Toxic Tid-Bits

C. Wistrom DO

Mercyhealth®

Cited

- https://www.merriam-webster.com/dictionary
- Common Toxidromes: Signs and Symptoms [35] | Download Table (researchgate.net)
- MCAT Memoranda (tumblr.com)
- Retrospective review of Tizanidine (Zanaflex) overdose - PubMed (nih.gov)

Mercyhealth®

More Cited

- Treatment of Phenobarbital Overdose With Activated Charcoal | JAMA | JAMA Network
- Google images

Mercyhealth®

disclosure

none

Mercyhealth®

Objectives

- Quick review of toxidromes
- Case reviews of several interesting cases
- Refresher of several antidotes

Mercyhealth®

First….The News.

Mercyhealth®

General Rules for the ED 1-3

1. If it's wet and not yours…Don't touch it
2. If it looks "yucky" cover it up
3. Air goes in and out, Blood goes round and round, any deviation from that is bad

Mercyhealth®

Toxicology

Toxic: **1:** containing or being poisonous material especially when capable of causing death or serious debilitation

Ology: a branch of knowledge **:** SCIENCE

TOXICOLOGY: a science that deals with poisons and their effect and with the problems involved (such as clinical, industrial, or legal problems)

Mercyhealth®

Toxicology

- A very broad and diverse field
- Includes a bunch of stuff they didn't teach you in medical school and some stuff you learned in kindergarten (don't eat yellow snow)
- Ever present challenge in the EMS/ED

Mercyhealth®

Toxidromes

Physical findings	Adregenic Toxidrome (decongest., amphetamine, cocaine)	Anticholinergic Toxidrome (antihist., phenothiazine)	Cholinergic Toxidrome (Insecticides)	Opiod Toxidrome	Sedative-hypnotic Toxidrome (tranquilizer, barbiturates, ethanol)
Vital Signs					
Resp. Rate	Increased	No change	Increased/ no change	Decreased	Normal/ decreased
Heart rate	Increased	Increased	Decreased	Normal/ decreased	Normal
Temperature	Increased	Increased	No change	Normal/ decreased	Normal
Blood P	Increased	Increased/ no change	No change	Normal/ decreased	Normal
Physical Examination					
Mental status	Alert/ agitated	Depressed/ confused/ hallucinating	Depressed/ confused	Depressed	Depressed
Pupils	Dilated	Dilated	Constricted	Constricted	Normal
Mucous membranes	Wet	Dry	Wet	Normal	Normal
Skin	Diaphoretic	Dry	Diaphoretic	Normal	Normal
Reflexes	Increased	Normal	Normal/ decreased	Normal/ decreased	Normal/ decreased
Bowel sounds	Increased	Decreased	Increased	Decreased	Normal
Urination	Increased	Decreased	Increased	Decreased	Normal
Other	Possible seizures	Possible seizures	Musclefasciculations /possibe seizures	--	--

Mercyhealth®

Sympathomimetic

- Cocaine
- Meth
- Amphetamines
- Epi
- Nor-epi
- Pseudoephedrine

Mercyhealth®

Anticholinergic

- Antidepressants
- Antihistamines
- Antiepilieptics
- Antinausea
- Antipsychotics

Mercyhealth®

Sympathomimetic v anticholinergic

- Easy to sweat the difference
- Treatment largely the same
  - Benzos until the cows come home
- Beware of the Fever
  - Does not improve with APAP/Motrin

