Pills that can kill

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Objectives

• Understand the theory behind *One Pill Can Kill*

• Recognize the eleven classes of medications which can kill a toddler with one or two standard doses

• Understand the typical presentations, initial stabilization and treatment of these ingestions
Background

- Toxic drug exposure in toddlers is high
  - Despite childproof containers, educational programs, increased use of Poison Centers
- American Association of Poison Control Centers (2000)
  - Over 1 million cases children < 6 yrs age (52.7% all exposures)
  - 40% all exposures ≤ 2 yrs age
  - 16 fatal cases
1993 – “Ten Pills that can Kill”

- Medications which can kill a toddler with one tablet or teaspoonful
- Analyzed medications that could kill a 10kg toddler with 1–2 standard doses
- Identified 10 medicinal preparations
- Accounted for 40% of American Association of Poison Control Centers (AAPCC) database fatalities ≤ age 2
2004 – Update – 11 Groups That Kill

- Medications that can be fatal for a toddler with one tablet or teaspoonful: a 2004 update
- List accounts for 45% of AAPCC fatalities ≤ 2 years age
  - 72% if iron ingestion excluded
Toddler Ingestions – Common Presentations

• Unwitnessed – suspected ingestion or exposure
• Found playing with pills or pills in mouth
• Empty bottles
• Missing medication
• Unexplained signs or symptoms
Toddler Ingestions – Symptoms

- Asymptomatic
- Altered LOC
- Seizure
- Vomiting
- Respiratory Depression
- Arrhythmias
- Classic Toxidromes – ie cholinergic, anticholinergic, opioid
- Arrest
EMS Considerations

• Look for medications/containers on scene
• Ask about medications in the home
• Consider possible exposures
• Foreign environment
1) TCAs – Tri-Cyclic Antidepressants

- Amitriptyline, Imipramine, Desipramine

- Uses:
  - Depression
  - Anxiety
  - ADHD
  - Migraines
  - Eating disorders
  - Bipolar disorder
  - Insomnia
  - Irritable bowel
  - Neuralgias
  - Nocturnal enuresis
Signs and Symptoms of Ingestion

- CNS depression
- Seizures
- Dysrhythmias
- Cardiac conduction abnormalities
  - QRS prolongation
- Hypotension
- Anticholinergic toxidrome
  - mydriasis, flushing, dry mucous membranes, tachycardia, hyperthermia, delirium, hallucinations
- Presents within 6 hours
Initial Stabilization & Management

- Cardiac monitor
- Anticipation of rapid deterioration in mental status and abrupt onset of seizures
  - Benzodiazepines
- Sodium bicarbonate – 1–2 mEq/kg IV
- Aggressive supportive care
- Airway management
- Observe for a minimum of six hours
2) Antipsychotics

- Loxapine, thioridazine, chlorpromazine

- Uses:
  - Schizophrenia
  - Psychosis
  - Bipolar disorder
  - Aggression
  - Porphyria
Signs and Symptoms of Ingestion

• CNS depression
• Seizures
• Anticholinergic Toxidrome
• Hypotension
• Tachycardia
• QRS widening
• QTC prolongation
Initial Stabilization & Management

- Continuous cardiac monitoring
- IV access
- Supportive therapy
- Consider GI decontamination
- Sodium Bicarbonate
- Minimum 6 hours observation – 24 if ECG changes
3) Antimalarials

- Chloroquine, hydroxychloroquine, quinine
- Uses:
  - Treatment and prevention of malaria
  - Auto-immune disorders
  - Lupus
  - Rheumatoid arthritis
  - OTC restless leg remedies
Signs and Symptoms of Ingestion

- Delirium
- Coma
- Seizures
- Myocardial depression
- Dysrhythmias
- Hypotension
- Hypoglycemia
- Visual disturbance – blurred vision, diplopia, altered color perception, tunnel vision, photophobia, blindness
Initial Stabilization & Management

- Cardiac monitoring
- IV Fluids
- Supportive Care
- Glucose
- Sodium Bicarbonate
- Severe chloroquine toxicity – epinephrine, diazepam, intubation, gastric lavage
4) Anti-arrhythmics

- Quinidine, disopyramide, procainamide, flecainide
- Class I anti-arrhythmics
- Uses – suppress abnormal cardiac rhythms:
  - Atrial fibrillation
  - Atrial flutter
  - Ventricular tachycardia
  - Ventricular fibrillation
Signs and Symptoms of Ingestion

- Hypotension
- QRS widening, QT prolongation
- Heart block
- Hyperthermia
- Hypoglycemia
- V Fib, V Tach, Torsades de pointes
Initial Stabilization & Management

