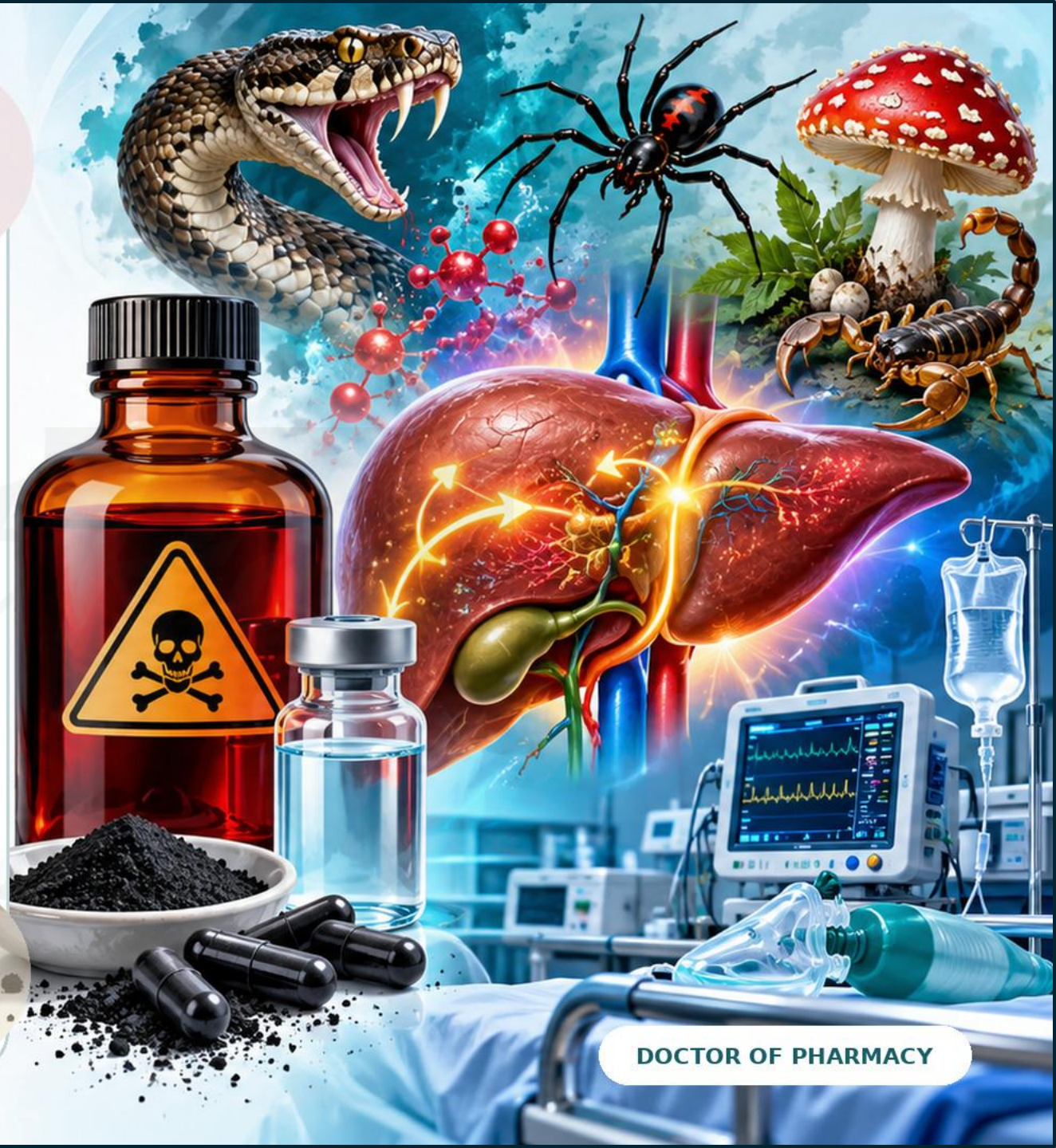
PHARM.D • YEAR 4

Clinical Toxicology

CHAPTER 5

Elimination Enhancement

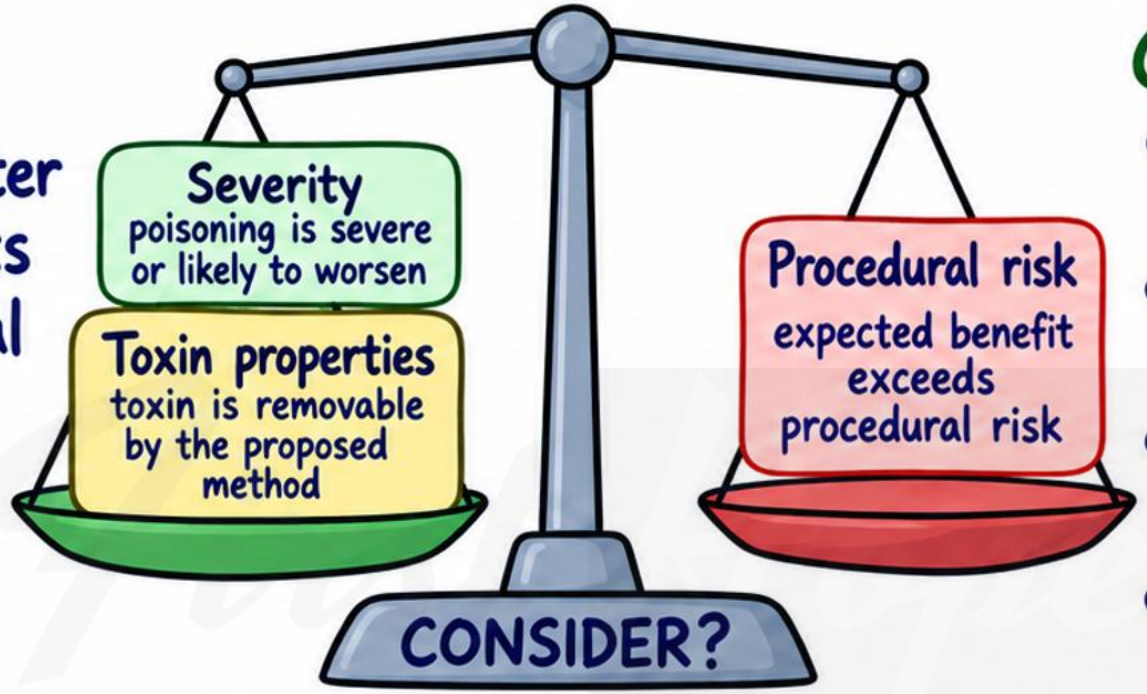
PPT CHAPTER COVER



DOCTOR OF PHARMACY

Enhanced elimination: when and why

Enhanced elimination accelerates removal after absorption or interrupts ongoing gastrointestinal re-entry.



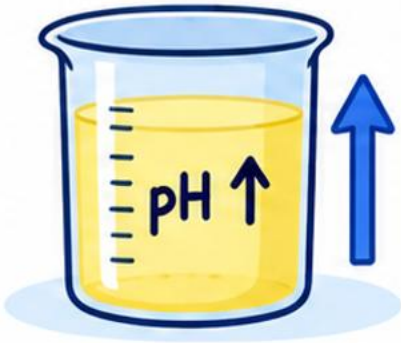
Consider only when:

- poisoning is severe or likely to worsen,
- the toxin is removable by the proposed method,
- expected benefit exceeds procedural risk,
- supportive care and antidotes are already addressed.

