Drug Toxicology

By

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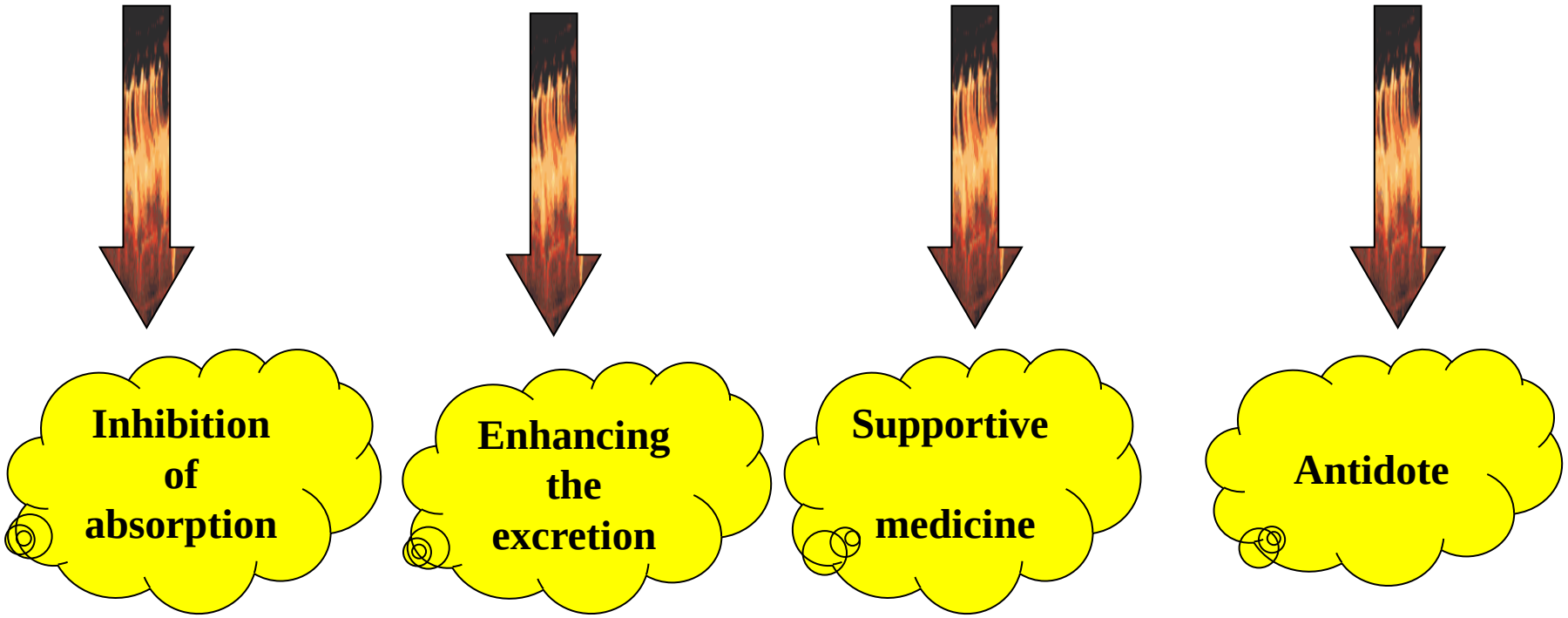
General strategy of poisoning treatment



1- Inhibition of absorption

vomiting animals

Sodium chloride

Copper sulphate

Apomorphine

Stomach lavage

-Is done as early as possible while the poison is still in the stomach

- Do not use in case of corrosives

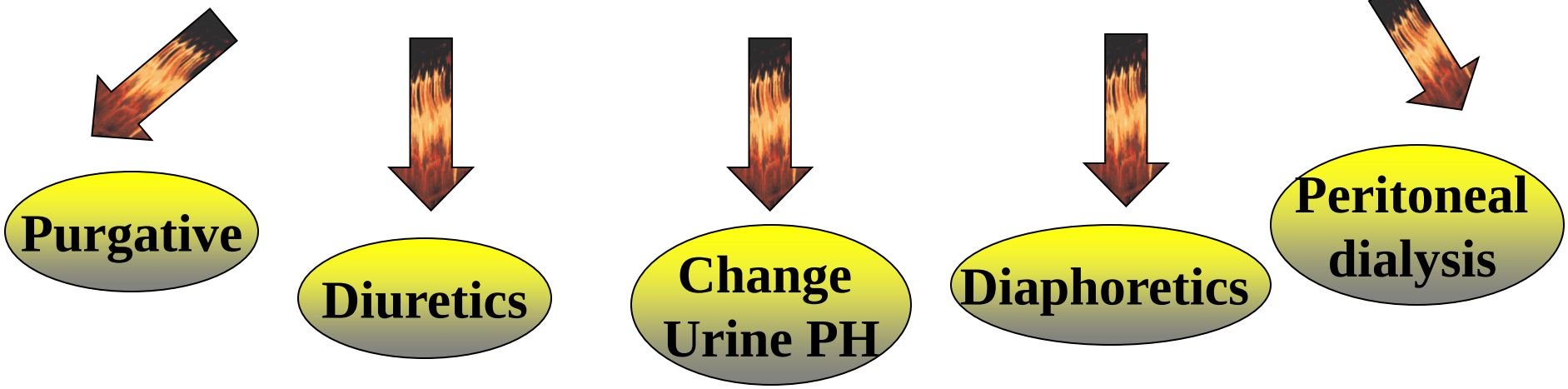
- It can be used at late time in case of morphine and arsenic poisoning (they are excreted in the stomach)

Emesis

* Not use apomorphine in case of CNS depressant.
* Not use emetics in case of corrosives you may perforate the esophagus or the stomach.