- Continuous cardiac monitoring
- IV Fluid bolus
- Supportive care
- Sodium bicarbonate
5) Calcium channel blockers

- Nifedipine, verapamil, diltiazem
- Uses:
  - Hypertension
  - Angina
  - Cardiac arrhythmias
  - Migraines
Signs and Symptoms of Ingestion

- Hypotension
- Bradycardia
  - Some may have reflex tachycardia
- Hyperglycemia
- Second/Third degree heart block
- Cardiogenic Shock/Arrest
- Symptoms appear 1–5 hrs post ingestion of immediate-release preparations
  - Up to 14 hours for sustained release
Initial Stabilization & Management

- Cardiac monitoring
- IV access
- Access to cardiac pacing
- Fluids
- Inotropes
- Atropine, Calcium
- Activated charcoal/Whole Bowel Irrigation
- Monitor 6–8 hours short acting agents, 24 hours for sustained release
6) Camphor

- Analgesic gels
- Anti-itch
- Cooling gels
- Congestion & cough relief
- Ex – Vicks Vapo Rub, Tiger Balm
Signs and Symptoms of Ingestion

- Typical odor
- GI distress
- Generalized sensation of warmth
- Onset symptoms within 10–20 minutes
- Initial CNS hyperactivity – excitement, restlessness, delirium, seizures
- CNS depression – coma, respiratory depression
- Deaths from respiratory depression and status epilepticus
Initial Stabilization & Management

- No specific antidote
- Supportive therapy
- Seizure control – benzodiazepines
- Airway management
- Asymptomatic patients should be observed 6–8 hours
7) Methyl salicylate

- Oil of wintergreen
- Uses – deep-heating and analgesic ointments
- Ex – Bengay, Icy Hot
Signs and Symptoms of Ingestion

• Nausea & vomiting
• Diaphoresis
• Tinnitus
• Nonspecific neurologic findings – agitation, delirium, hallucinations, lethargy
• Respiratory stimulation – hyperventilation, hyperpnea
• Severe intoxications – pulmonary edema, cerebral edema, coma, hyperthermia, death
Initial Stabilization & Management

- Aggressive supportive care
- Gastric decontamination
- Sodium bicarbonate infusion IV
- Hemodialysis
- Half-life of salicylates increases from 2–4 hours at therapeutic levels to 15–29 hours at toxic doses in children
8) Theophylline

• AKA Dimethylxanthine
• Uses:
  • COPD
  • Asthma
Signs and Symptoms of Ingestion

- Vomiting
- Anxiety
- Agitation
- Seizures
- Ventricular dysrhythmias
- Hypotension
- Tachycardia
Initial Stabilization & Management

- Supportive care
- IV fluids
- Inotropes
- Seizure management
  - benzodiazepines
- Anti-emetics
- GI decontamination
9) Narcotics

• Codeine, hydrocodone, methadone, morphine

• Uses:
  • Analgesia
  • Abuse
Signs and Symptoms of Ingestion

• Opioid Toxidrome
  • CNS depression
  • Respiratory depression
  • Miosis
• Symptoms within 1 hour of ingestion
Initial Stabilization & Management

• Supportive management
• Naloxone (Narcan)
10) Oral hypoglycemics – Sulphonylureas

- Chlorpropamide, glibenclamide, glipizide
- Uses – Type II Diabetes Mellitus
Signs and Symptoms of Ingestion

- Hypoglycemia
- Lethargy
- Confusion
- Headache
- Irritability
- Seizure
- Permanent neurologic impairment
- Death
Initial Stabilization & Management

- Serial glucose measurements & neuro exams
- IV Dextrose bolus
  - <30d: D10W 0.2g/kg – 2ml/kg
  - >30d – 2y: D25W 0.5g/kg – 2ml/kg
  - >2y: D50W 0.5g/kg – 1ml/kg
- Glucagon IM
  - <25kg 0.5mg
  - >25kg 1.0mg
- Beware of rebound hypoglycemia following bolus
  - May stimulate exaggerated insulin release
- Consider GI decontamination if less than 1 hour post ingestion or sustained release
- Minimum 24 hours observation
11) Podophyllin 25%

• Uses – treatment of genital warts and molluscum contagiosum
Signs and Symptoms of Ingestion

• Nausea, vomiting, abdo pain, diarrhea
• CNS depression
  • Confusion, obtundation, coma
  • Delirium, auditory and visual hallucinations
  • Paresthesias, cranial neuropathies, absent deep tendon reflexes
• Hematologic toxicity
  • Pancytopenia
Initial Stabilization & Management

- Supportive care
- Removal of any topical applied solution
- GI decontamination
- Observe for minimum of 12 hours – longer if significant dermal exposure
References


Questions?