

POISON ALERT



One Pill Can Kill

An 18 month old boy was brought to the ED after ingesting an unknown pill while at mother's friend's home. The ingestion occurred about 30 minutes prior to arrival. The child appears to be well, and his vital signs are appropriate for his age. Now what?

Since the child appears to be well, it is tempting to be reassured that the child will be okay. However, there is the potential for life-threatening toxicity IF the tablet happened to be one of the single pills that can kill a child. Several ingestions can lead to serious poisonings that may be potentially fatal in small doses in toddlers. Clinicians should be familiar with agents and substances that warrant hospital admission, even from a small exposure. Below is a list of substances of single pills and swallows that can kill a child.

Alpha-adrenergic blockers (clonidine)
 Antimalarials (chloroquine, quinine)
 Beta blockers
 Buprenorphine (Suboxone®, Subutex®)
 Calcium channel blockers
 Camphor
 Carbamates/organophosphates
 Caustics
 Imidazolines (oxymetazoline, tetrahydrozoline)
 Opioids
 Sulfonylureas (e.g., glipizide, glyburide, glimepiride)
 Toxic alcohols (ethylene glycol, isopropanol, methanol)
 Tricyclic antidepressants

Alpha-2 adrenergic agonists (clonidine) and imidazolines (oxymetazoline, tetrahydrozoline) can cause bradycardia, hypotension, and CNS and respiratory depression. The onset of symptoms can be rapid with this class of medications. Treatment may involve atropine to increase the heart rate and IV fluids for euvoletic support.

Naloxone has been reported to reverse effects of clonidine in some cases.

Beta blockers can also be detrimental in small doses in the pediatric population. There will a decrease in heart rate but fortunately beta blockers are unlikely to bring a healthy toddler's heart rate below an intrinsic rate. Of greater concern is the development of hypoglycemia. Hypoglycemia can occur with beta-blockade because β_2 -adrenoceptors normally stimulate hepatic glycogen breakdown (glycogenolysis) and pancreatic release of glucagon, which work together to increase plasma glucose. Thus, blocking β_2 -adrenoceptors lowers plasma glucose. Mental status changes may occur with the more lipid soluble agents because they readily cross the blood brain barrier. Treatment of symptomatic patients should include glucagon which should increase intracellular calcium to increase heart rate and contractility .

Buprenorphine (Suboxone or Subutex) is an opioid agonist/antagonist often used to treat opioid addiction. Buprenorphine is meant to be taken sublingually for best bioavailability. ONE lick in a child can cause significant CNS and respiratory depression. Any pediatric exposure to buprenorphine requires 24 hour observation. While naloxone may help patients with respiratory depression, very high doses for prolonged periods may be needed, making supportive care the more appropriate choice for care.

Calcium channel blockers (e.g., amlodipine, verapamil, diltiazem) can decrease cardiac inotropy and increase vasodilation. Hyperglycemia may also occur due to blocked insulin secretion. Any pediatric patient suspected to have ingested a calcium channel blocker should be observed for at least 24 hours. If symptoms occur, treatment should include high-dose insulin euglycemia therapy. Atropine, cardiac pacing, and vasopressors may

also be needed.

Opioids are the number one cause of pediatric poisonings in the United States according to the National Poison Data System. Opioids cause CNS and respiratory depression. Most deaths are due to apnea and hypoxia. If a small child ingests a long acting opioid, its effects may not peak for 18-24 hours after the ingestion. Ingestions should be treated with careful monitoring, supportive care, and administration of naloxone as needed.

Sulfonylureas (glipizide, glyburide, glimepiride) can cause significant hypoglycemia in pediatrics. Symptoms may occur 18 to 24 hours after the ingestion. Ingestion of such agents require 24 hour observation with glucose monitoring every 1 to 2 hours. Treatment of hypoglycemia includes IV dextrose bolus and/or infusion. Octreotide can be considered for refractory hypoglycemia despite dextrose therapy.

