Question 10

2yo. Witnessed ingestion of GMs SR verapamil 2 hours previously. HR 110/min and appears well perfused

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What is your risk assessment. Justify this

Risk assessment

High risk of delayed onset CVS collapse

Up to 12-6 hours PI

Toxicity could include:

Bradycardia, heart block, hypotension, seizures and associated fall in LOC

Potentially lethal ingestion without Rx

Justify

SR verapamil comes in 180 240 360mg tablets.

2 tablets of even lowest dose = 20-30 mg/kg dose

1 or 2 tablets can result in severe toxicity

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What is the role of decontamination for this ingestion?

- SR medication with high risk of lethality and delayed onset.
- A single dose of activated charcoal (1gram per kg) should be considered while child still asymptomatic to reduce absorbable load
  - Even up to 4 hours post-ingestion if ASx
- Whole bowel irrigation could be considered in asymptomatic SR prep ingestions.
  - BUT Difficult to perform in toddler, requires NG tube and infusion of PEG. Utility greater in multi-tablet ingestions in adults

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?

- Whole Bowel Irrigation is not a method of enhanced elimination
  - It is gastrointestinal decontamination
- Multiple-dose activated charcoal is not a method of decontamination
  - It is a form of enhanced elimination for drugs that have been shown to either have significant enterohepatic recirculation OR they have been shown to have enhanced clearance by a proposed mechanism of intestinal dialysis

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What is the role of enhanced elimination for this ingestion?

- There is no role for enhanced elimination
- Specifically:
  - HD -> not indicated due to high Vd, high protein binding, high lipohilicity
  - MDAC -> no evidence for enhanced elimination with MDAC for this drug
  - Urinary Alkalinisation -> No role for urinary drug trapping for verapamil

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List 4 key steps in supportive or specific treatment. Provide detail for each step (eg: a dose and end point for therapy)

- Fluid bolus – 0.9%Sal
  - 10-20 ml/kg. Pt euvolaemic. If no response further fluid unlikely to help and risk fluid overload
- Atropine
  - 0.01 mg/kg x 3 doses for bradycardia. Temporising measure and unlikely to help
- Calcium gluconate
  - IV bolus 0.05ml/kg. Rpt x 2 if response. May transiently increase BP. Can start infusion to keep ionized Ca++ upper limit of normal. Rarely works alone
- HIET
  - Start early. 0.5-1.0 U/kg load and 0.5-1.0 U/kg/h. + need 10-50%Glucose to maintain BSL. Titrate insulin to BP up to 10U/kg/h
- Catecholamine infusion Adrenaline/Norad
  - Adrenaline aim to increase BP/HR Titrate up 0.1ug/kg/min
  - Norad for vasodilatory shock Titrate to BP

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List 4 key steps in supportive or specific treatment. Provide detail for each step (eg: a dose and end point for therapy)

- Glucagon
  - 0.1mg/kg load and 0.1-2mg/kg/h
  - May increase HR. Effect unpredictable
- Intubation
  - Airway protection for falling GCS and ventilation/oxygenation
  - Ketamine 1mg/kg, Suxamethonium 1-2mg/kg ETT 4.5
- Cardiac Pacing
  - May not capture. May increase HR without increase in BP
- ECMO
  - Needs tertiary ICU. Consider when unresponsive to chemical therapies
- Lipid rescue
  - Controversial. 20% Intralipid. Dosing not well established. 1ml/kg bolus 5ml/kg over 60 minutes. Only if peri-arrest. Also considering ECMO

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List 4 key steps in supportive or specific treatment. Provide detail for each step (eg: a dose and end point for therapy)

- If you're going to put down
  - A
  - B
  - C
  - D
- As supportive care then there needs to be some detail at each step specific to CCB poisoning
  - An intervention
  - A dose
  - An end point

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State disposition and justify

- Critically unwell and likely to get sicker.
- Likely to need multiple inotropic supports for prolonged period.
- Needs tertiary paediatric ICU
- Paediatric Retrieval Team to transport if in smaller hospital
- Access to ECMO if fails response to chemical Rx
- Toxicology / PIC consult to assist in guiding complex management

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4 other meds with examples of toxic effects when ingest 1-3 tablets or mouthful in toddler

- TCA – primarily dothiepin (75mg tablets)
  - AC toxicity, Coma, seizures, Na+CB effects, hypotension
- Oral hypoglycaemics – SULPHONYLUREAS
  - NOT metformin
  - Delayed and recurrent hypoglycaemia persisting 24-48 hours
- Opioids –
  - IR and XR (oxycodone, methadone, SR opioids
  - Delayed onset and prolonged coma, resp depression/arrest
- Clonidine
  - Coma, bradycardia, hypotension, miosis, resp depression/arrest
- Beta-blocker – primarily propranolol
  - 40-160mg tablets. Bradycardia, hypotension, coma, seizures, Na+CB, hypoglycaemia

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4 other meds with examples of toxic effects when ingest 1-3 tablets or mouthful in toddler

- Carbamazepine IR and XR
  - Delayed onset, AC effects, coma, hypotension, paradoxical seizures
- Chloroquine, hydroxychloroquine, quinine
  - Coma, hypotension, Na+CB, seizures, HypoK+, QT prolongation
- Theophylline SR
  - Agitation, n/v, tachycardia, hypoK+, hypotension, seizures
- Antipsychotics esp clozapine, olanzapine
  - Coma, resp depression, miosis, drooling, hypotension
- Flecainide
  - Na+CB, hypotension, coma, seizures

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4 other meds with examples of toxic effects when ingest 1-3 tablets or mouthful in toddler

- Methanol / Ethylene glycol
  - Severe Metabolic acidaemia
- Camphor
  - Seizures
- Essential oils – Eucalyptus, Tea tree
  - Coma, aspiration, pneumonitis, cardiac toxicity
- Methyl salicylate
  - Resp alk, metabolic acidaemia, hypoglycaemia, coma
- Hydrofluoric acid
  - GI mucosal damage/perforation, hypocalcaemia, hyperK+, acidosis, ventricular arrhythmias

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3 investigations in Asx child with witnessed ingestion unknown medication

- 12-lead ECG
- Blood sugar / VBG
- Paracetamol
- AXR for radio-opaque tablets

- Arguably, no investigation required other than close observation for potential toxidromes
  - Hypoglycaemia, bradycardia, hypotension, etc…

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Disposition for symptomatic child with witnessed ingestion. Justify

- Assume worse case scenario
  - SR tablet or delayed toxicity possible
  - Want to ensure that delayed toxicities (CVS, metabolic) are excluded
- Admit for observation at least 12 hours to monitored bed
- Don't send home at night
- DC if ASx, normal BSL and ECG at 12 hours

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