Mercyhealth®

Cholinergic

BU Emergency Medical Services

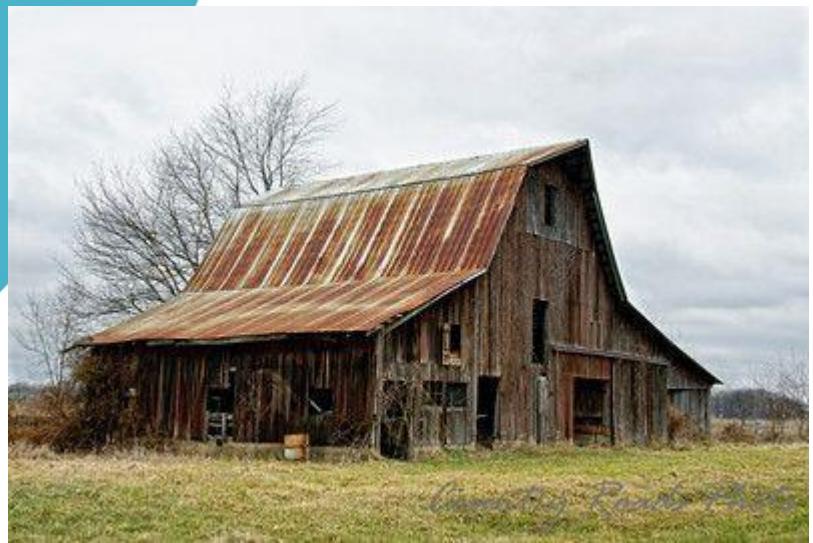
Signs of Nerve Agent Exposure: Sludgem/Dumbbells

- **S**alivation
- **L**acrimation
- **U**rination
- **D**efecation
- **G**astric upset
- **E**mesis (vomiting)
- **M**iosis

- **D**iarrhea
- **U**rination
- **M**iosis (pinpoint pupils)
- **B**radycardia
- **B**ronchospasm
- **E**mesis
- **L**acrimation
- **L**ethargy
- **S**eizures
- **S**alivation

Common cholinergic exposures

- Insecticides – **Malathion**, **parathion**, **diazinon**, fenthion, **dichlorvos**, **chlorpyrifos**, ethion.
- Nerve gases – Soman, sarin, tabun, VX.
- Ophthalmic agents – Echothiophate, isoflurophate.
- Antihelmintics – Trichlorfon.
- Herbicides – Tribufos (DEF), merphos.



Mercyhealth®

Cholinergic Tox

- Atropine and lots of it
- How much
- Three endpoints
  - Run out of Atropine
  - Run out of Symptoms
  - Run out of Patient to treat

Mercyhealth

Sedative Hypnotic (all in the name)

- Benzodiazapines
  - Romazicon
- Barbituates
  - Multidose Charcoal
  - Dialysis
- Sleep Aid (ambien) not the OTC ones (often anticholinergic)
- *Gabapentin

Mercyhealth®

Others

- Paracelces “the Dose Doth Maketh the Poison”
- OTCs
  - Common
    - APAP
    - Ibuprofen
    - ASA
    - Benadryl
    - Vitamins