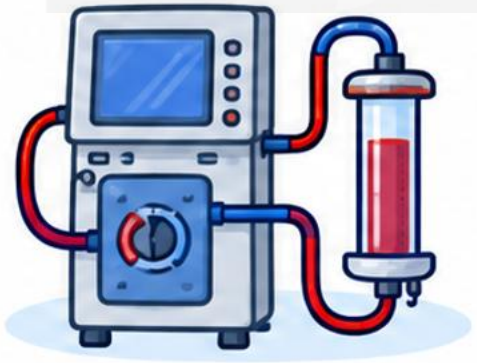
Options include:



multiple-dose charcoal



urinary alkalinization



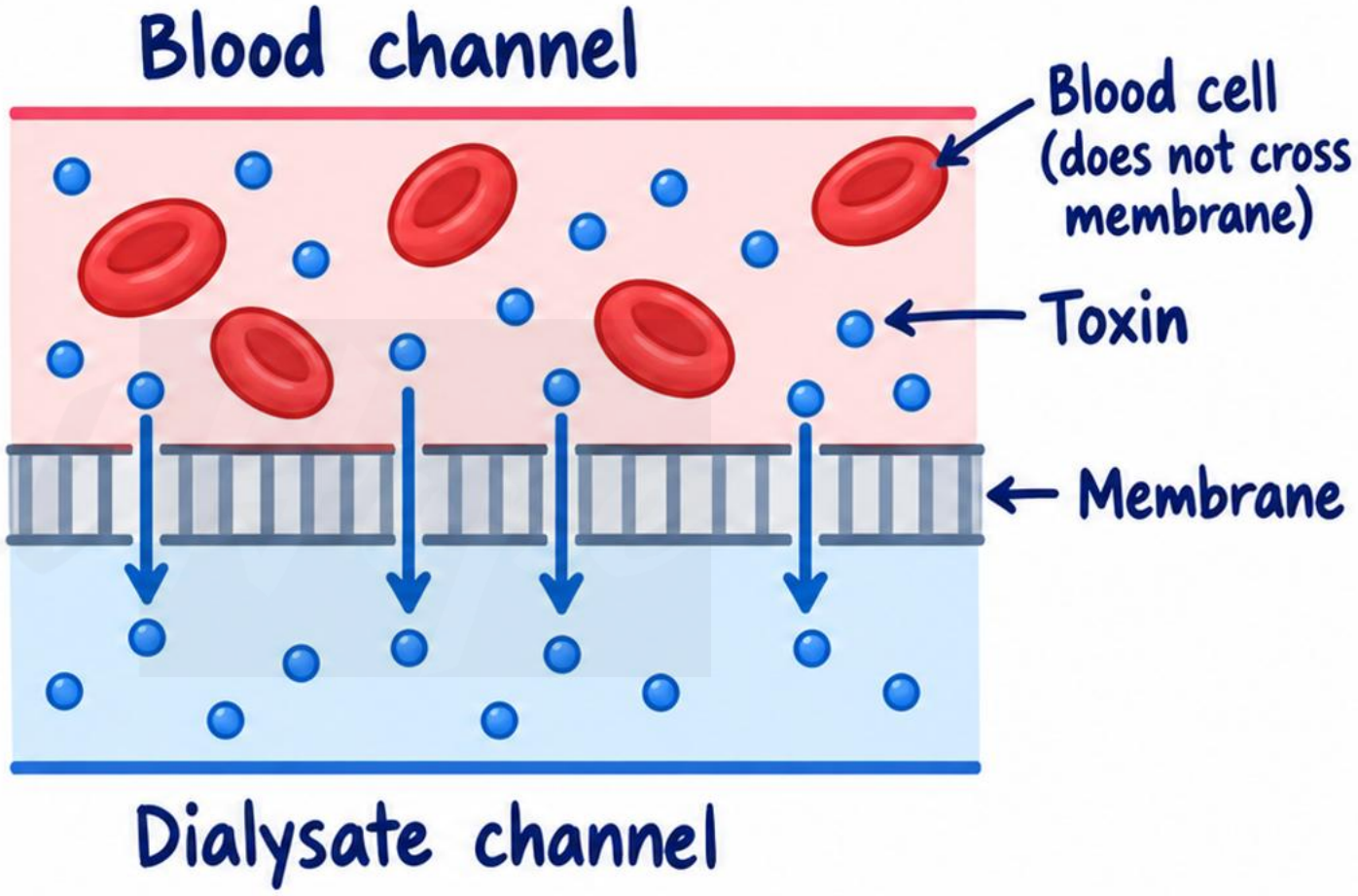
extracorporeal treatments

Decisions are toxin-specific—not based on one laboratory number alone.

