Toxins, Stings and Anaphylaxis in the Field

Paramedic care for overdoses with a twist, household and street exposures, marine toxins, bites, stings, anaphylaxis and its look-alikes

Medic Basics
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READ THIS FIRST

- Doses: NASEMSO 2022 and FDA labels; follow protocol. BLS steps: emt-by-complaint. Antidotes: toxicology-antidotes.
- Every poisoning: CO detector; 12-lead (QRS, QT), glucose, SpO_2 94-98%, $ETCO_2$; 20 mL/kg for hypoperfusion; bring every bottle and package; note time, amount, extended release.
- Ventilate before naloxone. Nothing by mouth if mental status may fall. Poison center early: 1-800-222-1222.
- A suicide attempt means no capacity to refuse transport (NASEMSO).

OPIOIDS AND SEDATIVES

AGENT	CLUE	PARAMEDIC ACTION
Fentanyl patch	Heat (heating pad, fever) raises absorption	Remove patch and heat; naloxone to breathing; levels fall only 50% in 20-27 h and naloxone may end within 1 h: transport
Incidental fentanyl contact	Alert, anxious, fast breathing, low $ETCO_2$	No naloxone without hypoventilation or low consciousness; wash skin with soap and water
Daily methadone	Long-acting; QT prolongation	Excludes field buprenorphine for withdrawal
GHB ("G")	Sudden coma, slow breathing, no naloxone response	Bag-mask, capnography; expect abrupt waking within hours; no flumazenil
Gabapentin, kidney disease	Drowsy, slurred speech, double vision	Half-life 5-7 h becomes about 52 h; support breathing; dialysis removes it

HIDDEN OR DELAYED DRUG TOXICITY

AGENT	WHY IT FOOLS YOU	DO
Loperamide, high dose	Self-treated withdrawal; wide QRS, long QT, polymorphic VT	Pads; torsades: magnesium 1-2 g IV; no ondansetron
Bupropion extended release	Looks well early	Seizures up to 24 h later: IV, monitor, benzodiazepine ready
Isoniazid (TB drug)	Seizures resisting benzodiazepines, acidosis	Notify early: IV pyridoxine gram for gram, 5 g if unknown
Metformin, large	Normal glucose, deep fast breathing, shock	Fluids; hemodialysis center
Valproate	Lethargy, vomiting, confusion	Hyperammonemia: transport, report the drug
Superwarfarin rat bait	Bleeding gums, hematuria days later	Lasts weeks to months; repeated vitamin K in hospital
Timolol eye drops	New wheeze, slow pulse	Absorbed systemically: albuterol plus ipratropium; report the drops
Disulfiram plus alcohol	Flushing, headache, vomiting, shock	Fluids, then norepinephrine (dopamine may fail)
Methylene chloride stripper	The liver makes CO for hours	100% oxygen and transport; never release on one SpCO

CHILDREN, CAUSTICS AND STREET DRUGS

EXPOSURE	KEY POINT	DO
Laundry pod	Drooling, vomiting, hoarse cough	Upright, nothing by mouth, suction, transport
Oil of wintergreen	Under 5 mL equals about 7,000 mg aspirin	Transport even if well; let a salicylate patient breathe on their own
Nicotine e-liquid	Vomiting, salivation, then slow pulse, low BP, seizures	Benzodiazepine, atropine, airway, fluids
THC edibles	Unexplained sleepy child; red eyes, fast pulse	Supportive; glucose; bring the package
Lye (alkali)	Mouth may look normal; drooling, painful swallowing	Nothing by mouth; no neutralizer, emesis or charcoal; watch the airway
Swallowed drug bag	Poor wrapping leaks; early vitals mean little	Transport; ED observes about 6 h
Wild mushrooms	Symptoms 5 h or more after the meal	Transport even if better; check glucose; bring samples
Cannabinoid hyperemesis	Heavy cannabis use; hot showers help	Fluids; haloperidol or droperidol after QT check; no opioids