Mercyhealth®

Herbals

- Homeopathy
- Naturopathy
- Wild “edibles/semi-edibles”
- Marijuana

Mercyhealth®

Rx Drugs

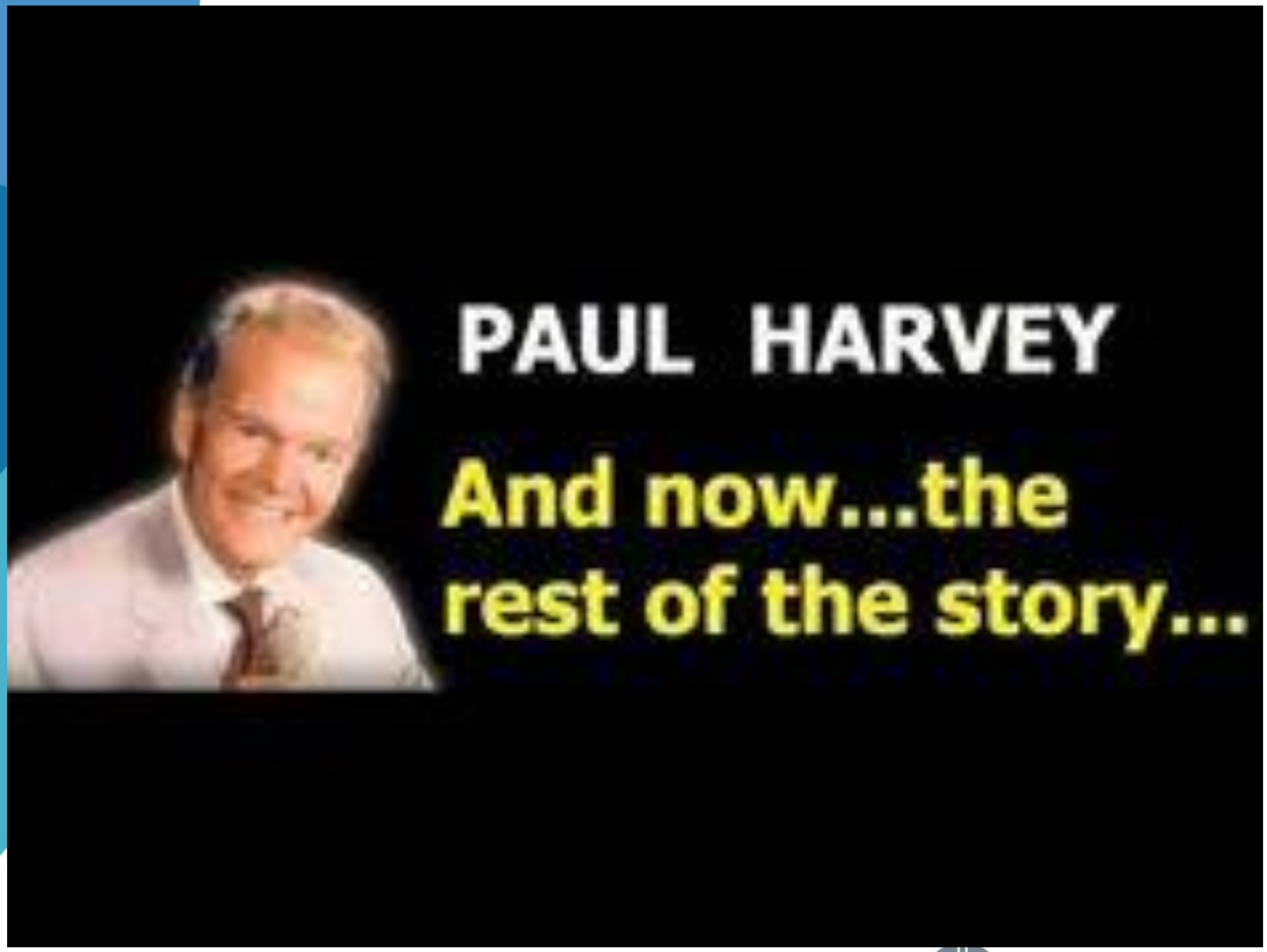
- Lots of bad ones
- ABCD of hypotension and Bradycardia
  - Alpha 2 agonist (clonidine, Methyldopa, tizanidine)
  - B-Blocker
  - Ca++ Chanel blocker
  - Digoxin

Mercyhealth®

Conclusion

- There are simply too many potential toxins to cover in one/two hours
- 800-222-1222 a GREAT HELP!!!
- Toxidromes are helpful but not end all be all (many times polyingestion)
- Supportive care always
- Quick to intubate
- Use resources (PD/FD/Family)

Mercyhealth®



Mercyhealth®

ED Rules 4-7

- Everybody Lies to you
- Never trust a Naked Person
- A patient who tells you they need to poop is about to take a dump
- When all else fails…Examine your patient Dr. Ron Chrome (and many others)
  - Sub rule: It's a History AND Physical not History OR Physical

Mercyhealth®

Case 1

- 30's male presents to EMS for "decreased responsiveness, possible OD"
- VS
  - HR 150's, B/P 100/70, RR 8, Temp normal
- PE
  - Abnormal extention, moans and doesn't open eyes=GCS?

Mercyhealth®

Case 1 cont

- Stabilization
- LEO shows up
- More to the story
- Change in management

Mercyhealth®

Phenobarbital OD

- Sedative hypnotic toxic in region of 1G/8mg/kg (80kg male took ~100 97.2mg tabs=9.7G or about 121.5mg/kg)
- In OD will cause “seizurecomadeath”
- Able to be dialyzed
- Multi dose activated charcoal

Mercyhealth®

Case 2

- 30s male calls EMS for “medical clearance”
- Known alcoholic and opiate user
- Decreased responsiveness GCS 13
- Third trip to this address this tour
- VS HR 120, RR 24, b/p 110/80, temp 97.7 temporal

