

Aspirin







ASPIRIN

Pathophysiology

- ✓ Peak level = 18-24 hrs.
- ✓ Acidemia = non-ionized ASA = cross BBB
- ✓ ASA = early stimulate respiratory center



Pathophysiology

- ▶ ASA = increased pulmonary vascular permeability
 - ▶ Reversible sensorineural hearing loss correlates ASA concentrations.
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Pharmacokinetics

- ▶ rapidly absorbed from GI tract within 30 minutes.
- ▶ Two thirds of a therapeutic dose is absorbed in 1 hour.
- ▶ peak levels occur in 2 to 4 hours.

- ▶ Large ingestions ,,,
- ▶ Delay gastric emptying ,,,
- ▶ Prolonged absorption ,,,
- ▶ Rising serum levels for 12 hours or more

- Free salicylate and its conjugates are eliminated by renal excretion.

➤ At therapeutic salicylate concentrations, elimination follows first order kinetics, and excretion is proportional to salicylate concentration.

➤ When serum salicylate concentrations are greater than 30 mg/dL, however, elimination follows zero order kinetics, and the metabolic rate is constant.

• When the metabolic pathways become saturated, urinary excretion of salicylic acid determines the half-life, which becomes prolonged and may approach 15 to 30 hours with toxic doses.



Children Clinical feature

- Primarily = metabolic acidosis and acidemia (<4 years old)
- If >4 years of age its just like adult
- Presenting signs fever, hyperventilation, and altered mental status with volume depletion, acidosis, and severe hypokalemia.
- Poor prognosis = hyperpyrexia
- Chronic higher mortality

TABLE 189-2 Severity Grading of Salicylate Toxicity in Adults

	Mild	Moderate	Severe
Acute ingestion (dose)	<150 milligrams/kg	150–300 milligrams/kg	>300 milligrams/kg
End-organ toxicity	Tinnitus Hearing loss Dizziness Nausea/vomiting	Tachypnea Hyperpyrexia Diaphoresis Ataxia Anxiety	Abnormal mental status Seizures Acute lung injury Renal failure Cardiac arrhythmias Shock

Toxic dose of aspirin is 200 to 300 mg/kg, and ingestion of 500 mg/kg is potentially lethal.

Five mL of oil of wintergreen contains 7 g of aspirin and can be deadly to a toddler




Diagnosis

- ▶ Don't use single level
- ▶ obtain serial serum salicylate concentrations initially every 1 to 2 hours until level declined then every 4-6 hrs


