

# Management of acute poisoning in children

*PLS Course*  
**Sri Lankan College of Paediatricians**



# Case History

- 4 years
- Chemical type – Unknown
- Amount
- Route
- Time
- Highly anxious parents

**?? Significant  
Poison**

# STEPS IN THE MANAGEMENT

- Relive anxiety
- ABCD
- **Reducing** drug absorption
- Enhancing **drug elimination**
- **Detoxification** – Antidotes
- Supportive care

# PELS Approach

## “The Blueprint”

- Triage
- Initial Stabilisation
  - Position
  - Airway
  - Breathing
  - Circulation
  - Disability
  - Measurement
  - Monitoring
  - Reassess
- Directed History and Examination and Ix –
  - Reassess
- Commence Specific Treatment
- Ongoing Care

# Initial Stabilisation

- **Triage?** / Relive anxiety
- **Position** – supine
- **Airway**
  - simple manoeuvre
  - any reason to consider intubation?
- **Breathing** – assess the adequacy and support as necessary

# Initial Stabilisation

- **Circulation** – bradycardia and the relative systolic hypotension. What do we do?
- **Disability** – even though GCS>8 would there be any reason to consider intubation?

# Directed History

- **What / when / why?**
- **Previous presentations**
- **Past history**
  - psychiatric
  - medical
- **History is usually reliable however**
  - Depends on parents or bystander
  - somebody at home may be on medications
- **Exceptions** – teenager patient

# Tests

- **For the drug – Blood / urine levels**
- **For the complications**
- **For co-morbidity**



# Specific Treatment

- **Reducing** drug absorption
- Enhancing **drug elimination**
- **Detoxification** – Antidotes
- Supportive care

# Reducing Drug Absorption

- **Surface irrigation**
- **Gastric emptying**
  - emesis(**no longer practiced**)
  - lavage
- **Reduce Adsorbent agent**
  - activated charcoal
- **Whole bowel irrigation**

# Reducing Drug Absorption

## Gastric lavage

- ✓ Effective within 2hr of poisoning
- ✓ Airway Protection should be ensured
- ✓ L/lateral, Head down position
- ✓ wide bore OG tube ( >24G)
  - position accurately confirmed
- ✓ Oral airway to prevent biting
- ✓ N Saline 10-20 ml/kg (5ml/kg, 3 cycles)
- ✓ continue till effluent is clear

**unproven efficacy,  
high complications,  
“socially rewarding”**



# Reducing Drug Absorption

## Single dose

### *Activated Charcoal*

- ✓ **Effective within 2hr of poisoning**
  - ( Except for substances with delayed gastric emptying)
- ✓ Dose 1g/kg – Drinking / via OG/NG
- **Use selectively - Ineffective for:**
  - Fe, Li, Hg, CN, other heavy metals
  - acids, alkalis, alcohols

# Reducing Drug Absorption

## Whole Bowel Irrigation

- **labour intensive**
- **Polyethylene glycol**
- **Dose** 15-30 ml /kg/ hr –via NG tube
- **Indications**  
Iron, Lithium, ingested button batteries, ingested illicit drug packets Overdose of sustained release/enteric coated drugs

**Until effluent is clear ( Mean duration 4 hrs)**

# Enhancing drug elimination

- **Forced urinary alkalinisation / enuresis**
- Saline diuresis
- Multiple dose charcoal
- **Dialysis**
- Extracorporeal removal of drugs:
  - haemodialysis
  - charcoal haemoperfusion

# Multiple dose activated charcoal

- ✓ Enhances elimination of poisons by either interrupting the entero-enteric or entero-hepatic circulation.
- ✓ May reduce absorption of controlled release drugs and oleander seeds.
- ✓ Dose 1-2 g/kg – Drinking / via OG/NG
- ✓ Dose repeated every 4 hours

# Detoxification - *Antidotes*

- Naloxone
- N-acetylcysteine
- Oxygen
- Digoxin Fab fragment
- Methylene blue
- Desferrioxamine
- Atropine / pralidoxime
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# Detoxification - *Antidotes*

- Beta blockers – Glucagon
- Benzodiazepines – Flumazenil
- Ca Chan.blockers – CaCl<sub>2</sub>
- Copper – Penicillamine
- CO – O<sub>2</sub>
- Chloroquine – Diazepam
- Clonidine – Naloxone
- Cyanide – Sodium Thiosulphate
- Digoxin – Atropine, Digibond
- Ethylene Glycol – Ethanol
- Fluoride – Ca gluconate



# Detoxification - *Antidotes*

- Heparin
  - Iron
  - Isoniazid
  - Lead
  - MethHb
  - Methanol
  - Methotrexate
  - Narcotics
  - OP
  - PCM
  - TCA
- Protamine
  - Desferrioxamine
  - Pyridoxine
  - Penicillamine
  - Methyline blue
  - Ethanol
  - Folinic acid
  - Naloxone
  - Atropine , Pralidoxime
  - NAC
  - Alkalinization



