusside**
Nitro-puss
Nitroprusside may also be used to treat hypertension associated with MDMA use, especially in cases that are refractory to benzodiazapines. Nitroprusside acts by causing the release of nitrous oxide (NO) in the peripheral circulation, which leads directly to vasodilation and therefore lowered blood pressure.

**Activated Charcoal if Within One Hour of Ingestion**
Lit Charcoal with (1) Wand Hourglass
If ingestion of MDMA is known to have taken place within an hour prior to presentation, activated charcoal may be used to prevent further absorption into the blood stream, which it does by binding the ingested drug.

**Ice Bath if Hyperthermic**
Hiker-thermometer in Ice Bath
Severe hyperthermia can be seen in MDMA toxicity, with severely elevated core body temperature (above 107?F) necessitating active cooling by ice bath until the temperature lowers to around 100?F. Antipyretics should be avoided.

**Cyproheptadine if Serotonin Syndrome**
Zippo-head and Silver-tonic Savage
Cyproheptadine is the first-line treatment when serotonin syndrome is suspected. It acts by exerting its effect as a potent serotonin antagonist and antihistamine with anticholinergic effects. <br>

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**Fluid Restriction for Hyponatremia**

Fluids with Restrictive-belts and Hippo-salt-shaker

Fluid restriction is the first-line therapy for patients with asymptomatic hyponatremia caused by MDMA toxicity. This is because their hyponatremia is likely caused by excessive free water intake. Conversely, patients who are symptomatic with hyponatremia (serum sodium usually <120 mmol/L) require more aggressive management.

**Hypertonic Saline if Hyponatremia + Altered Mental Status**

Hiker-tonic Saline-sail and Delta Sign-halo over Hippo-salt-shaker

Hypertonic saline can be used to quickly reverse hyponatremia (serum sodium usually <120 mmol/L) if it is severe enough to cause changes in mental status. In asymptomatic cases, fluid restriction remains the preferred approach for correcting hyponatremia.

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