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14. ABSTRACT Obj: Compare time to breathing between 3 groups of swine (11/group) with cyanide(CN) induced apnea; treated with intravenous(IV) hydroxocobalamin(HOC), IV cobinamide(COB), or IV normal saline(NS) control. Method:33 swine(45-55kg) intubated, anesthetized & instrumented (MAP and cardiac output). Isoflurane low to allow breathing; room air(0.21FiO2). CN infused until apnea. Given HOC(65mg/kg), COB(12.5mg/kg) or NS(20ml) & monitored 60min. Results:Weight, time to apnea, & CN dose similar (p>0.10). At treatment, blood CN, lactate levels, & decrease in MAP similar (p>0.10). 2/11 swine in NS group survived(p<0.001), compared to 10/11 in HOC & 10/11 in COB group. Time to breaths post treatment similar(HOC 1:48min, COB 1:49min). Blood CN levels undetectable post HOC or COB infusion. No statistically significant differences were detected between groups for CO, MAP, RR, or min vent at 60min. Lactate, pH, and PCO2 at 60 min were similar (p>0.10). Conclusion: IV COB led to similar time to breathing as IV HOC for CN induced apnea and severe toxicity. Cobinamide was 5 times as potent as hydroxocobalamin.											
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Title: Intravenous cobinamide, a novel cyanide antidote, versus hydroxocobalamin in the treatment of acute cyanide toxicity and apnea in a swine (*Sus Scrofa*) model

Background: Hydroxocobalamin (HOC) is an FDA approved antidote for cyanide (CN) toxicity.

Cobinamide (COB) is a novel antidote that has two cyanide binding sites, is more potent than HOC, and can be infused in a small volume, but its efficacy has not been clearly established. No study has directly compared HOC to COB in a severe, cyanide-toxic large animal model.

Objective: To compare the time to spontaneous breathing between 3 groups of swine with acute CN induced apnea and treated with IV HOC, IV COB, or IV normal saline (NS) control.

Methods: 33 swine (45-55 kg) intubated, anesthetized and instrumented (continuous MAP and cardiac output (CO)). Inhaled anesthesia lowered to allow spontaneous breath on room air (0.21 FiO₂). CN infused until apnea. Observed 1min before treatment. 11 swine per group randomly assigned to IV HOC (65mg/kg), IV COB (12.5mg/kg) or NS (20ml) and monitored for 60min. **Results:** Baseline weight, time to apnea, and CN dose were similar ($p>0.10$). At treatment, blood CN, lactate levels, and decrease in MAP from baseline were similar ($p>0.10$). 2/11 animals in NS group survived ($p<0.001$), compared to 10/11 in HOC group and 10/11 in COB group. Time to spontaneous breaths post antidote was similar (HOC 1:48 min:sec, COB 1:49 min:sec). Blood CN levels undetectable post HOC or COB infusion. No statistically significant differences were detected between groups for CO, MAP, RR, or min ventilation at 60 min. Lactate, pH, and PCO₂ at 60 min were similar ($p>0.10$). **Conclusion:** Intravenous cobinamide led to a similar time to spontaneous respirations as intravenous hydroxocobalamin for cyanide induced apnea and severe toxicity. Cobinamide was 5 times as potent as hydroxocobalamin.