FISH AND THE SEA

TOXIN	CLUE	DO
Ciguatera (barracuda, grouper)	GI illness, tingling, hot-cold reversal; slow pulse, low BP	Fluids; symptomatic bradycardia: atropine 1 mg IV q3-5 min (max 3 mg)
Scombroid (tuna, mackerel)	Flushing, headache, itching in 10-60 min; several eaters	Antihistamine; not a fish allergy
Blue-ringed octopus	Painless bite, numb lips, flaccid paralysis	Ventilate now; no antivenom
Jellyfish	Tentacles keep firing	Scrape off, hot water 45 °C; no vinegar for sea nettle or man-of-war
Stingray, lionfish	Puncture, severe pain	Hot water, not scalding (benefit unproven, Merck); irrigate; ED checks for spine fragments

BITES AND STINGS ON LAND

CAUSE	CLUE	DO
Black widow	Cramps spreading to a rigid abdomen, sweating, high BP	Opioid plus benzodiazepine; antivenom hospital if severe
Tick paralysis	Ascending flaccid weakness after outdoors	Search scalp and spine; removal helps within hours
Bee swarm, no allergy	Child: more than 1 sting/kg; dark urine	20 mL/kg fluid, monitor, transport for kidney and muscle tests
Large local reaction	Swelling peaks near 48 h, may fill a limb	Cold pack, oral antihistamine; often mistaken for cellulitis; no epinephrine
Bat in the bedroom	A sleeper may not feel a bite	Contain the bat for testing; same-day rabies evaluation

ANAPHYLAXIS: WHEN TO GIVE EPINEPHRINE

- Skin or mucosa plus breathing trouble, low BP or organ dysfunction; or
- Low BP after a known allergen for that patient (adult SBP under 90); or
- Two or more systems soon after a likely allergen: skin, breathing, persistent GI, low BP or its symptoms.
- Skin signs are absent in up to 40%.
- One system only (hives alone, swelling that spares the airway): allergic reaction. Diphenhydramine; keep epinephrine ready.

SAFETY Epinephrine is first-line (NASEMSO). Never wait for an IV, antihistamine or steroid.

ANAPHYLAXIS DRUGS (NASEMSO)

DRUG	DOSE	NOTE
Epinephrine 1 mg/mL IM	0.3 mg at 25 kg or more; 0.15 mg under 25 kg; thigh	Repeat q5-15 min; EpiPen label: 0.3 mg from 30 kg
Isotonic fluid	20 mL/kg over 15 min, repeat	Hypoperfusion
Albuterol or nebulized epinephrine	Albuterol 2.5-5 mg; epinephrine 1 mg/mL, 5 mL	Wheeze; stridor: nebulized epinephrine
Epinephrine infusion	Per protocol	After repeated IM doses and 60 mL/kg
Diphenhydramine	1 mg/kg, max 50 mg	Hives, itching; H2 blocker optional
Glucagon (Merck)	1-5 mg IV over 5 min	Beta-blocked, poor epinephrine response

Remove the trigger: stop the infusion, change to nonlatex gloves, get a stinger out at once without squeezing the sac. Steroids have no proven benefit.

LOOK-ALIKES AND SPECIAL CASES

SITUATION	POINT
Faint after an injection	Pale, clammy, slow pulse, recovers lying flat: monitor, epinephrine at hand. Anaphylaxis: fast pulse, hives or wheeze
ACE-inhibitor angioedema	Lips and tongue, no hives; epinephrine, steroids and antihistamines unproven: early transport, expect a difficult airway
Hereditary angioedema	Family history, swelling, belly pain; allergy drugs not shown to work; C1 inhibitor or icatibant
Latex (spina bifida)	Reaction after gloves or catheter: nonlatex gloves, remove latex items
Expired auto-injector	If it is the only one: use it if the solution is clear
Auto-injector into a thumb	Pale, cool digit: keep warm, ED now (phentolamine used in one case report)
After recovery	Can return hours later: everyone given epinephrine goes to hospital

Sources (45) are listed with links at medicbasics.com/sheets/toxins-stings-anaphylaxis.html. For education and exam preparation only. Not medical advice; follow current guidelines and your institution's protocols. Medic Basics is an independent study aid not affiliated with any certifying body.