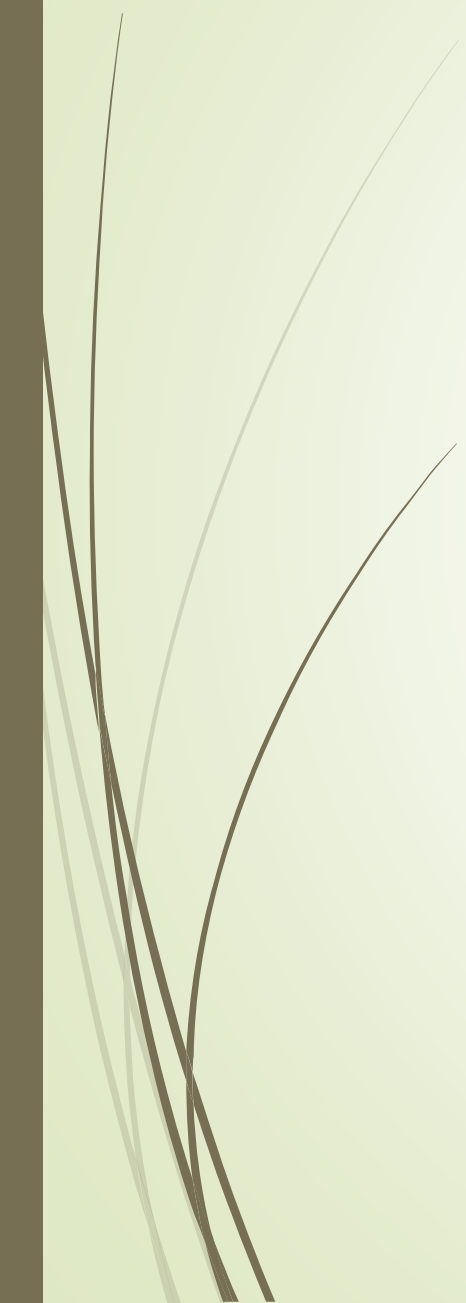
Treatment of ASA overdose

- ▶ Treat dehydration; maintain urine output at 2 to 3 mL/kg/hr.
- ▶ Correct potassium depletion with goal serum level of 4.5 mEq/L.
- ▶ Consider activated charcoal (AC); 25 grams every 2 to 4 hours for two to four doses if tolerated.
- ▶ Alkalinize urine with goal urine pH of 7.5 to 8.0.
- ▶ Infuse bicarbonate drip: 132 to 150 mEq (three 50-mL ampules) of 7.5% or 8.4% sodium bicarbonate (NaHCO_3) in 1 L of dextrose 5% in water (D5W) + 40 mEq of potassium chloride (KCl) running at 2 to 3 mL/kg/hr.
- ▶ Allow serum pH up to 7.55.
- ▶ Do not attempt forced diuresis.



Initiate hemodialysis if any of the following occur:

- ▶ Altered mental status, coma, seizure
- ▶ Renal failure
- ▶ Hepatic failure
- ▶ Pulmonary edema or respiratory failure Severe acid-base imbalance (pH <7.1 to 7.2)
- ▶ Deterioration in condition
- ▶ Failure of urine alkalinization
- ▶ Rapidly rising salicylate level
- ▶ Serum salicylate concentration ≥ 100 mg/dL after acute ingestion
- ▶ Serum salicylate concentration ≥ 40 mg/dL after chronic ingestion
- ▶ Intubation

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- ▶ Administer intravenous (IV) dextrose 0.5 to 1 g/kg IV for any central nervous system (CNS) abnormalities (altered mental status, coma, agitation, seizure)

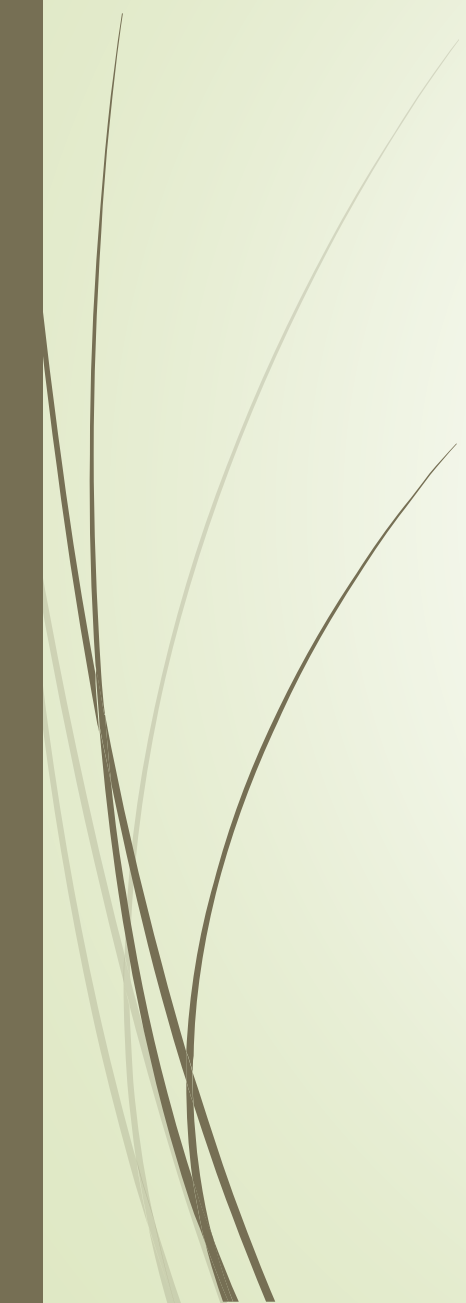


Disposition

- ▶ A patient may be discharged from the ED if serial declining salicylate levels.
- ▶ Hospital admission is required for pulmonary edema, CNS symptoms, seizures, acidosis, electrolyte disorders, dehydration, renal insufficiency, or increasing serum levels during serial testing.
- ▶ Overdosed of enteric-coated or modified-release preparations of aspirin should be treated and observed for approximately 24 hours, with serial serum salicylate concentrations.



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- ▶ Consultation with a clinical toxicologist is recommended.
 - ▶ The mortality rate for chronic salicylate intoxication is 25%, compared with a mortality rate of 1% after acute salicylate intoxication.
 - ▶ With any case of intentional overdose, psychiatric evaluation is essential.
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Any Questions