

# Approach to Patient with Suspected Overdose

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## **Preface**

According to a 2014 National Poison Center Report<sup>1</sup>, the most common ingestions in patients <5 years of age include cosmetics and personal care products, household cleaning substances, analgesics, foreign bodies, and topical preparations. Fatal ingestions in this age group include toxic fumes and gases, analgesics, unknown drugs, batteries, alcohols, antidepressants, antihistamines, and sedative hypnotics.

This guideline establishes a general reference to dealing with patients suspected of ingesting potential poisonous substances. The Centers for Disease Control and Prevention provides detailed online assistance dealing with numerous overdoses and poisonings at <http://www.atsdr.cdc.gov/toxguides/index.asp>.<sup>2</sup>

## **Initial Management of Ingestion**

### **Life support phase—Initiate Basic Life Support**

- Airway. Maintain airway patency and assess protective reflexes
- Breathing. Assess effectiveness of respiratory effort
  - Arterial Blood Gas (ABG)
  - Pulse oximetry
  - Consider end tidal CO<sub>2</sub> monitoring
- Circulation
  - Assess perfusion
  - Obtain IV access and bedside glucose

- Disability. Assess level of consciousness
  - Glasgow Coma Scale (GCS)
  - AVPU Scale (**A**lert, **R**esponsive to **V**erbal Stimuli, **R**esponsive to **P**ainful Stimuli, **U**nresponsive)
- Drugs
  - Administer appropriate medication as recommended by Pediatric Life Support Guidelines developed by the American Heart Association<sup>3</sup>
  - Naloxone 0.1 mg/kg up to a maximum of 2 mg
  - Dextrose 5-10 mls/kg of D10 or 2-4 mls/kg D25
  - Consider Thiamine 100 mg IV in teenager to prevent Wernicke's encephalopathy<sup>3</sup>

## Evaluation phase

- Focused history after initial survey and ALS stabilization
  - Medications in the home
    - Amount of ingestion
    - Time of ingestion
    - Initial symptoms
    - Home treatments
    - Intentional or accidental
  - Chemicals in the home
  - Recent visits by grandparents or sitters
  - Recent stressors in teenagers
  - Recent illnesses and medications
  - Recreational drug use
- Thorough physical examination with specific attention to
  - Vital signs—Respiratory rate, heart rate, blood pressure, temperature
  - Neurologic examination
    - Level of consciousness—agitated, depressed, ataxic, stuporous
    - Pupil size
  - Skin
    - Color
    - Dry versus diaphoretic
  - Odor present
- Suggestive physical findings and drugs causing the side effects:

## Table. Physical Findings and Responsible Substances

To view a larger image on your device, please click or touch the image.

**Table. Physical Findings and Responsible Substances**

<b>Physical Finding/Side Effect</b>	<b>Substance Responsible for Side Effect</b>
<u>Bradycardia</u>	Beta blockers, Calcium channel blockers, Clonidine, Digoxin  Opiates, Plants
Tachycardia	Amphetamines, <u>Anticholinergics</u> , Cocaine, Nicotine, Phencyclidine (PCP), Pseudoephedrine, Theophylline, Tricyclic antidepressants (TCAs)
Hypotension	Antipsychotics, Barbiturates, Beta blockers, Calcium channel blockers, Clonidine, Opiates, TCAs
Hypertension	Amphetamines, <u>Anticholinergics</u> , Clonidine, Monoamine oxidase inhibitors (MAOIs), PCP, Stimulants
<u>Miosis</u>	Barbiturates, Clonidine, Ethanol, Opiates, Organophosphates, PCP, <u>Phenothiazines</u>
<u>Mydriasis</u>	Amphetamines, <u>Anticholinergics</u> , Antihistamines, Antidepressants, Barbiturates, Cocaine, Lysergic acid diethylamide (LSD), Marijuana, PCP
Agitation	Alcohol, Amphetamines, <u>Anticholinergics</u> , Narcotics (including cough medications) Steroids, Stimulants
Comatose	Alcohol, <u>Anticholinergics</u> , Anticonvulsants, Carbon monoxide, Clonidine, Opiates, Sedative hypnotics
Seizures	Alcohol, Amphetamines, Aspirin, Cocaine, Isoniazid, Organophosphates, <u>Phenothiazines</u> , Plants
Ataxia	Alcohol, Anticonvulsants, Sedative-hypnotics

- Laboratory and ancillary studies as indicated
  - Glucose, electrolytes, serum pH, anion gap, calculated and measured serum osmolality for unknown ingestions
  - Obtain specific drug level when ingestion is known, such as acetaminophen, aspirin, or iron
  - Routine urine drug screen will not identify many ingested drugs
  - The results of comprehensive urine drug screens on serum or urine samples may take several days and initially may not be clinically useful; however, they can provide a definitive diagnosis and forensic evidence
  - Electrocardiogram

