

SELECTED POISONS BLOCK Q

TOXIDROMES • ANTIDOTES • MANAGEMENT

KMU FINAL YEAR MEDICINE

THE "RAPID RECALL" ANTIDOTE TABLE

| Poison | Antidote / Key Management | Classic Sign |
|---------------------------|--------------------------------|--|
| Acetaminophen | N-Acetylcysteine (NAC) | Liver Failure (Late) |
| Organophosphates | Atropine + Pralidoxime | Pinpoint pupils + Wet everywhere |
| Benzodiazepines | Flumazenil (Use with caution!) | Coma with Normal Vitals |
| Opioids | Naloxone | Pinpoint pupils + Respiratory depression |
| Methanol | Fomepizole or Ethanol | Blindness ("Snowstorm vision") |
| Carbon Monoxide | 100% Oxygen (Hyperbaric) | Cherry Red Skin |
| Snake Bite (Viper) | Anti-Venom | Bleeding / Non-clotting blood |

1. ACETAMINOPHEN (PARACETAMOL)

⚠ THE LIVER KILLER

Toxic Dose: >150 mg/kg (or 7-10g in adults).
Mechanism: Depletion of Glutathione → Accumulation of toxic NAPQI.
The 4 Hour Rule: Do NOT check levels before 4 hours post-ingestion. Plot on Rumack-Matthew Nomogram.
Rx: N-Acetylcysteine (NAC). Most effective if given within 8 hours.

5. ALCOHOLS (THE GAP ACIDOSIS)

Methanol (Wood Alcohol):

- Metabolized to **Formic Acid**.
- Key Sign:** **Blindness** / Visual disturbances ("Snowstorm").
- Labs:** High Anion Gap Metabolic Acidosis.

Ethanol (Drinking Alcohol):

- CNS depression, Hypoglycemia (in kids/malnourished).

Management: **Fomepizole** (inhibits Alcohol Dehydrogenase) or Ethanol infusion (competes with methanol).

2. THE "WET" POISON (INSECTICIDES)

Organophosphates / Carbamates

Mechanism: Inhibits Acetylcholinesterase → Too much Acetylcholine (Cholinergic Crisis).

Mnemonic: DUMBELS (Leak from everywhere)

- Diarrhea / Diaphoresis (Sweating)
- Urination
- Miosis (Pinpoint Pupils)
- Bradycardia / Bronchorrhea (Lung secretions - Killer!)
- Emesis (Vomiting)
- Lacration
- Salivation

Rx: **Atropine** (dries secretions) + Pralidoxime.

6. STIMULANTS VS DEPRESSANTS

Stimulants (Cocaine / Amphetamines):

- Sympathetic Overdrive:** Tachycardia, Hypertension, Dilated Pupils (Mydriasis), Agitation, Hyperthermia.
- Complication:** MI, Stroke, Rhabdomyolysis.
- Rx:** Benzos for agitation. **NO Beta-Blockers** (causes unopposed alpha constriction → HTN crisis).

Depressants (Benzodiazepines):

- Coma, Hypotonia, but usually **Normal Vitals** (unlike Opioids which stop breathing).
- Rx:** Supportive. Flumazenil (Antidote) - *Warning: Can cause seizures in chronic users.*

3. THE "DRY" POISON (ANTICHOLINERGICS)

Atropine / Datura / Tricyclics

Mnemonic: "The Mad Hatter"

- Blind as a Bat (Dilated pupils/Mydriasis).
- Dry as a Bone (No sweat/saliva).
- Red as a Beet (Flushing).
- Hot as a Hare (Hyperthermia).
- Mad as a Hatter (Confusion/Delirium).

Rx: Physostigmine (rarely used), Benzodiazepines for agitation.

7. SNAKE BITE (ENVENOMATION)

Vipers (Hemotoxic):

- Local swelling, necrosis.
- Bleeding:** Systemic bleeding (Gums, Hematuria). Prolonged PT/PTT.
- Test:** 20 Minute Whole Blood Clotting Test (WBCT20). If blood doesn't clot → Give Anti-venom.

Cobras/Kraits (Neurotoxic):

- Ptosis (drooping eyes), Paralysis, Respiratory failure.
- Minimal local swelling.

4. CARBON MONOXIDE (CO)

Source: Gas heaters, fires, exhaust.

Pathology: CO binds Hemoglobin 200x stronger than O₂. Shifts curve to Left (Oxygen trapped).

Signs: Headache ("Flu-like" in winter), Confusion, **Cherry Red Skin** (Post-mortem finding, rare in life).

Pulse Oximeter: Shows NORMAL (Falsely high) because it reads CO-Hb as Oxy-Hb.