Toxin properties that favor dialysis

MORE DIALYZABLE

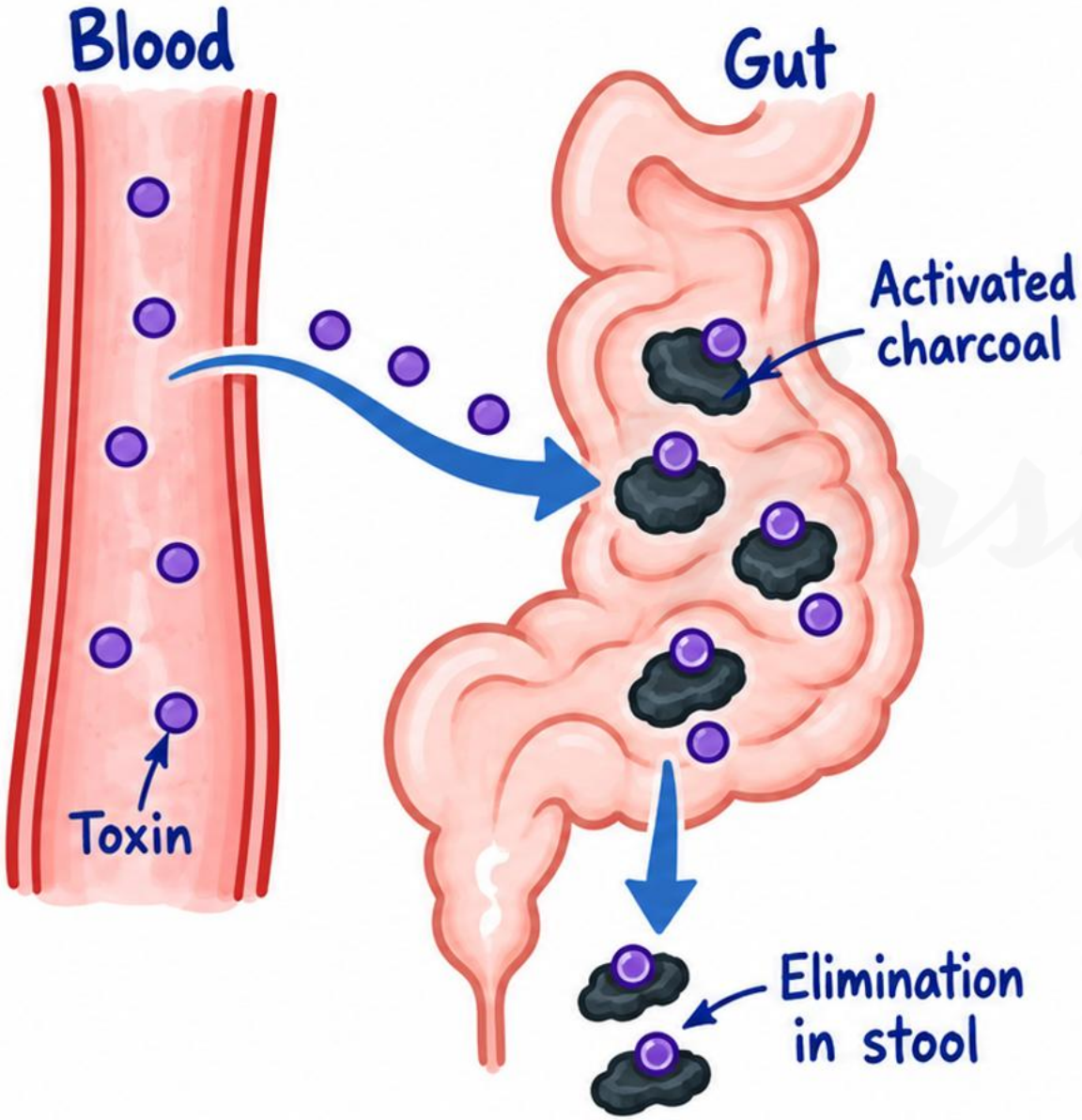
- small molecular size
- low apparent volume of distribution
- water soluble
- limited tissue binding
- lower protein binding
- substantial extracorporeal clearance



Clinical severity and endogenous clearance also matter.

