

TOXALERT

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Thumbs Up or Thumbs Down?

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Much has changed in the management of poisoned patients in the past several years. Some treatments have been shown to be ineffective or harmful, while antidotes with greater safety and efficacy have been discovered. The Maryland Poison Center gives the following treatments either a thumbs up or thumbs down to raise awareness of some of these changes.

Syrup of Ipecac– Thumbs down!

Syrup of ipecac has been used as an emetic in the management of poisonings since the 1950's; however, its role has changed dramatically in the past 5-10 years. The administration of syrup of ipecac in the home, by EMS providers and in the emergency department is no longer routinely recommended. In 34,943 exposures reported to the Maryland Poison Center in 2002, syrup of ipecac was recommended in only 59 cases (0.17% of exposures), most of which involved ingestions of substances that are not bound by activated charcoal. In contrast, in 1990 ipecac was administered in 8.6% of cases. There is no evidence from experimental studies that ipecac improves the outcome of poisoned patients. Other reasons why ipecac is rarely recommended include (a) childhood poisonings rarely result in significant toxicity; (b) most intentional overdose patients present with an altered mental status, a contraindication to ipecac; (c) ipecac-induced vomiting may be delayed or persistent, delaying activated charcoal administration; (d) ipecac is contraindicated when certain drugs and poisons are ingested, including caustics, hydrocarbons, foreign bodies, and substances that produce a sudden onset of seizures, CNS depression and/or dysrhythmias. Recently, the FDA Nonprescription Drug Advisory Panel voted to recommend to the FDA that syrup of ipecac be removed from non-prescription status due to concerns about the risks of abuse by those with eating disorders, and the potential for adverse effects following misuse. Final FDA action is still pending.



Ipecac and gastric lavage are no longer routinely recommended to prevent the absorption of ingested drugs and poisons. In most cases, gastrointestinal decontamination is accomplished by administering activated charcoal alone.

Thumbs Up or Thumbs Down?

Gastric Lavage– Thumbs down!

Gastric lavage has been used for over 180 years to remove poisons from the stomach; however, there is no evidence that its use improves clinical outcome. Experimental studies indicate that the amount of drug or poison actually removed by gastric lavage is variable and decreases with time. There are reports that gastric lavage can produce significant returns, therefore it is occasionally utilized in the patient who ingests a life-threatening amount of a drug or poison within one hour of the start of the procedure, especially if the substance is not bound by activated charcoal. The MPC recommended gastric lavage in only 56 overdose patients in 2002 (0.16% of total cases). Risks of aspiration, esophageal injury, and fluid and electrolyte imbalance must be considered when deciding whether to lavage or not. Contraindications include the ingestion of hydrocarbons and caustics.



often recommended when the following are ingested: sustained-released or enteric-coated drugs (e.g. calcium channel blockers, beta blockers, lithium, theophylline); substances not bound by activated charcoal (e.g. lithium, iron, lead); and drug packets (as in body packers). The recommended dose of PEG-ELS is 0.5 L/h in children and 1.5 – 2 L/h in adults, until the rectal effluent is clear. Vomiting may occur and is rate related.

Acetaminophen Screening– Thumbs Up!

Intentional acetaminophen overdoses are commonly seen in the ED and reported to poison centers.



The initial signs and symptoms are mild or absent, with hepatotoxicity not becoming apparent until greater than 24 hours after the ingestion. Beginning antidotal therapy with N-acetylcysteine early is imperative in order to prevent hepatotoxicity. The wide availability and usage of acetaminophen-containing products coupled with a delayed onset of effects when taken in overdose dictate that acetaminophen ingestion be suspected in all intentional overdoses. The incidence of positive plasma acetaminophen concentrations in patients without a history of acetaminophen ingestion varies in published studies but has been reported to be as high as 7.2%, with toxic concentrations occurring in 0.3% to 2.2% of these patients.

Thumbs Up



Whole Bowel Irrigation*
Acetaminophen screening in all OD's
Octreotide (Sandostatin™)
Fomepizole (Antizol®)
Crofab™ (Crotalidae Polyvalent Immune Fab)

(*for ingestion of drug packets, sustained released drugs, substances not bound by activated charcoal)

Whole Bowel Irrigation– Thumbs up!

Whole bowel irrigation (WBI) reduces the time available for drug absorption by decontaminating the entire gastrointestinal tract, without any significant changes in water or electrolyte balance. Whole bowel irrigation is accomplished with the oral administration of large amounts of an osmotically balanced polyethylene glycol electrolyte solution (PEG-ELS). Whole bowel irrigation is



Octreotide (Sandostatin™)– Thumbs up!

