

Acute Phenytoin Overdose

Phenytoin (commonly known by the brand name Dilantin®) has been used since the 1930's as an anticonvulsant and is still a first-line drug used for some seizure disorders. Many overdoses with phenytoin are reported to poison centers, but fatalities are rare.

Absorption of oral doses of phenytoin is often erratic and delayed. It's not unusual to see gastrointestinal absorption continue for several days. Phenytoin is highly protein bound and rapidly distributed to all tissues. Therapeutic levels are 10-20 mcg/mL. Labs routinely test for total phenytoin; however, only free or unbound phenytoin is responsible for clinical effects. More than 95% of the drug is metabolized by the liver. The half-life of phenytoin is 6-24 hours with therapeutic doses but is prolonged in overdoses, to 20-60 hours.

Acute phenytoin toxicity produces mainly neurologic symptoms that may persist for days to a week or more. Phenytoin concentrations greater than 15-20 mcg/mL are associated with horizontal and/or vertical nystagmus, ataxia is seen with levels greater than 30 mcg/mL, and slurred speech, confusion and lethargy appear at levels greater than 40-50 mcg/mL. Large overdoses may also result in tremor, delirium, hyperreflexia, dyskinesias, hallucinations, and coma. Nausea and vomiting can occur following phenytoin ingestions because of the large amount of undissolved drug in the stomach. Respiratory depression rarely occurs. High doses of intravenous phenytoin or rapid infusions can result in hypotension, bradycardia and dysrhythmias due to myocardial conduction depression. These cardiovascular effects are thought to be due to the propylene glycol diluent in the parenteral form of phenytoin. Cardiovascular toxicity following oral overdoses has not been reported; therefore, patients who ingest large amounts of phenytoin do not need cardiac monitoring.

Treatment consists of supportive care and activated charcoal. Repeat doses of charcoal are often recommended to prevent further absorption of any drug that persists in the GI tract. Ataxic patients should be observed closely and steps taken to prevent falls. Because of its erratic absorption, phenytoin levels should be repeated every six hours after an acute overdose.

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DID YOU KNOW THAT... Mr. Yuk is mean, green, and still alive?

Mr. Yuk stickers have been used by many poison centers since 1971 to help teach children not to touch poisonous products. The stickers also act as a reminder to call the poison center in an emergency by having the telephone number printed on each sticker. Some newspapers have recently reported that Mr. Yuk stickers are no longer being used because they have not been proven to prevent poisonings; however, the key to Mr. Yuk being an effective prevention tool is education. The Maryland Poison Center distributes more than 100,000 Mr. Yuk stickers each year along with information on how to teach children what Mr. Yuk represents, and we will continue to do so.



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