Rx: 100% Oxygen (decreases CO half-life).

8. CLINICAL SCENARIOS

Q: Farmer found unconscious in field. Pupils pinpoint. Profuse sweating and drooling. Muscles twitching.

Organophosphate Poisoning. Give Atropine until chest clears (secretions dry up).

Q: 20yo male, agitated, BP 180/110, Dilated pupils. Chest pain.

Cocaine/Amphetamine. Do NOT give Beta Blockers. Give Benzos.

Q: Patient drank "homemade liquor". Now complains of blurred vision and severe abdominal pain.

Methanol Poisoning. High Anion Gap Acidosis. Needs Fomepizole/Dialysis.

APPROACH TO POISONING

RESUSCITATION • DIAGNOSIS • DECONTAMINATION

KMU FINAL YEAR MEDICINE

1. THE GOLDEN RULE

⚠ TREAT THE PATIENT, NOT THE POISON

- A:** Airway (Protect it! GCS < 8 = Intubate).
- B:** Breathing (O₂ Saturation, Respiratory Rate).
- C:** Circulation (IV access, Fluids for hypotension).
- D:** Disability (GCS, Pupils, Glucose).
- E:** Exposure (Remove contaminated clothes).

2. THE COMATOSE PATIENT (EMPIRIC RX)

"The Coma Cocktail" (DONT)

If patient is unconscious with unknown cause, give:
D: **Dextrose** (Hypoglycemia mimics everything).
O: **Oxygen** (Hypoxia kills fastest).
N: **Naloxone** (Opioid reversal - pinpoint pupils).
T: **Thiamine** (Before Dextrose in alcoholics to prevent Wernicke's).

3. DIAGNOSIS: THE TOXIDROME HUNT

Step 1: Look at the Pupils

- **Pinpoint:** Opioids, Organophosphates, Clonidine.
- **Dilated:** Cocaine, Amphetamines, Anticholinergics (Atropine).

Step 2: Look at the Skin

- **Wet/Sweaty:** Sympathomimetics (Cocaine), Organophosphates.
- **Dry/Hot:** Anticholinergics ("Dry as a bone").
- **Red/Cherry:** Carbon Monoxide.
- **Blue (Cyanosis):** Methemoglobinemia.

4. DIAGNOSIS: THE NOSE (ODORS)

| Odor | Suspect Poison |
|----------------|----------------------------|
| Bitter Almonds | Cyanide |
| Garlic | Organophosphates / Arsenic |
| Rotten Eggs | Hydrogen Sulfide |
| Fruity | DKA / Isopropanol |

5. DECONTAMINATION (GET IT OUT)

1. Activated Charcoal (The Universal Binder):

- **Dose:** 1g/kg.
- **Timing:** Best within **1 hour** of ingestion.
- **Useless for:** Metals (Iron/Lithium), Alcohols, Corrosives.

2. Gastric Lavage ("Stomach Pump"):

- **Indication:** Life-threatening poison within **1 hour**.
- **Contraindication:** Corrosives (burns coming up), Hydrocarbons (aspiration).

3. Whole Bowel Irrigation (PEG solution):

- For "Body Packers" (drug mules) or Iron tablets (don't bind to charcoal).

6. ENHANCED ELIMINATION (DIALYSIS)

Who needs Hemodialysis? "I STUMBLE"

- **I:** Isopropanol
- **S:** Salicylates (Aspirin) - *Common exam Q*
- **T:** Theophylline
- **U:** Uremia
- **M:** Methanol
- **B:** Barbiturates
- **L:** Lithium
- **E:** Ethylene Glycol

7. THE ANION GAP (MUDPILES)

Calculation: Na - (Cl + HCO₃). Normal = 8-12.

High Gap Metabolic Acidosis (>12):

- Methanol
- Uremia
- DKA
- Paraldehyde
- Iron / Isoniazid
- Lactic Acidosis
- Ethylene Glycol
- Salicylates

8. CLINICAL SCENARIOS

Q: Patient found comatose. RR 6/min. Pupils pinpoint. Needle tracks on arm.

Opioid Overdose. Give Naloxone immediately (Diagnostic & Therapeutic).

Q: 20yo female, took bottle of pills. Ringing in ears (Tinnitus), hyperventilating. ABG shows Respiratory Alkalosis + Metabolic Acidosis.

Salicylate (Aspirin) Poisoning. Alkalinize urine. Dialysis if severe.

Q: Comatose alcoholic. Glucose is normal. What do you give first?

Thiamine. Before any glucose containing fluids to prevent Wernicke's Encephalopathy.