While there are many other safer alternative antidepressants on the market, tricyclic antidepressants are still utilized and accessible to young children. If ingested, not only CNS depression can occur, but QRS prolongation (>100 msec), arrhythmias, tachycardia, torsades de pointes, seizures, and metabolic acidosis can occur. An asymptomatic child should be observed with continuous cardiac monitoring for at least 6 hours and possibly a bit longer due to delayed onset of cardiac symptoms. If the decision is made to admit the child, then it's probably going to be an overnight 12 to 24 hour stay depending on the time of day. Serum alkalinization with sodium bicarbonate is often necessary for cardiac toxicity. Physostigmine is not recommended, and avoid flumazenil even if a benzodiazepine was co-ingested.

This poison alert provides some examples of what substances or pills can harm a child with one swallow or pill. For more specific information regarding these substances and treatment of such ingestions, contact the Missouri Poison Center.

Toxic alcohols (e.g., ethylene glycol, isopropyl alcohol and methanol), antimalarials (chloroquine, quinine), caustics (e.g., hydrofluoric acid, selenious acid, ammonia fluoride), oil of wintergreen, and various insecticides (carbamates, organophosphates, lindane) can also cause significant harm with one swallow or pill. Fortunately, children are exposed to these substances less frequently than the substances discussed above.

For assistance with all possible poisonings in children, symptoms and specific treatment information, please contact the Missouri Poison Center at
1-800-222-1222.



POISON
Help
1-800-222-1222



PoisonSafe Practices

Cut this public education article out of every issue to copy and distribute or post for your clientele!



Grandpa's Medicine – Oh My!

All too often, unintentional poisonings among children involve a parent's or grandparent's medication. This happens when medicine is left where a child can reach it - on a table or countertop, on low shelves, on the sink, or in a purse or travel bag. Parents and grandparents may feel a false sense of security if medications have child resistant closures (CRC). These CRCs are child resistant, not child proof! Babies put everything into their mouths as a way of learning and discovering about their world. Toddlers move about quite quickly and begin to reach and climb and because of their natural curiosity tend to put many things in their mouths, as well. Medication taken by grandparents may be especially harmful for small children, including things like heart medicines, high blood pressure medications, antidepressants, narcotics and diabetic medicines.

The following tips will help prevent a poisoning from Grandma and Grandpa's medicine.

- ◆ Keep all medicines locked up and out of reach.
- ◆ Keep weekly pill dispenser boxes out of reach – children are attracted to these like toys.
- ◆ Never leave medicine out on a counter or table even if it has a child resistant closure (CRC).
- ◆ When visiting homes with small children, keep medications in a secure location out of reach of children.
- ◆ Avoid keeping medications in purses or suitcases where curious children may explore.
- ◆ When bringing children to another residence, check the home for poison dangers.
- ◆ Do not take medication in front of children. Children tend to mimic adult behavior.
- ◆ Contact the poison center immediately if a poisoning occurs 1-800-222-1222.



A Quick Checklist for a Poison Safe Holiday Season

- ◆ Don't let a poisoning spoil your holiday! Children are more likely to get into things when their routine is disrupted. The first tip for a poison safe holiday is to pair up each child with someone responsible for keeping a close eye on that child. That's the best way to be sure the children aren't getting into grandma's handbag while everyone else is drinking eggnog.
- ◆ Speaking of handbags: Be sure that handbags, suitcases, and visitors' medicines are out of sight and reach of children. Medicines should be locked up. Keep your own family's medicines locked if your family is traveling.
- ◆ Eggnog and party drinks: Alcohol is dangerous for children. Empty the glasses, cans, and bottles before going to bed. The youngsters will be awake the next morning before the adults! While you're at it, clean up left-over food and cigarette butts, so children don't suffer food poisoning or nicotine poisoning the next morning.
- ◆ Decorate *without* live holly berries, mistletoe berries, or Christmas tree bubble lights. All are poisonous.
- ◆ If you think there's been a poisoning, call the poison center right away. The number is 1-800-222-1222.

PoisonAlert

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The Missouri Poison Center website is at:
<http://www.cardinalglennon.com>. Click on Poison Center under Support Services.



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