

POISON ALERT

MISSOURI
POISON
CENTER

Cardinal Glennon

1-800-222-1222

CLONIDINE

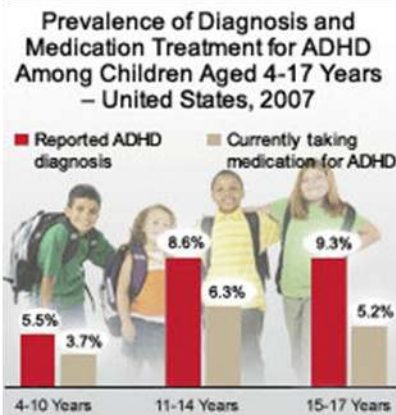
CLONIDINE OVERDOSE AND TREATMENT

With the return to school, students with attention deficit hyperactivity disorder (ADHD) often resume a stricter adherence to their medication regimens. Stimulants are commonly used to treat ADHD; though in 2003 the FDA approved the use of the nonstimulant, clonidine extended release (Kapvay®) for the treatment of ADHD in children 6 years of age and older.

Clonidine has become the third most commonly prescribed drug in the US for the treatment of ADHD after methylphenidate and amphetamine/dextroamphetamine.

Due to the availability of clonidine in many homes with children, the risk for unintentional ingestion increases due to medication errors, inappropriate dosing, and oral behavior typical of young children. Intentional overdose can be a potential problem in some older children and teenagers. Typical scenarios received by the poison center include:

- The inquisitive toddler wants to be just like her big brother; gets the clonidine bottle out of the cabinet and eats the pills as if they were candy.
- A parent places the evening dose of clonidine for her school-aged child next to the child's dinner plate but the toddler gets to it first.
- A 12-year-old child who forgets to take his doses of



clonidine over the weekend while visiting with his other parent, attempts to make up the missed doses by taking the entire amount at one time.

- A distraught teenager overdoses on her clonidine after a breakup with her boyfriend.
- During administration of medication to his toddler who is spiking a fever, dad accidentally gives his teenage son's clonidine instead of the Tylenol tablets that he intended.

All of these scenarios may warrant a referral to the ED for treatment. Gaining familiarity with the toxicity of clonidine can prepare the health care professional to select the most appropriate treatment options for a particular patient.

Clonidine stimulates central alpha-2 adrenergic receptors to reduce sympathetic nervous system activity resulting in bradycardia, hypotension, and decreased cardiac output. It also acts on alpha-1 receptors on peripheral smooth muscle which may lead to an initial transient rise in blood pressure.

Overdose mimics opiate toxicity with symptoms of CNS depression, bradycardia, hypotension, and miosis.

The severity of effects in children is often enhanced by a high plasma concentration of clonidine, a decreased clearance rate, and a more permeable blood-brain barrier. While correlations between the amount of drug ingested and the severity of symptoms are often poor; as little as one tablet of clonidine ingested by an infant or toddler can produce rapid onset of serious symptomatology. Onset of toxicity is typically within 30 to 60 minutes of exposure; while resolution is usually within 24 to 48 hours. **Sedation, bradycardia, and**

hypotension (at times preceded by transient hypertension) are the primary toxic effects of overdose. Ataxia, dizziness, lethargy, coma, hyporeflexia, miosis, hypothermia, respiratory depression, and apnea may also be observed.

In a retrospective study of 10,060 children (up to 19 years of age) ingesting clonidine, the most prevalent symptoms were lethargy (60%), bradycardia (17%), hypotension (15%), and respiratory depression (5%) (Klein-Schwartz 2002.) In another retrospective study of 113 pediatric patients ingesting clonidine, all patients who developed toxic symptoms did so within four hours, with most symptoms being apparent within one hour (Spiller 2006.)