*Not use in case of the poisons that anaesthetize the stomach like the carbolic acid (phenol)

2- Enhancing the excretion



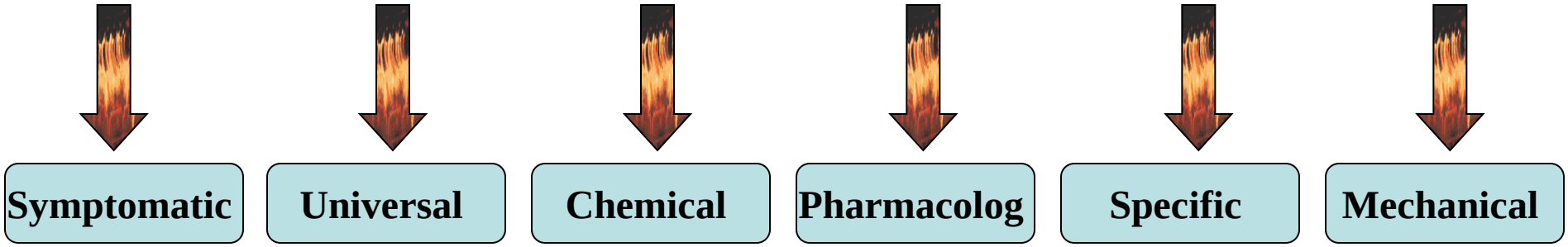
- **Using purgatives** like laxatives or in horse it is good to give cholinergic stimulant like arecoline and pilocarpine.
- **Using diuretics** as extra fluid infusion, caffeine or even strong diuretic .
- **Changing the urine pH** to favor the excretion of the poison:
  - * In case of **acidic drugs** like sulphonamides they are ionized in an alkaline pH so we can trap them in the alkaline urine by using NaHCO3
  - * In case of **alkaline drugs** like amphetamine is ionized and get trapped in the acidic urine so use **ammonium chloride** to lower the urine pH.
- **Using diaphoretics** like pilocarpine for dogs in case of poisoning with chemicals excreted in the sweat (potassium iodide is excreted in the sweat).
- **Peritoneal dialysis in small animals** by injecting physiological ringers solution intraperitoneally and remove it after 30 minutes.

3- Supportive medicine

- **Maintenance of the cardiovascular function:**
  - *** IV of physiological fluids or plasma if in case of shock.**
  - *** Administration of glucocorticoids**

- **Maintenance of the respiratory function:**
  - *** Mechanical ventilation**
  - *** endotracheal intubation.**
  - *** High oxygen chamber in of case gases suffocation**
- **Maintenance of body temperature in case of comatosed or sedated animals by using hot pads, blankets or heating lamps.**

4- Administration of antidote



1- Symptomatic antidote

to prevent the general symptoms to appear on the animals:

* Antiemetics in vomiting.
* Astringents in diarrhea.
* Stimulants in depression.
* Artificial respiration in collapse.
* CNS depressant in case of excitement, convulsion and sedation.

2- Universal antidote:

2 parts activated charcoal powder,

one part tannic acid and

one part magnesium oxide.

Take 15 gm in a half a gallon of worm water.

3- Chemical antidote

by chemical precipitation, neutralization or decomposition

* starch for iodine

* lemon juice for strong alkali

* dilute ammonia water for strong acids.

4- Pharmacological antidotes

to counteract the pharmacological effect of the poison

* atropine for physostigmine
* barbiturates for strychnine.

5- Specific antidote

* mephnisine in case of strychnine,
* nalorphine in case of morphine
* 2-PAM in case of OP.

6- Mechanical antidote

•**Entanglers**: as cotton ball and high fiber ration in case of sharp objects

•**Magnetic bar** is used to keep a nail in the reticulum of the cattle to avoid reticulo-pericarditis when a cattle swallow a nail.

• **Charcoal** adsorbs poisonous gases on its surface in the intestine and getting it out with the feces without absorption.

Chelating agents:

are materials that bind with the poisons and form inactive poorly dissociating complexes known as chelats.

*** Dimercaprol, British Anti Lewisite (BAL)**

provides 2 –SH groups to bind to the heavy metals (arsenic, mercury and cadmium) and make the –SH containing enzymes free from the metals.

*** Penicillamine**

to chelate copper, mercury, zinc and lead.

*** Sodium calcium edetate**:

used in case of lead poisoning and chelating the radioactive metals, and plutonium.

*** Desferrioxamine:** for the ferric iron

*** Sodium ferrocyanide** for ferrous iron.


THANKS