**EmergencyKT: Salicylate Toxicity**

- **Arrival to ED**
  - >500 mg/kg & <1 hr. since ingestion
  - <150 mg/kg & asymptomatic
  - >150 mg/kg Unknown amount OR symptomatic

- **Reported Salicylate Dosage Ingested**
  - Absolutely sure of dosage?
    - Yes: D/C or to PES
    - No: Monitor and recheck in 2 hours to ensure peak level

1. **Contraindications to Charcoal**
   1. Unprotected airway
   2. Presence of intestinal obstruction
   3. GI tract not anatomically intact
   4. Altered mental status
   5. Severe uncontrolled vomiting

2. **Severe Symptoms**
   1. AMS – persistent CNS disturbance
   2. Pulmonary edema / CHF
   3. Renal failure
   4. Acute Lung Injury
   5. Progressive deterioration of VS
   6. Severe acid-base or electrolyte imbalance despite appropriate tx
   7. Hepatic compromise with coagulopathy
   8. Salicylate level >1000 mg/L acutely or >600 mg/L chronically (Salicylate level irrelevant if there are concerning symptoms)

- **IV Monitor**
  - 50 g charcoal po (if no contraindications)

- **LABS**
  - Serum salicylate level
  - VBG, UA, Renal, Coags, Ca, MG, Phos
  - CXR if hypoxemia (pulmonary edema)
  - Consider acetaminophen level and EKG

- **Are symptoms severe?**
  - Yes: Hemodialysis + NaHCO₃
  - No / Not Yet

- **Results**
  - VBG <7.2 HCO₃ <18

- **First Salicylate Level?**
  - Yes: Redose activated charcoal
    - (25g po q 2 hr x 3 doses or 50g po q4 hr x 2 doses)
  - No: Recheck level of serum salicylate & VBG in 2 hours

- **Levels of poisoning**
  - **Mild**
    - <300 mg/L
    - Asymptomatic or nausea, vomiting, tinnitus
    - - Rehydrate with oral/IV fluids
    - - Replace electrolytes and glucose
    - - Correct volume status as needed
    - - Recheck serum salicylate, VBG, UA, Renal q2 hr
  - **Moderate**
    - 300-600 mg/L
    - Sx’s: Lethargy, mild acidosis, coagulopathy, tachypnea, sweating, dehydration, loss of coordination, restlessness
    - - Notify: Poison Control, Renal Fellow, MICU
  - **Severe**
    - >600 mg/L
    - Sx’s: Confusion, delirium, coma, hypotension, metabolic acidosis after rehydration, oliguria
    - - Hemodialysis + NaHCO₃
    - - Watch volume if anuric

- **Conversion Chart**
  1. (1) mmol/L → mg/L – divide by 0.0072
  2. (2) mg/L → mmol/L – multiply by 0.0072

- **Goals of Urine Alkalinization**
  1. Urine pH 7.5-8.0
  2. Arterial pH>7.5 & <7.6
Table 1

**Recommendations for Salicylate-poisoned Patients**

- Avoid intubation if possible. Intubation should only be performed if patient truly has respiratory failure (worsening acidosis, hypoxemia).
- Ensure that alkalinization of plasma and urine are initiated early and prior to intubation if possible.
- Avoid paralytics and high doses of sedatives during rapid sequence intubation. Try to minimize the time that patient's ventilatory drive is compromised.
- Place an arterial line for frequent blood gas monitoring.
- Frequent blood gas monitoring to ensure that an appropriately high minute ventilation is achieved. The goal is to maintain an arterial pH of 7.5-7.6.
- Consider pressure-controlled ventilation. Adjust the rate to obtain the desired minute ventilation. This will allow delivery of maximal tidal volumes while controlling peak airway pressures. Any mode can be used as long as physiologic goals are being met. Adjust the settings based on the arterial blood gas to achieve goal pH.
- Monitor closely for 'breath-stacking' and ventilator asynchrony due to tachypnea.
- Collaboration with intensivist recommended.

### References


