# PEDIATRIC TOXIC EMERGENCIES

# ONE PILL CAN KILL
# Toxic Pediatric Overdoses

**Gabe De Baltz, EMT-P/Fire Fighter for BCFD, I/C Instructor CNMCC**
**Chelsea White IV, MD, NREMT-P, BCFD Medical Director**
**With additional content given by:**
**Brian Moore, MD, FAAP, State EMS Medical Director**

# Objectives:

- Identify common medications that are highly toxic in single to small doses (adult based dosing) to pediatric patients.
- Identify common symptoms related to these "poisons."
- Understand treatment options for best chance survival of this patient demographic
- Review case studies of this type of 911 activation.

# Initial Case Study:

- You are called out to a residential address for a 4 year old female overdose. The coding is "OMEGA" as at the time of the call, your patient is non-symptomatic.
- **What is your alert level for this call?**
- **Why?**

- You arrive on scene to an elderly female who is shaking and slapping a small child in attempts to rouse your obvious patient.
- **Now what is your alert level? Why?**
- What about this initial sight changes your level of intensity on a primary survey?
- How do children present when they are truly sick?
- **Does this child sound truly sick?**

# Overview:

- Children are more frequently exposed to poisons than any other group.
- The peak age for childhood poisoning is between 12 months and 3 years of age.
- **Why is this?**

# Ingestion Characteristics

- Toddlers differ from adolescent ingestions:
- They are without suicidal intent.
- There is usually only one substance involved.
- The substances are usually non-toxic.
- The amount of the exposure tends to be small.
- The time of presentation is usually not delayed.

# What attracts children to prescription medications?

# Developmental Considerations

- Children may be attracted to toxic substances based on color or smell.
- Toddlers perform hand to mouth behaviors an average of 10 times an hour.
- Toddlers are more accepting of "disgusting" substances than older children and adults, and are more likely to taste these substances.

# One Pill Rule:

- What does this mean?

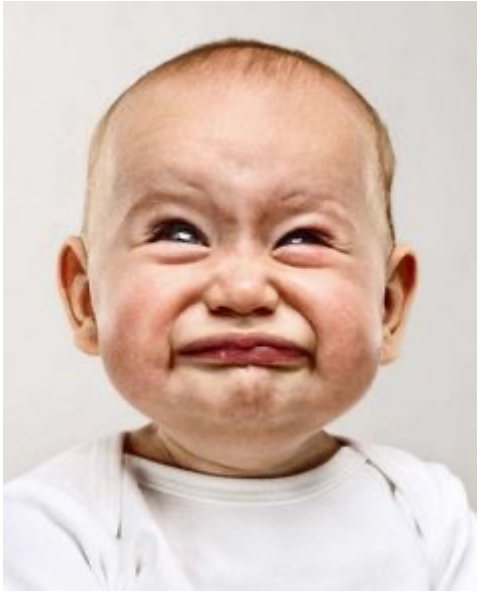
A single adult therapeutic dose would not be expected to produce significant toxicity in a child. (10 kg child for example cases)

**Examples: Iron:** toxicity at dose of greater than 60mg/kg. This requires about 9 tablets of Hemantinic Iron Preparation of 65mg.

How unlikely is it a child will continue to eat something that tastes poorly or bad?

**Acetaminophen (straight):** toxicity at dose greater than 150mg/kg. This requires 3 or more tablets of extra strength (500mg)

Toddlers aren't expert swallowers, they tend to initially chew anything they put in their mouths.



# The **devil** in the details:

- Certain chemicals can produce life threatening toxicities in a 10kg toddler following a single ingestion of one to a few pills or one or two liquid swallows.
- **Does anyone know of any?**

# Some single pill/kill substances:

- **Antimalarial Agents:**

Chloroquine: (1) 500mg tablet

Hydroxychloroquine: (1) 200mg tablet

Quinine: (1-2) 650mg tablets

- **Tricyclic Antidepressants:**

Imipramine: (1) 150mg tablet

Desipramine: (2) 75mg tablets

# 1pill/kill cont.

- **Phenothiazines:**

Thioridazine: (1) 200mg tablet

Chlorpromazine: (1) 200mg tablet

- **Theophylline:** (1) 500mg tablet
- **Lindane:** Liquid with a single swallow of 5 or greater cc's.
- **Organophosphates**: A single swallow of 5 or greater cc's.