Mercyhealth®

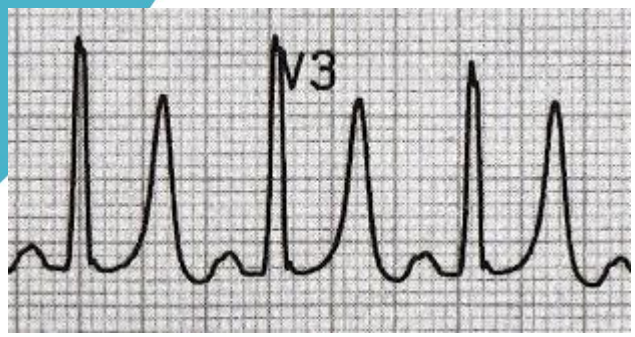
Arrival at ED

- Very busy, put in last available bed
- Bedside report given to RN
- Quick update to doc
- Back in service
- Just after you leave……

Mercyhealth®

Whoops

- Tele reading HR 240
- Time for A Closer exam
  - Patient Nonsensical
  - He’s not cooperative
  - His Mouth looks like the Mojave
- Change in plan



Mercyhealth®

30 minutes later

- Stable on vent, sedated
- Central line, art line placed
- CaCl, Bicarb, D50, insulin and kayexalate by NG done then labs
- Labs show K of 8.7, Cre >20
- EtOH <0.01
- UDS…well he hasn't urinated yet despite 3 L of fluid

Mercyhealth®

3 days later

- Off vent
- Admits to trying to wean of EtOH by using opiates
- Out of ICU and left AMA with normal kidney function

Mercyhealth

Case 3

- 60’s female presents by EMS with generalized weakness
- Recently hospitalized with new onset cirrhotic liver disease unk cause and a-fib RVR
- Home about 2 weeks and now has progressive and worsening weakness, some somnolence, slight confusion

Mercyhealth®

Case 3 cont

- VS HR 52, RR 8, B/P 90’s/palp 98.6 spo2 92%
- Exam
  - Ascites, jaundice, diminished lungs b/l, edema b/l legs, falling asleep in exam
- Work-up
  - All the usual suspects, Ammonia, VBG, CMP, CBC, PT/INR, UA, TSH, CT head etc

Mercyhealth®

Case 3 cont

- Lab calls
  - Glu 40's
- Orders
  - D50 & food (doesn't eat too sleepy)
- Tech calls
  - Glu 190 /p D50, 30 min check 30's
    HR also in 30's b/p 70/palp
- Orders/Chart review
  - D50 bolus D10 drip, albumin
  - Diabetic meds: No orals, only insulin
- Rest of labs essential unchanged from discharge

Mercyhealth®

What the What

- What do we know that would cause…
  - Hypotension
  - Bradycardia
  - Hypoglycemia

Mercyhealth®

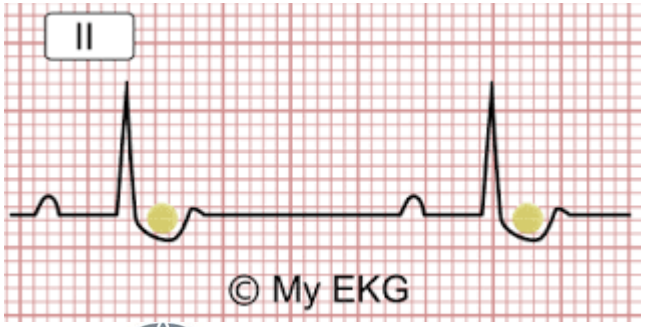
New Med

- Placed on Propranolol during last admission is her only new med
- Well B-Blocker toxicity does cause hypotension/bradycardia/hypoglycemia
- But a very low dose??
- Ah, Hah!!! Requires a functional liver to metabolize

Mercyhealth®

ABCD's of low HR & BP in OD

- A2 agonist
  - Pinpoint pupils
- B-Blocker
  - Cool extremities
  - Low Glucose
- Ca++ Channel blocker
  - Warm extremities
  - High glucose
- Digoxin
  - ECG findings
  - Salvador Dali



Mercyhealth®

Case 4

- Young female presents to ED by car with parents for “medical clearance”
- Attempted OD by “pain killers”
- Not willing to say what
- Not participatory to HPI/ROS
- Ingestion 30 min PTA

Mercyhealth®

Hmmm, “pain killers”

- Opiates
- Opiate like
- ASA
- APAP
- “other” NSAID ie Motrin

Mercyhealth®

History AND Physical

- Still breathing…not opiates
- Not seizing/sleepy…not ultram
- ASA, APAP, Ibuprofen…..
  - Breathing quickly (anxiety? ASA)
  - 30 min PTA so no liver issues from APAP yet
  - Ibuprofen…what's the LD50 of Ibuprofen???

