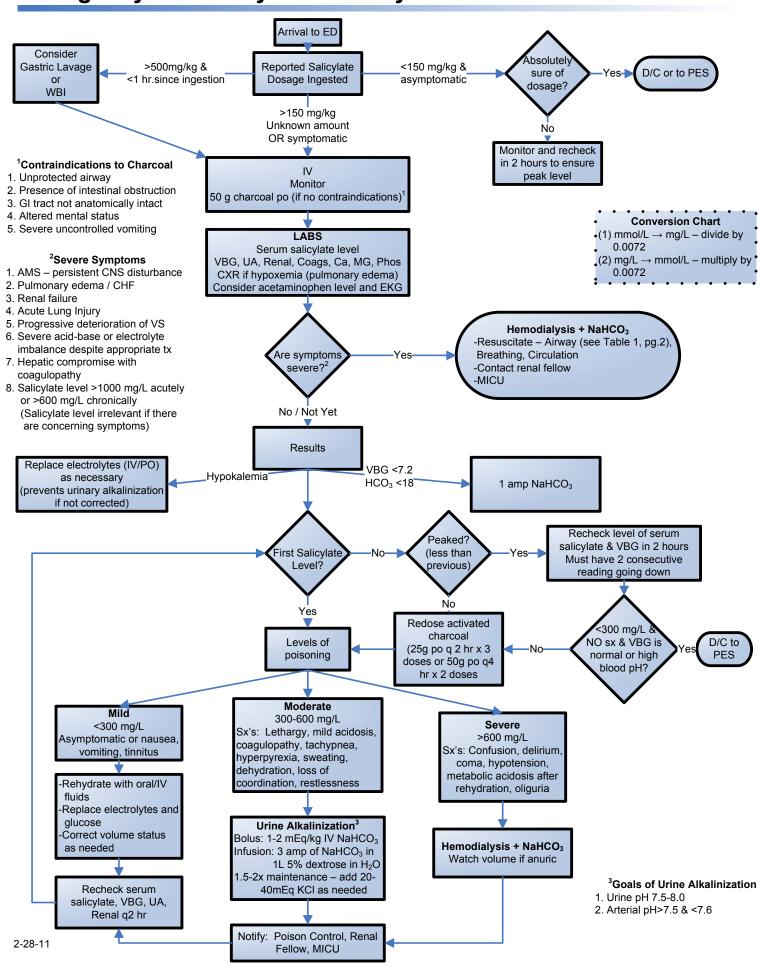
## **EmergencyKT: Salicylate Toxicity**



## 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

American Academy of Clinical Toxicology; European Association of Poison Control Centres and Clinical Toxicologists. Position statement: Gastric lavage. J Toxicol Clin Toxicol 1997;35:711–19.

American Academy of Clinical Toxicology; European Association of Poison Control Centres and Clinical Toxicologists. Position statement: single dose activated charcoal. J Toxicol Clin Toxicol 1997;35:721–41.

Barone J, Raia J, Huang Y. Evaluation of the Effects of Multiple-Dose Activated Charcoal on the Absorption of Orally Administered Salicylate in a Simulated Toxic Ingestion Model. Annals of Emergency Medicine. 17:1 January 1988.

Burton BT, Bayer MJ, Barron L, et al. Comparison of activated charcoal and gastric lavage in the prevention of aspirin absorption. J Emerg Med 1984;1:411–16 Brenner BE, Simon RR. Mangement of salicylate intoxication. Drugs 1982;24:335–40.

Chyka PA, Erdman AR, Christianson G, Wax PM, Booze LL, Manoguerra AS, et al. Salicylate poisoning: an evidence-based consensus guideline for out-of-hospital management. Clin Toxicol (Phila). 2007;45(2):95-131.

Chapman BJ, Proudfoot AT. Adult salicylate poisoning: deaths and outcome in patients with high plasma salicylate concentrations. Q J Med. Aug 1989;72(268):699-707

Curtis RA, Barone J, Giacona N. Efficacy of ipecac and activated charcoal/cathartic. Arch Int Med 1984;144:48-52

Danel V, Henry JA, Glucksman E. Activated charcoal, emesis, and gastric lavage in aspirin overdose. Br Med J (Clin Res Ed). May 28 1988;296(6635):1507 Dargan PI, Wallace CI, Jones AL. An evidence based flowchart to guide the management of acute salicylate overdose. Emerg Med J. May 2002;19(3):206-9.

Dillon EC Jr, Wilton JH, Barlow JC, et al. Large surface area of activated charcoal and the inhibition of aspirin absorption. Ann Emerg Med 1989;18:547-52.

Done AK, Temple AR. Treatment of salicylate poisoning. Mod Treat. Aug 1971;8(3):528-51

Dugandzic RM, Tierney MG, Dickinson GE, et al. Evaluation of the validity of the Done nomogram in the management of acute salicylate intoxication. Ann Emerg Med. Nov 1989;18(11):1186-90

Garella, S. Extracorporeal techniques in the treatment of exogenous intoxications. Kidney Int 1988; 33:735.