# Common poisonings in children

- **Drugs - Paracetamol, Iron, Mercury, .....**
- **Agrochemicals**
  - **Insecticides – OP**
  - **Weedicides**
- **Rodenticides – rat poisons**
- **Plants**
- **House hold chemicals**

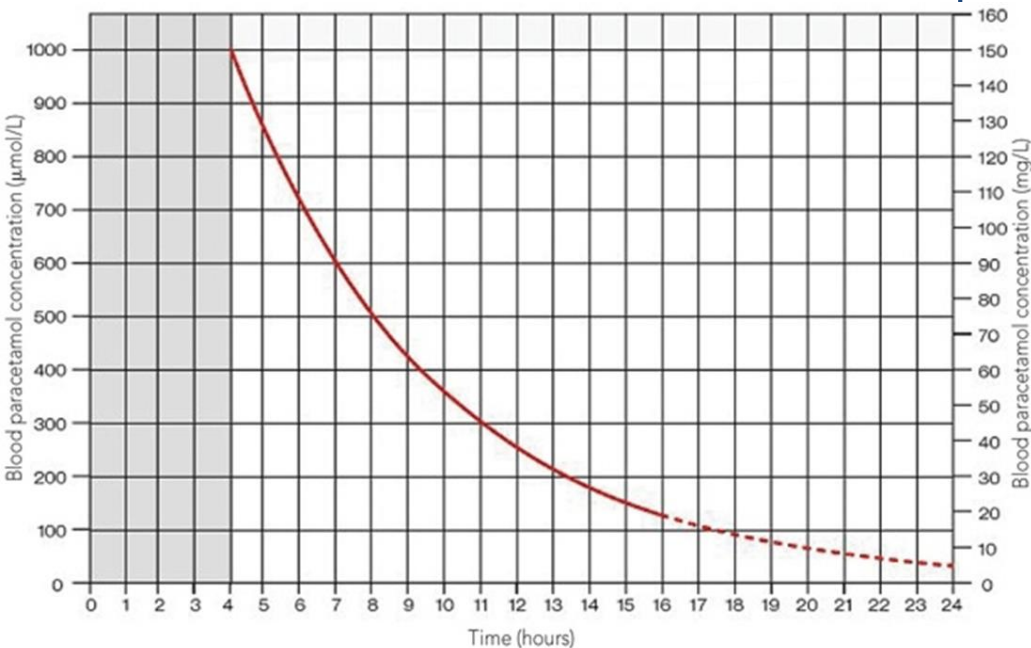
# ACUTE PARACETAMOL poisoning

## Clinical scenario

- Acute large ingestion >200mg/kg
- Repeated supra-therapeutic dose ingestion

## Investigations & Management

- PCM level at 4 hrs after ingestion
- LFT
- Clotting profile



➤ NAC,

➤ Methionine

# PLANTS

- Oleander කන්රු (Arrhythmias, Hyperkalaemia)
- Datura අත්තන (Anticholinergic)
- Abrus මළිඳු (Shock, Haemolysis)
- **Hondala** (Necrotizing enteritis, liver failure)
- Ricinus / Jatropa එබරු (GI symptoms, hypoglycaemia)
- Gloriosa නියහලා (GI, Blood disorders, cardiac, neuro, hepatic, renal)
- Difenbachia හබරල (Corrosive effects)

# MERCURY

## Clinical scenario

- Elemental mercury
  - Ingestion
  - Inhalation
- Organic mercury
- Inorganic mercury
  
- **GI symptoms,**  
Neurological symptoms,
- Renal failure,
- Shock

## Investigations & Management

- ✓ **Activated charcoal,**
  
- ✓ **Penicillamine**

# Hydrocarbons

## Clinical scenario

- Volatile / Liquid
- High risk of aspiration -  
> aspiration pneumonia

## Investigations & Management

- ✓ No gastric lavage
- ✓ ? Use of steroids
- ✓ Antibiotics

# House hold chemicals

- **Detergents**
- **Cosmetics**
- **Hydrocarbons**
- **Vehicle maintenance chemicals**
- **Insect repellants**



# *Example of a Toxidrome*

**Cholinergic =**

**DUMBELS**

- **D** iarrhoea
- **U** rination
- **M** ioiosis
- **B** ronchorrhoea, bradycardia, bronchospasm
- **E** mesis
- **L** acrimation
- **S** alivation

**MUSCARINIC**

- **H** ypertension
- **T** achycardia
- **M** ydriasis
- **F** asiculation

**NICOTINIC**



A

B

C

D

E

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**SUPPORTIVE CARE**



# Important Points

The most common error in the management of a poisoned patient is inadequate management of airway, breathing or circulation

Emesis is no longer part of the in-hospital management of a poisoned patient

Seek expert advice early in regard to antidote use

- National Hospital Poisons Centre

# Important Points

- Gastric lavage is of unproven efficacy, complication fraught if the patient not intubated
- Activated charcoal is an important decontamination method, but is not always indicated
- Whole bowel irrigation is useful in certain serious overdoses

Thank you