When treatment is indicated for clonidine toxicity, the opportunity to institute GI decontamination is extremely limited therefore efforts are focused on symptomatic and supportive care. **Activated charcoal and lavage are not recommended due to the rapid onset of CNS depression and the inherent risk for aspiration.**

The initial hypertension associated with clonidine toxicity is usually transient and may rapidly shift to hypotension. Caution should be used when considering pharmacologic intervention. Life-threatening hypertension, when it occurs, is managed with nitroprusside (Nipride®) which can be rapidly adjusted. When hypotension occurs, administer IV fluid boluses and place in Trendelenburg position. Patients who are unresponsive to these measures may benefit from administration of a vasopressor such as dopamine, norepinephrine, epinephrine, or phenylephrine. Naloxone may be utilized to attempt reversal of respiratory depression and coma, though response rates vary widely. Methods of naloxone administration are single-dose and continuous IV infusion. Patients may also maintain breathing with vigorous manual stimulation, but this may be short-lived. Intubation and mechanical ventilation may be required in patients who do not adequately respond to naloxone or manual stimulation.

Bradycardia that does not adversely affect hemodynamic status may not require treatment, though IV atropine is indicated for significant bradycardia. Serum levels of clonidine are of no value in the clinical management of clonidine overdose.

In summary, meticulous airway management and symptomatic treatment of significant bradycardia and hypotension over a 24-hour period are the mainstays of treatment for clonidine overdose.

Clonidine Management Points

Activated charcoal and lavage are **not recommended** due to rapid onset of sedation and the risk for aspiration.

Initial hypertension is typically transient. Nitroprusside is considered only when hypertension becomes life threatening, as it may rapidly shift to hypotension.

Hypotension is treated with IV fluids and Trendelenburg position. Vasopressors are administered if no response.

Bradycardia is treated with atropine.

Respiratory depression may be reversed with naloxone, but results are variable. Intubation and mechanical ventilation may be necessary.

24 hour observation and supportive care.



Please contact the Missouri Poison Center at **1-800-222-1222** to consult with a specially trained registered nurse or pharmacist for information regarding clonidine overdose.

To obtain a facsimile of current management recommendations, request the **Clonidine and other Alpha-2 Agonists** treatment guideline.

Citations:

Klein-Schwartz W. Trends and toxic effects from pediatric clonidine exposures. Arch Pediatr Adolesc Med. 2002; 156(4):392-396.

Spiller HA, Klein-Schwartz W, Colvin JM, Villalobos D, Johnson PB, Anderson DL. Toxic clonidine ingestion in children. J Pediatr. 2006; 146(2):263-266.

PoisonSafe Practices

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

Safe Use of ADHD Medications and other Tid Bits of Information

With the return to school, students with attention deficit hyperactivity disorder (ADHD) are getting back into the routine of taking their medicine each day and closely following their medication schedules. While stimulants such as Ritalin®, Adderall®, or Concerta® are commonly used to treat ADHD, in 2003 the FDA approved the use of the nonstimulant, Clonidine (Kapvay®), for ADHD.



When used correctly for ADHD these drugs have legitimate purpose and positive results for improving the person's attention span and ability to concentrate. If used incorrectly or by the wrong person, these drugs can have harmful effects. The prescription ADHD medicines are sometimes misused or abused as "brain boosters" or "academic enhancers." Misusing or abusing these medications could lead to dangerous changes in heart rate, restlessness or drowsiness, seizures, and difficulty breathing. It is important to use these drugs properly in the way they are prescribed.

The Missouri Poison Center offers these tips:

- Educate your teens on proper use of these medications.
- Warn children, teens and young adults about the risks of sharing medications.
- Do not take somebody else's medicine for an "academic enhancer." It can have harmful side effects for people it is not indicated for.
- Use these medications only as directed. Do not take more of it, do not take it more often, and do not take it for a longer time than prescribed.
- If you think the medication isn't working very well, do not increase the dose. Instead, check with your doctor.
- Report any side effects to your doctor.
- Remember to keep all medicines locked up and out of the reach of children.

National Prescription Drug Take Back Day on Saturday, October 29, 2011 from 10:00 a.m. – 2:00 p.m.

Medication use is alarmingly high. With so many people using and storing medication in the home, unintentional poisoning from medications is increasing. The DEA has scheduled another take back event to provide a venue for persons who wish to dispose of unwanted and unused prescription drugs. Please check the DEA website after September 30th to find convenient collection locations in your zip code area, county or city.



Just in case you need us
Program your cell phone with the nationwide toll free number to call your local poison center:
 1-800-222-1222.

POISON
Help

1-800-222-1222

PoisonAlert

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



Public Education Materials

If you would like to provide your patients with public education materials including: brochures, telephone stickers, emergency action cards, quarterly public newsletters and more, call for a complete list and order form.

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