Sulfonylureas such as glyburide, glipizide and glimepiride are commonly prescribed for the management of Type 2, non-insulin-dependent diabetes mellitus. In 2002, there were 3,964 ingestions of sulfonylureas reported to U.S. poison centers. Moderate to major complications such as delayed and prolonged hypoglycemia occurred in 887 of these cases, and there were 4 fatalities. Historically, IV glucose supplementation with frequent monitoring of blood glucose concentrations has been the



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mainstay of treatment for symptomatic hypoglycemia. But, there are concerns with this therapy including (a) exacerbation of hypoglycemia from rebound insulin release; (b) the development of phlebitis from prolonged infusion of hypertonic dextrose solutions; and (c) the necessity for central vascular access when dextrose concentrations greater than 10% are given. In addition, there are reports of hypoglycemia refractory to glucose administration. Octreotide (Sandostatin™) is a long-acting somatostatin that reduces insulin secretion. It has been found to be superior to glucose supplementation, is easy to administer, inexpensive and well tolerated. Given subcutaneously, octreotide reduces the need for dextrose and results in fewer episodes of rebound hypoglycemia. The dose of octreotide for sulfonylurea-induced hypoglycemia is 50-100 mcg every 6-8 hours in adults, and 4-5 mcg/kg/day divided every 6 hours in children.

Thumbs Down



Syrup of Ipecac
Gastric Lavage
Flumazenil (*Romazicon*®)

Flumazenil (*Romazicon*®)-Thumbs down!

Flumazenil (*Romazicon*®) is a competitive benzodiazepine antagonist that is used to reverse benzodiazepine-induced conscious sedation following a medical procedure. Controversy exists over its use to reverse the CNS depression associated with an intentional overdose of a benzodiazepine. Seizures, dysrhythmias, and benzodiazepine withdrawal have occurred in patients who are benzodiazepine-dependent or who ingest drugs that are capable of inducing seizures or dysrhythmias. Many drugs fall into this category, including tricyclic antidepressants, theophylline, carbamazepine, bupropion, chloral hydrate, chloroquine, cocaine, isoniazid, propoxyphene, meperidine and others. The



risks greatly outweigh the benefits of using flumazenil in the patient who intentionally overdoses or the patient who ingests unknown drugs.

Fomepizole (*Antizol*®)- Thumbs up!

Ethylene glycol and methanol poisonings are life-threatening events, even when small quantities are ingested. Traditionally, the antidote for these antifreeze agents has been ethanol, which acts by inhibiting the metabolism of the parent alcohols to toxic compounds. Ethanol administration is fraught with problems including difficulty in dosing and administration, and adverse effects such as CNS and respiratory depression. Fomepizole (*Antizol*®) is a potent competitive inhibitor of alcohol dehydrogenase that has been approved for ethylene glycol and methanol poisoning. Fomepizole is more effective, easier to dose and produces less adverse effects than ethanol. Although it is more expensive than ethanol therapy, the use of fomepizole can decrease total patient costs by eliminating ICU stays and the use of dialysis. Currently, nearly every hospital in Maryland has fomepizole in stock.



CroFab™ (*Crotalidae Polyvalent Immune Fab*)- Thumbs up!

CroFab™ (Savage Laboratories) is a highly purified sheep-derived antivenin approved for the reversal of signs and symptoms arising from mild to moderate crotalid snake envenomation (e.g. copperheads, rattlesnakes). Ease of administration and lack of adverse effects make this new antivenin particularly useful. It is approved for use in adult and pediatric populations but data on children are limited. In one large case series, no allergic reactions directly attributable to CroFab™ were reported. All patients receiving CroFab™ should be admitted because recurrence of clinical toxicity can occur.





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TOXNOTES

How long do I need to observe a patient who has overdosed on Wellbutrin SR®?

Bupropion is a pharmacologically unique antidepressant that acts by selectively inhibiting neuronal reuptake of dopamine, norepinephrine, and serotonin. Tremors, seizures and tachycardia are the most common effects seen following overdose. Seizures have been reported in doses of as little as 600-900 mg (two times the therapeutic dose). The onset of seizures is usually within 1-4 hours after the ingestion of immediate release bupropion, but may be delayed for 8-12 hours after ingesting the sustained release formulation (Wellbutrin SR®, Zyban®).

All patients with a history of ingesting Wellbutrin SR®, Zyban® or an unknown formulation of bupropion should be observed for a minimum of 12 hours.

Poison Prevention Materials

The Maryland Poison Center has developed new poison prevention education materials for the public. A new brochure, entitled "What You Need to Know" contains information on the poison center, general poison prevention information and information on poisons such as plants and carbon monoxide. In addition, we have new materials to help teach children about poisons. And of course, we still have telephone stickers, magnets and Mr. Yuk stickers! For more information, call 410-706-2151.

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