

Minnesota Poison Control System Healthcare Facility Antidote Stocking Recommendations

Contact the Poison Center for treatment recommendations 1-800-222-1222

These recommendations are based on national consensus guidelines^{1,2} as well as local needs within Minnesota, North Dakota, and South Dakota. Stocking recommendations should always be taken in the context of the availability of medications as subject to drug shortages. Each of these recommendations below applies to a single potential 100 kg patient.

Antidote	Poison/Condition	≈8-hour expected treatment duration	≈24-hour expected treatment duration	Comments
Activated Charcoal (Aqueous)	Miscellaneous	4 bottles (25 g/bottle)	For MDAC: 12 bottles (25 g/bottle)	If using multiple dose activated charcoal (MDAC), continuous reassessment of bowel function is required before additional doses are given.
N-Acetylcysteine (NAC) oral NAC (e.g., Mucomyst®) <i>and</i> IV NAC (e.g., Acetadote®)	-Acetaminophen -Other hepatotoxins (e.g., cyclopeptide-containing mushrooms such as <i>Amanita bisporigera</i>)	Oral Product: 28 g IV Product: 22 g	Oral Product: 56 g IV Product: 30 g	IV route preferred to PO for acetaminophen poisoning.
Antivenom, Crotalidae Polyvalent Immune Fab-Ovine (Crofab®) <i>or</i> Antivenin, Crotalidae Immune F(ab') ₂ -Equine (Anavip®)	U.S. pit vipers (e.g. rattlesnakes, cottonmouths, copperheads)	Fab: 12 vials F(ab')₂: 20 vials	Fab: 18 vials F(ab')₂: 24 vials	Hospitals need to stock either Fab-Ovine <i>or</i> F(ab') ₂ -Equine; there is no need to stock both products.

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Atropine sulfate	Cholinergic Toxidrome (e.g. organophosphates & carbamate insecticides, nerve agents)	45 mg	165 mg	If additional doses are needed consider obtaining from local EMS services.
Botulinum antitoxin (A,B)-Equine	Botulism	NA	NA	Contact Health Department to obtain from CDC: Minnesota: 651-201-5000 or 1-888-345-0823 South Dakota: 605-773-3361 or 1-800-738-2301 North Dakota: 701-328-2372 or 1-800-366-6888
Botulism Immune Globulin (BIG)	Infant Botulism	NA	NA	Contact California Dept of Health at (510) 231-7600 (24/7 number)
Calcium Chloride <i>and</i> Calcium Gluconate	-Beta blockers -Calcium channel blockers -Hydrofluoric acid, fluoride salts	Calcium Chloride: 10 g Calcium Gluconate: 30 g	Calcium Chloride: 10 g Calcium Gluconate: 30 g	Calcium Chloride should be administered via central line except in extreme circumstances. The chloride salt provides 3 x more calcium than the gluconate salt.
Calcium disodium EDTA (edetate calcium disodium [Versenate®])	Lead encephalopathy	0.75 g (if available)	2.25 g (if available)	<u>Do not</u> confuse with sodium EDTA (edetate disodium) Versenate® is often unavailable for purchase

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Dantrolene (e.g., Ryanodex®)	-Malignant hyperthermia -Neuroleptic malignant syndrome (rarely indicated)	800 mg	2,000 mg	To determine stocking levels consider consulting institutional anesthesia, who are more likely to use dantrolene for malignant hyperthermia
Deferoxamine mesylate (Desferal®)	Iron	12 g	36 g	
Digoxin Immune Fab (Digifab®)	Cardioactive steroids (e.g., digoxin, various plants)	15 vials	15 vials	10 vials as IV push if cardiac arrest 10-20 vials if unstable cardioactive steroid plant ingestion
Dimercaprol (BAL in oil)	Heavy metals (e.g., As, Pb, Hg, Au)	800 mg	2,400 mg	Contraindicated in patients with peanut allergy (formulated in peanut oil)
Flumazenil (Romazicon®)	Benzodiazepines	6 mg	12 mg	
Folic acid & Folinic acid (Leucovorin)	-Methotrexate, trimetrexate -Methanol -Formaldehyde/Formic acid	300 mg	1,000 mg	

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Fomepizole (Antizol®)	-Methanol -Ethylene glycol -Other toxic alcohols/glycols	1.5 g	4.5 g	Ethanol recommended in setting of fomepizole shortage
Glucagon	Beta blockers	20 mg	20 mg	Access to up to 90 mg in the first 8 hours and 250 mg in the first 24 hours may be needed for rare cases ³
Hydroxocobalamin (Cyanokit®)	Cyanide (e.g., salts, smoke inhalation)	10 g	10 g	
Idarucizumab (Praxbind®)	Dabigatran	5 g	5 g	
Insulin and dextrose (High-dose insulin [HDI])	-Calcium channel blockers -Beta blockers	Insulin: 5,000 units regular insulin Dextrose: 20 ampoules (25 g/ampoule) of D50	Insulin: 5,000 units regular insulin Dextrose: 20 ampoules (25 g/ampoule) of D50	Dextrose stocking needs to include concentrated (D20 - D70) preparations to avoid volume overload in HDI
Intravenous Fat Emulsion (e.g., Intralipid®)	-Local anesthetics -Cardiotoxic drugs (eg, bupropion, calcium channel blockers, beta blockers, tricyclic antidepressants)	1,250 mL	1,250 mL	Recommended concentration: 20% solution For drugs other than local anesthetics, use when the patient is peri-arrest, in cardiac arrest, or has failed HDI + 3 vasopressors.

