

Pediatric Buprenorphine Ingestions

Buprenorphine, a partial mu opioid receptor agonist and kappa opioid receptor antagonist, is increasingly being prescribed for opioid dependence in the U.S. Consequently, buprenorphine products have become widely available to toddlers in homes and were the most common cause of hospitalization for medication ingestions by young children in 2010-2011.¹

Buprenorphine is available by prescription as sublingual tablets, sublingual film, and buccal film. Formulations may contain buprenorphine alone or in combination with naloxone to prevent diversion and misuse. The number of emergency department visits in 2013-2015 for pediatric buprenorphine/naloxone ingestions declined 65.3% compared to 2008-2010, presumably as a result of formulation changes (Suboxone® brand sublingual tablets to Suboxone® filmstrips) and packaging changes (multi-dose to unit-dose containers). However, as generic products have entered the market, the percentage of prescriptions dispensed in unit-dose packaging has declined, raising concerns that the incidence of pediatric ingestions will rise.²

Buprenorphine is almost completely absorbed sublingually within 2-4 minutes, thus children who suck or chew buprenorphine are at significant risk of toxicity. Its bioavailability once swallowed is <30% of sublingual. In adults, buprenorphine exhibits a "ceiling effect", limiting euphoria and respiratory depression. However, this "ceiling" effect does not appear to exist in children. Unintentional exposures in the pediatric population have resulted in significant morbidity including central nervous system depression, emesis, respiratory depression, miosis and death.^{3,4,5,6,7} In a recent retrospective study of 88 pediatric buprenorphine ingestions (ages 6 months to 7 years) at a single tertiary care center, 95% of the patients developed clinical signs of opioid intoxication. The majority of patients developed symptoms requiring reversal with naloxone within 8 hours, but two patients developed respiratory depression more than 8 hours after ingestion. While 83% experienced respiratory depression, hypoxia occurred in only 28%.⁵

Recommendations:

- Observe pediatric patients who have ingested buprenorphine for a minimum of 6 hours. This includes children who were found with the film or tablet still in the mouth. Children with symptoms should be admitted for at least 24 hours.⁷
- Give naloxone 0.1 mg/kg or 2 mg IV, IM, SC or IN for respiratory depression. A naloxone infusion may be required for recurrent respiratory depression.
- Contact the Maryland Poison Center for assistance with pediatric exposures to buprenorphine: 1-800-222-1222.

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Did you know?

Pediatric buprenorphine ingestions are primarily associated with unsafe medication storage.

Analysis of poison center data reported to the Researched Abuse, Diversion, and Addiction-Related Surveillance Program (RADARS) concluded that unsupervised ingestions by small children most commonly occur when the medication is stored within sight of the child, accessed from a purse or bag, and/or not stored in the original container. At least 15% of the ingestions involved prescriptions for someone other than a parent. The exposure rate with tablets was 8.8 times that of the film strips. No conclusion could be made, however, as to whether the difference in exposure rate was due to the formulation, packaging or something else.³

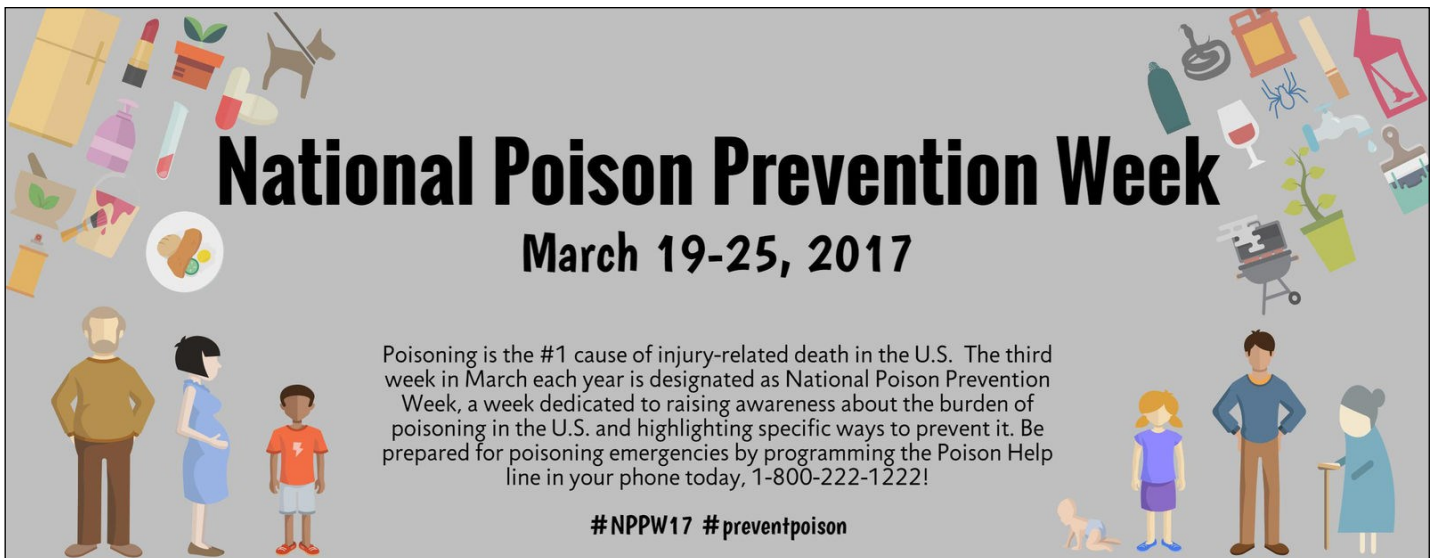


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References

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A banner for National Poison Prevention Week. The background is light gray with various colorful icons representing household hazards: a box, a bottle, a dog, a plant, a grill, a wine glass, a fire extinguisher, a first aid kit, a dog, a person, a pregnant woman, a child, a dog, a person, and an elderly person. The text is centered and reads:

National Poison Prevention Week

March 19-25, 2017

Poisoning is the #1 cause of injury-related death in the U.S. The third week in March each year is designated as National Poison Prevention Week, a week dedicated to raising awareness about the burden of poisoning in the U.S. and highlighting specific ways to prevent it. Be prepared for poisoning emergencies by programming the Poison Help line in your phone today, 1-800-222-1222!

#NPPW17 #preventpoison

Participating in *National Poison Prevention Week* is easy, and every activity—large or small—can make a difference. Download our poison prevention information sheets and order poison center phone stickers, magnets and brochures from our website: www.mdpoison.com/education/materials. Call us at 410-563-5584 for more information about National Poison Prevention Week and our public education materials.