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THE MARYLAND POISON CENTER'S MONTHLY UPDATE.
NEWS. ADVANCES. INFORMATION.

Ethanol Therapy for Ethylene Glycol and Methanol Toxicity

Before fomepizole (Antizol®) was approved in 1997 as an antidote for ethylene glycol and methanol poisonings, ethanol was utilized as the antidotal agent. However, due to its propensity to cause adverse effects in the patient as well as its erratic and patient specific absorption and metabolism, ethanol is not considered to be first line therapy. Some hospitals are reporting difficulty in obtaining fomepizole; therefore providers should review the use of ethanol as an antidote if fomepizole is unavailable.

Ethanol is metabolized by alcohol dehydrogenase, the enzyme that is responsible for converting ethylene glycol and methanol to their toxic metabolites. Ethanol has a higher binding affinity to alcohol dehydrogenase compared to both ethylene glycol and methanol, resulting in the blockade of the formation of the toxic compounds. The goal in therapy is to maintain the poisoned patient at a serum ethanol concentration of 100-200 mg/dL. A 10% ethanol solution should be utilized for IV administration, or a 20% ethanol solution can be administered orally or through a nasogastric tube. Due to its erratic absorption (and consequently, difficulty to maintain goal ethanol serum concentrations), oral ethanol therapy is ONLY warranted in situations when neither fomepizole nor IV ethanol are available. Recommended doses are:

	IV (10% ethanol)	PO (20% ethanol)
Loading Dose: 800 mg/kg	8 mL/kg	4 mL/kg
Maintenance Dose, Non-drinker: 80-130 mg/kg/hr	0.8-1.3 mL/kg/hr	0.4-0.7 mL/kg/hr
Maintenance Dose, Chronic drinker: 150 mg/kg/hr	1.5 mL/kg/hr	0.8 mL/kg/hr

While the maintenance doses are being administered, serum ethanol concentrations should be monitored every 2 hours. The maintenance dose of ethanol may need to be adjusted in order to keep the patient at a level > 100 mg/dL. Call your local Poison Control Center for dosing assistance. Monitor the patient for the following adverse effects from ethanol therapy: CNS depression, hypoglycemia (especially in pediatrics), and renal output.

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Did you know?

A 100 proof spirit contains 50% ethanol.

This unit of measurement was derived by the British Navy when it was suspected that the rum ration was being diluted. In turn, the sailors demanded “proof” by pouring a sample on gunpowder. If the lighted gunpowder sparked or ignited, this was 100% proof that the rum was 50% ethanol. Today in the U.S., we define “proof” as being twice the percentage of ethanol.

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