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Antidote	Poison/Condition	≈8-hour expected treatment duration	≈24-hour expected treatment duration	Comments
L-Carnitine (Carnitor®)	Valproic Acid	9 g	15 g	
Methylene Blue	-Methemoglobinemia (e.g. aniline dyes, dapson, local anesthetics, naphthalene, nitrates/nitrites, phenazopyridine [Pyridium®]) -Amlodipine	400 mg	600 mg	For amlodipine, use when the patient has distributive shock refractory to HDI + 3 vasopressors.
Naloxone (Narcan®)	Opioids	20 mg	40 mg	
Octreotide acetate (Sandostatin®)	Sulfonylureas	75 mcg	225 mcg	Intermittent IV boluses at identical doses are a reasonable alternative to subcutaneous doses based on pharmacokinetics.
Physostigmine salicylate (Antilirium®)	Anticholinergic delirium (possible causes: antihistamines, olanzapine quetiapine, plants [e.g., “deadly nightshade”, “jimson weed”])	4 mg	4 mg	Never administer IV push; slow infusion over 5 minutes minimum.

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Phytonadione (Vitamin K ₁)	Vitamin K antagonists (e.g., warfarin, long-acting anticoagulant rodenticides such as brodifacoum)	50 mg	100 mg	Rodenticides may require large Vitamin K doses daily for long term (e.g., 50 mg daily). For these patients consider oral dosing.
Potassium iodide	Thyroid radioiodine protection	130 mg	130 mg	
Pralidoxime (2-PAM®)	Cholinergic toxidrome (organophosphates & nerve agents)	7 g	18 g	Pralidoxime is available in vials (1 vial = 1 g/mL) for IV use or auto-injectors (600 mg/2 mL) for IM use
Protamine sulfate	-Heparin -Low molecular weight heparins (e.g., enoxaparin, dalteparin, etc.)	400 mg	1,200 mg	
Prussian Blue (Radiogardase®)	-Thallium -radioactive cesium	12.5 g	25 g	Intermittently unavailable, sometimes available through Heyl Pharmaceuticals, Distributed via McGuff Compounding Pharmacy Services in Santa Ana, CA. Phone: (1-877) 444-1133 After-hours and on weekends use option #3

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Pyridoxine (Vitamin B6)	-Glutamic acid decarboxylase inhibitors (e.g., isoniazid, <i>Gyromitra</i> sp. mushrooms [false morels]), hydrazine derivatives [rocket fuels]) -Acrylamide	8 g	24 g	
Sodium bicarbonate	-Urine/serum alkalization -Sodium channel blockade on ECG (e.g., TCAs, class I antidysrhythmics, cocaine)	63 g (750 mEq)	84 g (1,000 mEq)	
Sodium Thiosulfate and Sodium Nitrite (Nithiodote®)	Cyanide (e.g. salts, smoke inhalation)	1-2 Nithiodote® kits	1-2 Nithiodote® kits	Hospitals do <i>not</i> need to stock both Nithiodote® and hydroxocobalamin. If choosing between the two, we recommend hydroxocobalamin.
Succimer (Chemet®)	Heavy metals (e.g., As, Pb, Hg)	1,000 mg	3,000 mg	
Thiamine	-Ethylene Glycol -Wernicke's encephalopathy	500 mg	1,500 mg	

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4-Factor Prothrombin Complex Concentrate (4F-PCC e.g., Kcentra®)	Anticoagulant reversal for bleeding from: -Vitamin K antagonists (e.g., warfarin) -DOACs (e.g. rivaroxaban, apixaban, edoxaban, etc.)	5,000 units	5,000 units	For rivaroxaban or apixaban reversal, if andexanet alfa is immediately available, it may be used in lieu of 4F-PCC. ⁴
<p>kg = kilogram; g = grams; mg = milligrams; ECG = electrocardiogram; TCA = tricyclic antidepressant; mEq = milliequivalents; D20 = dextrose 20%; D50 = dextrose 50%; D70 = dextrose 70% (stock solution); IV = intravenous; IM = intramuscular; As = arsenic; Hg = mercury; Pb = lead; Au = gold; CDC = centers for disease control; EMS = emergency medical services; DOACs = direct oral anticoagulants</p>				

Original 2009, Revised 7/2016, 2/2017, 11/2017, 10/2022 CO/JC/SL

REFERENCES

1. Dart RC, Borron SW, Caravati EM, et al. Expert consensus guidelines for stocking of antidotes in hospitals that provide emergency care. *Ann Emerg Med.* 2009;54(3):386-394.e1.
2. Dart RC, Goldfrank LR, Erstad BL, et al. Expert Consensus Guidelines for Stocking of Antidotes in Hospitals That Provide Emergency Care. *Ann Emerg Med.* 2018;71(3):314-325.e1.
3. Howland MH, Smith SW. Glucagon. In: Nelson LS, Howland MA, Lewin NA, Smith SW, Goldfrank LR, Hoffman RS, eds. *Goldfrank's Toxicologic Emergencies, 11th Edition.* McGraw-Hill; 2019:941-944.
4. Baugh CW, Levine M, Cornutt D, et al. Anticoagulant Reversal Strategies in the Emergency Department Setting: Recommendations of a Multidisciplinary Expert Panel. *Ann Emerg Med.* 2020;76(4):470-485.