Important exception: some highly protein-bound drugs become dialyzable in overdose when binding saturates or modern high-flux techniques are effective.

Multiple-dose activated charcoal



Repeated charcoal can enhance elimination by:

- interrupting enterohepatic or enteroenteric cycling,
- promoting diffusion from blood into the gut.

Classically considered for:

- carbamazepine,
- dapsone,
- phenobarbital,
- quinine,
- theophylline.

Use only with a protected airway and functioning gut.

Watch for vomiting, aspiration, ileus, bowel obstruction and fluid disturbance.

Urinary alkalinization

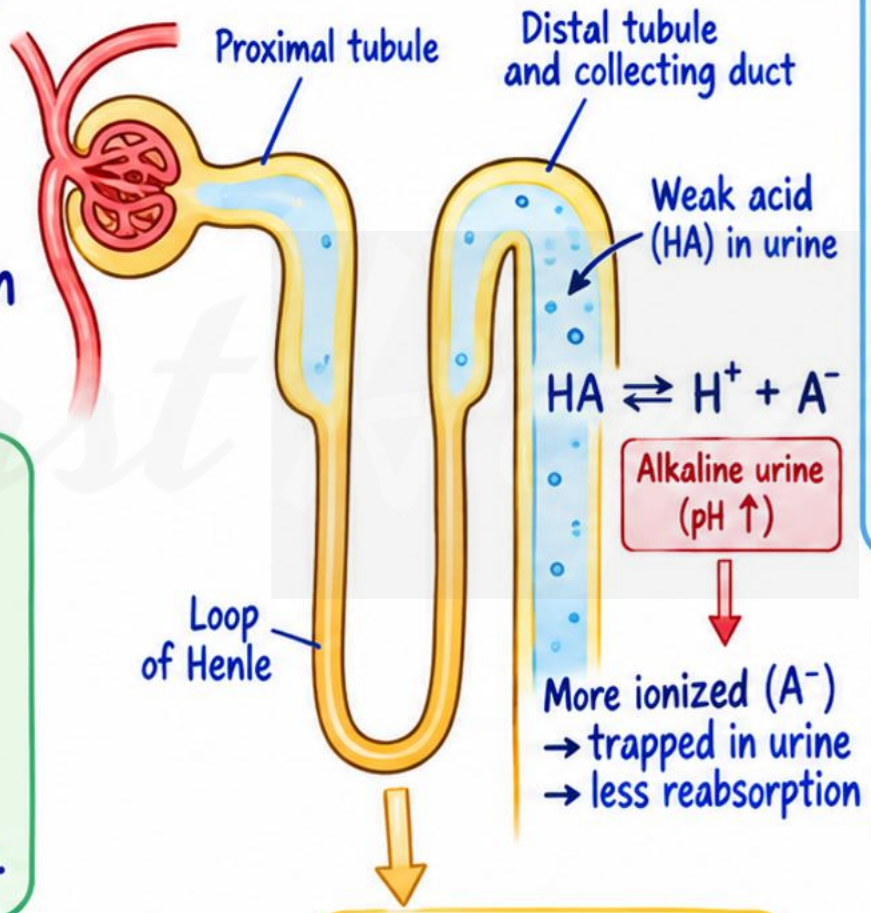
- Sodium bicarbonate raises urine pH and traps weak acids in ionized form.
- Best-established use: significant salicylate poisoning.
- May enhance phenobarbital elimination in selected cases.

Monitor:

- serum and urine pH,
- potassium,
- sodium and bicarbonate,
- fluid balance,
- clinical status and toxin concentrations.

Hypokalemia makes urine alkalinization difficult.

Ion trapping in the nephron



Monitoring



- serum and urine pH
- potassium
- sodium and bicarbonate
- fluid balance
- clinical status and toxin concentrations.

Severe salicylate criteria present?

Yes

Do not delay hemodialysis when severe salicylate criteria are present.

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