Mercyhealth®

ASA, APAP, Ibuprofen

- Ibuprofen
  - LD50 is 1250mg/kg!!!! Wow!!!
- APAP
  - Will need a 4 hour blood draw
  - Consider early NAC
  - Toxic 140mg/kg (also 1st NAC dose)
- ASA
  - Nurse reports she is wringing her hands and c/o ringing in her ears
  - GOTCHA

Mercyhealth®

Medical Clearance

- 30 min APAP undetectable
- 30 min ASA 35
- Charcoal
- Bicarb
- Ph already 7.2 on VBG
- 1-800-222-1222
- Transferred to PICU on Bicarb in less than 60 minutes
- Not yet toxic,,,but you will be

Mercyhealth

More ED Rules

- You can’t spell syncoPE without PE
- Everybody is here for something, even if they don’t tell you what that “something” is
- Complacency Kills
- The road to hell is paved with unexplained sinus tachycardia
- Vital Signs are vital because they are vital
- Bar Close-you don’t have to go home, but you can’t stay here

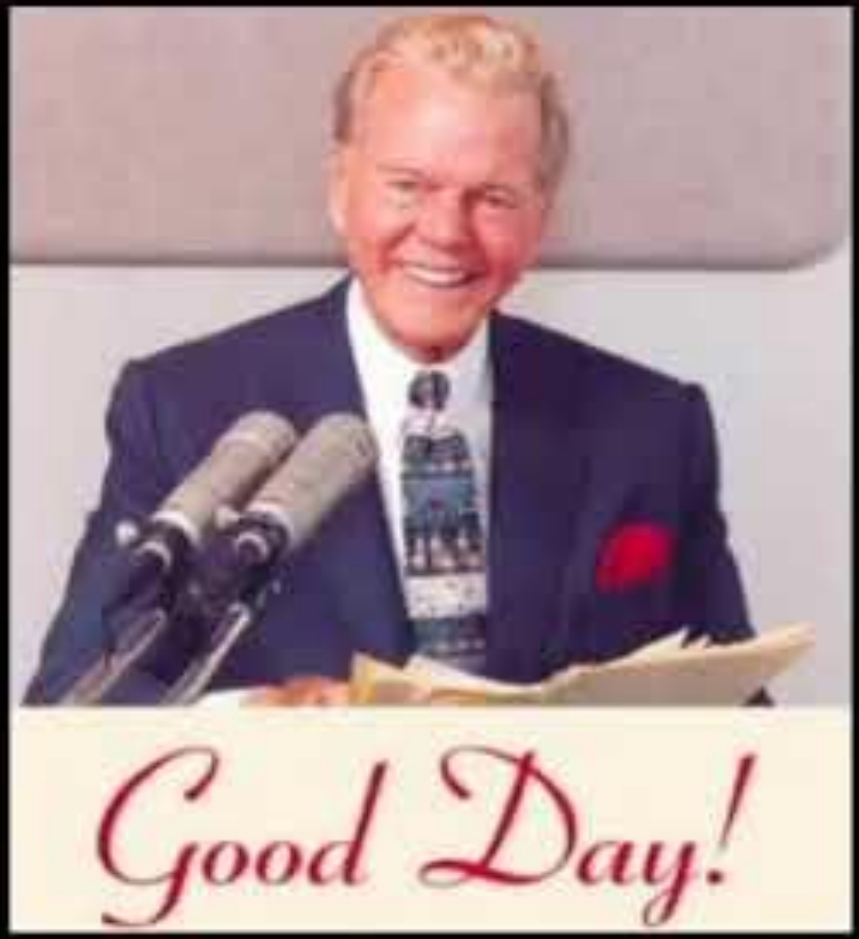
Mercyhealth®

Rules

- If you listen long enough, people will tell you what's wrong with them
- It's going to be a good day when there's more cops than nurses in the ER
- Every Hysteric dies of something
- # of patients in a room is generally disproportionate to the amount of illness they have

Mercyhealth®

Mercyhealth®



Mercyhealth®