How many of these do you know?

Are they common drugs to you?

What is the relative risk?

# More likely culprits:

- **Opiates and opiods:**

  Codeine: (1) 30mg tablet

  Methadone: (1) 10mg tablet

  Hydrocodone: 5cc or greater liquid or mixed with **APAP**….remember that dose?

- **Beta blockers: "olols"**

  Propanolol, Metoprolol, Atenolol

- **Calcium channel blocker:**

  Amlodipine, Verapamil, Diltiazem

# Culprits cont.

- **Sulfonylureas:** glimepiride, glyburide, glipizide, metformin.
- No single presentation can give you an exhaustive list or accurately give you absolute doses for lethal overdose in pediatrics. This is a grey world and we have so many variables that we should just be prepared for any overdose as a reasonable responder.

# Our supervillian:

- **Clonidine:** brand names of: **Catapres, Kapvay.**
- **Why is this our nemesis?**
- **It is used for multiple diagnosis' and is a drug that can be rather common in usage in many age groups for things like hypertension and ADHD or Anxiety like disorders.**
- **A single tablet can cause respiratory arrest.**

# Case study continued:

- Your pediatric patient is limp, near lifeless in appearance with almost no respiratory drive.
- **What was your decision?**

- **What are your treatment priorities?**

# Preparation for treatment:

# IS IT TIME TO GO?

# Lets talk treatments:

- Back to the basics. What are our priorities?
- **A,B,C's?**
- **Remember that a good majority of these medications are going to cause profound respiratory depression, bradycardia and hypotension. Are all of these things we can manage?**
- **A great basic can *save* a great medic.**

# DID WE FORGET TRANSPORT?

- REMEMBER, REMEMBER, REMEMBER….

No one is doing our patients any good by staying on scene. Stay and play is not an option any more, we need to get our patient to definitive care. If you can afford it, only stay long enough to get possible substance names.

***GET MOVING!!!!!***

## **Treatments enroute:** we are moving towards the hospital, right?

- Keep an eye on your patient's respiratory drive, can you free your hands with a non rebreather? You're going to be busy, like it or not.
- Cardiac monitor? Can you get this placed so you can continually assess your patient's cardiac rate and waveform?
- IV access and fluids/medications?

# THE ABC's:

# **MEDICATIONS:** Our sidekick

- Naloxone (Narcan): This can be given for a variety of drugs that cause respiratory depression. Opiate based overdoses and our clonidine overdoses. You will probably need more than the state protocol max dose is, call an MCEP early for orders, this may take more than everything you have on your truck. Doses of 10mg are not uncommon.

# Glucagon:

- Does your service carry this? You'll need plenty of it for your beta blocker overdose. More than most services that do carry it, carry.

# Calcium Chloride/Gluconate

- Two different forms of calcium. Both can be used in the calcium channel blocker overdose.

# Glucose/Dextrose:

- Use in our Sulfonylureas. Best practice is probably to get an MCEP for an order. A micro dose of D10 will most likely not be enough to deal with this emergency. The long acting effect of this drug class could require a prolonged drip.

# Time is of the essence

- In the metro area a transport of 20 minutes is average. Even this short amount time can be chaotic. Imagine 1,2,3, or 4 hours… you need help.
- Use an ALS helicopter service. Your patient needs definitive care as soon as possible.

# Air-intercepts

# ANY QUESTIONS?

- In this case study, it was my patient. She was successfully delivered to the ED with viable vital signs but in critical condition.

My transport time was less than 20 minutes, I had almost no interventions performed and felt completely overwhelmed. This is a real call in every sense of the term.

Always be prepared for the worst case-scenario.