INTRODUCTION
- Ingestion of toxic substances is a common reason for injury in children < 6 years
- Little to no harm is caused in the majority of these cases, although significant morbidity or mortality possible
- Clinician must understand the approach to treating poisonings in children

EPIDEMIOLOGY
- American Association of Poison Control Centers' database reports ~ 1 million exposures to poisonings each year in children < 6 years of age
- Substances most available to children include those items in the home, such as cosmetics, cleaning products, analgesics, plants, cough medicine, foreign bodies, topical agents, pesticides, vitamins and hydrocarbons
- Increased risk of death with cocaine, anticonvulsants, antidepressants, iron supplements

TREATMENT
General
- If the specific agent and amount ingested have been identified, many children can remain at home (without referral to a doctor) after consultation with the local Poison Center.
- If brought to an ED, priority given to obtaining and potentially stabilizing the vital signs
- Antidotes are rarely needed
- "Toxicology screens" typically not needed since the ingested product is usually known
- Consider gastrointestinal decontamination for all poisonings; see Table 3, page 188, for list of agents

Gastric Emptying
- Principle: induced emesis or gastric lavage to remove toxin from stomach prior to absorption in small intestine
- Chemically induced emesis
  - Many agents (apomorphine, copper, H₂O₂) used in past to stimulate chemoreceptor trigger zone
  - Historically, ipecac most commonly used; contains cephaline and emetine
  - Contraindications: caustics, agents causing seizures or loss of airway protection, hydrocarbons, known coagulopathy, age < 6 months (see also Table 4, Page 188)
  - Complications: prolonged vomiting, sedation, Mallory-Weiss tears, gastric rupture, fatal aspiration
  - Although previously advocated by some for home use, American Academy of Pediatrics no longer recommends routine use; efficacy and safety never demonstrated, delays administration of charcoal
- Gastric lavage
  - Must use large bore (24 to 32Fr) orogastric tube (to get out pill fragments); confirm placement before use
  - Gag reflex must be intact
  - Child in left lateral decubitus position: limits movement of toxin to duodenum, minimizes risk of aspiration
  - Instill saline aliquots (10 to 15 cc/kg) until clear aspirates are obtained
  - Advantages over induced emesis: prompt results with definitive endpoint (clear aspirate); can also give charcoal via tube
  - Potential complications: propelling toxins into duodenum, inadvertent placement of tube in trachea or mainstem bronchus, esophageal injury, hypothermia, hyponatremia, water intoxication
  - Safety and efficacy unclear; of note, <30% of toxin removed if performed after one hour
  - Contraindicated in caustic ingestions, low viscosity hydrocarbons, protective airway reflexes absent

Adsorbents bind toxins so that they can’t be absorbed through the GI tract
- Activated charcoal (AC) is the most broadly effective adsorbent
- Toxins for which AC is not suggested include alcohols, hydrocarbons, metals and minerals (i.e. lead, iron); AC indicated for virtually all other potentially toxic ingestions.
- AC charcoal reduces toxin absorption by up to 75% if given within one hour
- Dose: 1 gram/kg administered as a slurry; Chocolate additive improves palatability without reducing efficacy
- Half of children may need a nasogastric tube (NGT) for charcoal administration
- Main hazards of AC are vomiting and aspiration, with potential for serious lung injury
**Catharsis**
- Osmotic cathartics (i.e. magnesium citrate, sorbitol) increase GI motility to hasten expulsion of toxin
  - Magnesium citrate no longer recommended (may cause hypermagnesemia if aspirated)
  - Sorbitol not recommended in children < 1 year: concerns of hypernatremia dehydration (sorbitol may pull free water into GI lumen) and subsequent cardiovascular collapse.
- Whole bowel irrigation used to “wash out” toxins not well adsorbed by charcoal (iron, lead, lithium)
  - Polyethylene glycol (Go-Lytely®), 500 to 1000 ml/hr (35 ml/kg/hr in infants); given orally or by NGT
  - Adverse effects include vomiting, abdominal cramps, and bloating
  - May also have a role in removing sustained release preparations.

**Decisions about Management**
- Decontamination not needed for all ingestions; may defer if drug is known and no effects or only mild toxic effects are expected.
- In general, activated charcoal (AC) is the sole decontamination intervention needed for most poisonings, and should be given
- Administer AC orally or use an NGT if unable to drink it within 20 minutes
- Cathartics generally ineffective, but may be indicated when ingested items don’t bind to AC (iron, lead, lithium) or in cases of illicit drug smuggling (cocaine or heroin bodypacking).

**PREVENTION**
- There has been a major reduction in pediatric poisoning incidence due to passive and active interventions
  - Passive: federal legislature for product safety and child safety caps
  - Active: safe storage of household products
- Poison Centers educate public about poisonings and prevent unnecessary trips to the Emergency Department