Greenberg MI, Hendrickson RG, Hofman M. Deleterious effects of endotracheal intubation in salicylate poisoning. Ann Emerg Med 2003;41(4):583-4.

Higgins RM, Connolly JO, Hendry BM. Alkalinization and hemodialysis in severe salicylate poisoning: comparison of elimination techniques in the same patient. Clin Nephrol 1998; 50(3):178–83.

Hill, JB. Salicylate intoxication. N Engl J Med 1973; 288:1110.

Hillman RJ, Prescott LF. Treatment of Salicylate poisoning with repeated oral charcoal. British Medical Journal. Vol 291. 23 November 1985.

Jacobsen D, Wiik-Larsen E, Bredesen JE. Haemodialysis or haemoperfusion in severe salicylate poisoning. Hum Toxicol 1988;7:161-3.

Johnson D, Eppler J, Giesbrecht E, Verjee Z, Rais A, Wiggins T. Effect of multiple-dose activated charcoal on the clearance of high-dose intravenous aspirin in a porcine model. Ann Emerg Med. Nov 1995;26(5):569-74.

Kirshenbaum LA, Mathews SC, Sitar DS, et al. Does multiple-dose charcoal therapy enhance salicylate excretion? Arch Intern Med 1990;150:1281-3.

Lheureux P, Tenenbein M. Position paper: whole bowel irrigation. J Toxicol Clin Toxicol 2004;42(6):843-54.

Lund B, Seifert SA, Mayersohn M. Efficacy of sustained low-efficiency dialysis in the treatment of salicylate toxicity. Nephrol Dial Transplant 2005;20(7):1483-4.

O'Malley, Gerald. Emergency Department Management of the Salicylate-Poisoned Patient. Emerg Med Clin N Am 25(2007) 333-346.

Park GD, Spector R, Goldberg MJ, et al. Expanded role of charcoal therapy in the poisoned and overdosed patient. Arch Intern Med 1986;146(5):969-73.

Pierce, RP, Gazewood, J, Blake RL, Jr. Salicylate poisoning from enteric-coated aspirin. Delayed absorption may complicate management. Postgrad Med 1991; 89:61.

Prescott LF, et al. Diuresis or urinary alkalinisation for salicylate poisoning? Br Med J 1982; 285: 1383-1386.

Proudfoot AT. Toxicity of salicylates. Am J Med. Nov 14 1983;75(5A):99-103

Proudfoot AT, Krenzelok EP, Brent J, et al. Does urinary alkalinization increase salicylate elimination? If so, why? Toxicol Rev 2003;22(3):129-36.

Proudfoot AT, Krenzelok EP, Vale JA. Position paper on urine alkalinization. J Toxicol Clin Toxicol 2004;42(1):1-26.

Rivera, W, Kleinschmidt, KC, Velez, LI, et al. Delayed salicylate toxicity at 35 hours without early manifestations following a single salicylate ingestion. Ann Pharmacother 2004; 38:1186.

Shalkham AS, Kirrane BM, Hoffman RS, et al. The availability and use of charcoal hemoperfusion in the treatment of poisoned patients. Am J Kidney Dis 2006;48(2):239–41.

Stolbach A, Hoffman R, Nelson L. Mechanical Ventilation Was Associated with Acidemia in a Case Series of Salicylate-poisoned patients. Academic Emergency Medicine 2008; 15:866-869.

Tenenbein M. Position statement: whole bowel irrigation. American Academy of Clinical Toxicology; European Association of Poisons Centres and Clinical Toxicologists. J Toxicol Clin Toxicol 1997;35(7):753–62.

Temple AR. Acute and chronic effects of aspirin toxicity and their treatment. Arch Intern Med. Feb 23 1981;141(3 Spec No):364-9.

Botma, M, Colquhoun-Flannery, W, Leighton, S. Laryngeal oedema caused by accidental ingestion of Oil of Wintergreen. Int J Pediatr Otorhinolaryngol 2001; 58:229.

Vale JA, Krenzolak E, Barceloux GD. Position statement and practice guidelines on the use of multidose activated charcoal in the treatment of acute poisoning. American Academy of Clinical Toxicology; European Association of Poisons Centres and Clinical Toxicologists. J Toxicol Clin Toxicol 1999;37(6):731–51.

Vree TB, et al. Effect of urinary pH on the pharmacokinetics of salicylic acid, with its glycine an glucuronide conjugates in human. Int J Clin Pharmacol Ther 1994; 32:550-558.

Wortzman, DJ, Grunfeld, A. Delayed absorption following enteric-coated aspirin overdose. Ann Emerg Med 1987; 16:434.