

Gut Decontamination

Introduction to Gut Decontamination

Definition

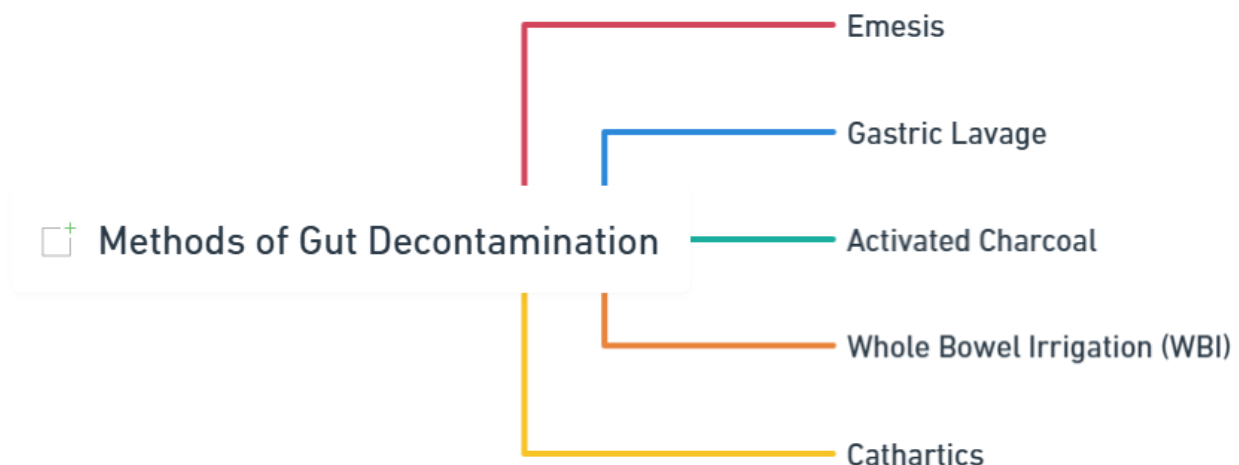
- Gut decontamination refers to a set of therapeutic procedures used in the management of poisoning, aimed at limiting the absorption of toxins that have been ingested via the gastrointestinal (GI) tract.
- It is primarily used in acute oral poisonings to reduce systemic toxicity.
- These techniques are often employed early after ingestion, typically within 1–2 hours, depending on the substance, its formulation (immediate vs sustained release), and the patient's clinical status.

Objectives of Gut Decontamination

- Prevent further absorption of the toxin into the bloodstream
- Minimize systemic toxicity
- Facilitate elimination of the poison
- Improve clinical outcomes by reducing the need for intensive interventions

Methods of Gut Decontamination

The main techniques used in clinical practice include:



Technique	Purpose	Route
Emesis (rarely used now)	Induce vomiting	Oral
Gastric Lavage	Remove gastric contents	Orogastric
Activated Charcoal	Adsorb toxins	Oral / NG tube
Whole Bowel Irrigation (WBI)	Flush entire GI tract	Oral / NG tube
Cathartics	Increase GI motility (used adjunctively)	Oral

Detailed Explanation of Each Method

A. Ipecac-Induced Emesis (*Obsolete in most guidelines*)

- Involves the oral administration of syrup of ipecac to induce vomiting.
- Previously used to expel ingested substances from the stomach.
- **No longer recommended** due to:
 - Ineffectiveness in improving clinical outcomes
 - Risk of aspiration, delayed hospital presentation, and poor tolerability
- **Status:** Obsolete in modern toxicology practice.

B. Gastric Lavage ("Stomach Pumping")

Procedure:

- Involves the insertion of a large-bore orogastric tube into the stomach.
- Repeated aliquots of warm saline (200–300 mL) are instilled and aspirated until returns are clear.

Time frame:

- Most effective if performed within 1 hour of ingestion.

Indications:

- Life-threatening ingestions (e.g., tricyclic antidepressants, calcium channel blockers)
- Large ingestions where no antidote is available

Contraindications:

- Unprotected airway or decreased level of consciousness without intubation
- Corrosive ingestion
- Hydrocarbon ingestion (e.g., kerosene)
- Risk of GI perforation

Complications:

- Aspiration pneumonia
- Laryngospasm
- Electrolyte disturbances
- Mechanical injury (esophageal/gastric)

Current stance:

- **Rarely used;** considered in **very specific life-threatening cases only.**

C. Activated Charcoal (AC)

Mechanism:

- Activated charcoal is a fine black powder with high surface area, capable of adsorbing many drugs and toxins, preventing their absorption from the GI tract.

Dose:

- Adult: 50–100 grams orally or via NG tube
- Pediatric: 1 g/kg (up to 50 g)

Timing:

- Most effective within 1 hour of ingestion.
- May be useful beyond 1 hour in:
 - Delayed gastric emptying
 - Extended-release formulations
 - Drugs that undergo enterohepatic circulation

Not adsorbed by AC:

- Acids, alkalis
- Iron
- Lithium
- Alcohols (ethanol, methanol, ethylene glycol)

Contraindications:

- Altered mental status without airway protection
- Intestinal obstruction or perforation
- Risk of aspiration

Complications:

- Aspiration (especially in unconscious patients)
- Constipation
- Vomiting

Multi-dose activated charcoal (MDAC):

- Used to enhance elimination of toxins with enterohepatic recirculation (e.g., theophylline, carbamazepine, phenobarbital, dapsone)
- Dosing: Initial dose 50–100 g, followed by 25–50 g every 4–6 hours

D. Whole Bowel Irrigation (WBI)

Mechanism:

- Involves administration of large volumes of osmotically balanced polyethylene glycol electrolyte solution (PEG-ELS) orally or via NG tube until rectal effluent is clear.

Dose:

- Adults: 1.5–2 L/hour
- Children: 25–40 mL/kg/hour

Indications:

- Ingestion of sustained-release or enteric-coated drugs
- Ingestion of substances not adsorbed by activated charcoal (e.g., iron, lithium)
- Body packers (drug smugglers) or body stuffers (accidental ingestion)

Contraindications:

- Bowel obstruction
- Perforation
- Hemodynamic instability
- Intractable vomiting

Complications:

- Abdominal bloating
- Vomiting
- Aspiration (if airway not protected)

E. Cathartics (*No longer routinely used*)

- Agents such as sorbitol or magnesium citrate were previously added to activated charcoal to speed transit of the toxin through the GI tract.
- **Not routinely recommended** today due to:
 - No proven clinical benefit
 - Risk of dehydration and electrolyte disturbances

Selection of Gut Decontamination Method

Situation	Recommended Decontamination
Within 1 hour of ingestion	Activated charcoal (if toxin is adsorbed)
Sustained-release or enteric-coated drug	AC or WBI
Iron or lithium overdose	WBI
Body packer	WBI



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