## Decontamination phase

- Dermal exposure
  - Copious water and soap
  - Protect healthcare providers
- Ocular exposure. Irrigation with one liter normal saline until neutral pH
- Gastrointestinal (GI) decontamination - Options based upon history and exam. Options can range from no intervention needed to simple dilution, gastric lavage, or whole bowel irrigation.
  - No GI decontamination is necessary in many non-toxic ingestions.
    - Examples include silica gel, birth control pills, antibiotics, or zinc oxide
    - Call Poison Control Center to determine toxicity 1-800-222-1222
  - Simple dilution with 2-4 ounces of milk or water is indicated with mild irritants
    - Household bleach
    - Household soap or detergents
  - Decontamination is contraindicated with certain ingestions
    - Hydrocarbon ingestion—may increase risk of aspiration
    - Caustic ingestion -may exacerbate injury and oral intake may delay the time to safely take the patient to the operating room for endoscopy
- Emesis is NOT recommended
  - Official policy statement by American Academy of Pediatrics<sup>4</sup> advises against the use of syrup of ipecac.
  - Emesis has been shown to be variably effective (0 to 70% effective)
  - Ipecac may require as long as 30 to 60 minutes to induce vomiting
  - Protracted emesis may last up to 4 hours preventing the effective use of charcoal
- Gastric Lavage
  - Indicated in recent ingestions (within 30-60 minutes)
  - Indicated when substances that are extremely toxic (tricyclic antidepressants, calcium channel blockers) or substances that do not bind to charcoal (heavy metals including iron or lithium) or substances for which there is no effective antidote
  - Certain drugs delay gastric emptying and gastric lavage may be effective outside of the recommended 60 minute window
  - Gastric lavage has not shown to more effective than charcoal alone for substances that bind to charcoal
  - Procedure
    - Contraindicated if altered mental status or unsecured airway
    - Place the patient on left side with the head lower than the feet
    - Use the largest orogastric tube that can be used, such as a 24 F tube in a toddler or an Ewol or 36 F tube in an adult or teen
    - Lavage with normal saline until no fragments are present in return
- Activated charcoal
  - Binds drugs onto surface of charcoal
  - Does not bind small ions including iron, lithium, cyanide, alcohols, hydrocarbons
  - Contraindicated in hydrocarbons and caustic ingestions
  - Administer 0.5 to 1 gram/kg up to 50 to 100 grams maximum
  - Elimination may be further enhanced with concomitant cathartic such as sorbitol
- Cathartics
  - Little evidence that cathartics decrease absorption by reducing GI transit time
  - Cathartics may reduce constipation caused by charcoal
    - Single dose of sugar alcohol (sorbitol) or saline agent (magnesium citrate) may be considered safe

- Repeated dosages may cause electrolyte disturbance and dehydration
- Whole bowel irrigation
  - Polyethylene glycol electrolyte solution is not absorbed and has little osmotic effect
  - Indicated in iron tablets, heavy metals, packaged illicit drugs, sustained release preparations
  - Especially useful in toddlers when orogastric tube size eliminates effectiveness of gastric lavage
  - Dosage is 500mls/hour in toddlers and 2 liters/hours in adults
  - May require nasogastric tube in uncooperative patients
- Enhanced urinary elimination by alkalization of urine
  - Certain drugs favor urinary excretion when in the ionized state
  - These include salicylates, phenobarbital, and isoniazid
  - Administer 1-2 mEq/kg sodium bicarbonate IV over 1-2 hours
  - Alkalinize the urine with IV sodium bicarbonate to maintain a urine pH 7.5-7.8

Additional Resources

## Additional Resources

### Arkansas Poison & Drug Information Center

University of Arkansas for Medical Sciences  
 College of Pharmacy  
 4301 W. Markham, #522-2  
 Little Rock, AR 72205  
 Administration: 501-686-6161  
 Emergency: 800-222-1222  
 Emergency TTY/TDD: 800-641-3805

- [Poisoning \(UAMS website\)](#)
- [Arkansas Poison and Drug Information Center \(APDIC\)](#)

### [American Association of Poison Control Centers](#)

### Centers for Disease Control and Prevention

- [Tips to Prevent Poisonings](#)

*This guideline was developed to improve health care access in Arkansas and to aid health care providers in making decisions about appropriate patient care. The needs of the individual patient, resources available, and limitations unique to the institution or type of practice may warrant variations.*

References

## References

1. Mowry JB, Spyker DA, Brooks, DA, McMillan, N, Schauben, JL. 2014 Annual report of the American Association of Poison Control Centers' National Poison Data System (NPDS): 32nd Annual Report. *Clin Toxicol (Phila)*. 2015;53(10):962-1146.
2. Centers for Disease Control and Prevention. Agency for Toxic Substance & Disease Registry. Toxic Substances. <http://www.atsdr.cdc.gov/toxguides/index.asp> Accessed July 15, 2013.
3. Chameides L, Samson RA, Schexnayder SM, Hazinski MF, et al. *Pediatric Advanced Life Support*. United States of America: American Heart Association; October 2011.
4. Gardner HG, American Academy of Pediatrics Committee on Injury, Violence, and Poison Prevention. *Pediatrics* 2007;119(1):202-6.