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Maryland Poison Center
UNIVERSITY OF MARYLAND SCHOOL OF PHARMACY

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The Maryland Poison Center's Monthly Update: News, Advances, Information

The Benadryl Challenge

There is a dangerous new game that teens are playing: the Benadryl challenge. Videos on the social media app TikTok dare teens to take as many Benadryl (diphenhydramine) tablets as necessary to hallucinate while capturing it on video to share with others. As a result of the challenge, several adolescents have been treated in emergency departments and a 15-year-old Oklahoma girl reportedly died. On September 24,2020, the FDA issued a warning about the challenge, and the agency is reviewing cases *(https://www.fda.gov/safety/medical-product-safety-information/benadryl-diphenhydramine-drug-safety-communication-serious-problems-high-doses-allergy-medicine).*

Diphenhydramine is easily accessible in nonprescription anti-tussives, nighttime sleep aids, and allergy relief medications. It is also used for chemotherapy-induced nausea and vomiting, drug-induced extrapyramidal reactions, motion sickness, anaphylaxis and urticaria. In 2018, poison centers handled more than 53,800 cases involving diphenhydramine-only products as well as diphenhydramine combination products, with over 30% of those patients being treated in a health care facility *(Clin Toxicol 2019;5:1220-1413).* Recreational use has been well documented and is associated with the drug's ability to elevate mood, increase energy levels and in high doses, produce hallucinogenic effects *(J Psychopharm 2009;23:101–105. Neurol Clin Pract 2017;7:439–441)*.

Diphenhydramine doses of greater than 7.5 mg/kg or 300 mg (whichever is less) in children, adolescents and adults can result in anticholinergic toxicity. Life-threatening effects are seen with doses in excess of 1 gram in adults. Patients may present with dry and warm skin, flushing, tachycardia, hypertension, hyperthermia, dilated pupils, hypoactive bowel sounds, and urinary retention. Neurological symptoms may progress from agitation, drowsiness and confusion to hallucinations, seizures and coma. Prolongation of the QRS interval can occur in serious overdoses due to sodium channel blocking properties, increasing the risk of serious ventricular dysrhythmias.

Initial treatment of diphenhydramine overdoses consists of gastrointestinal decontamination with activated charcoal. Activated charcoal may be of benefit several hours after ingestion because of slow absorption due to decreased gastrointestinal motility. Sodium bicarbonate is administered to increase arterial pH to 7.45-7.55 which narrows the QRS complex. Benzodiazepines treat anticholinergic delirium and seizures. Physostigmine reverses anticholinergic-induced delirium; however, because of the potential for life threatening adverse effects, it should only be used on the advice of a toxicologist or poison specialist and only if the EKG shows an absence of a wide QRS interval. In massive overdose, intravenous lipid emulsion or extracorporeal membrane oxygenation (ECMO) may be considered for cardiogenic shock and/or refractory arrhythmias but are not routinely recommended.

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Did you know?

Overdoses of acetaminophen in combination with diphenhydramine present challenges in interpreting serum acetaminophen concentrations.

Although plasma acetaminophen concentrations (PAC) typically peak within 4 hours after an acute ingestion, delayed and prolonged absorption of acetaminophen has been described after overdoses of acetaminophen/diphenhydramine products. This leads to challenges in using the acetaminophen nomogram to determine need for antidotal therapy. If the 4-hour PAC is below the treatment line on the nomogram, the Maryland Poison Center recommends obtaining PAC every 4 hours until a peak is reached and a downward trend has been observed. Call the poison center for guidance in determining the course or therapy for combination acetaminophen and diphenhydramine overdoses.

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