Why we chose medicine as a career......
In reality.....
Goals for today

1. Discuss manifestations of drug intoxication in patients presenting to ED
2. Identify drugs commonly seen in drug intoxication and poisoning
3. Discuss evaluation, identification, and screening for drug intoxication and poisoning
CC: Altered Mental status

- Overdose is in differential
- “Overdose panel” is helpful
- Rapid assessment
  - Brief history
  - Vital signs
  - Monitor
  - Bedside blood glucose
  - Labs, UA, drug screen, EKG, other diagnostics
    - Lab: CBC, CMP, Acetaminophen, Salicylate, Alcohol
      - +/- lactate, PT/PTT/INR, acetone, drug level
Management of the OD patient

- ABCDE’s/ACLS
- IV, O₂, monitor, EKG
- Immediate measures
  - Unresponsive or decreased LOC?
    - Bedside glucose
    - Consider Thiamine, Naloxone, Dextrose
- Decontamination
- Enhance elimination
- Antidote if available
- Supportive care
History

- Name and amount of agent(s)
- Type of agent (immediate or sustained release)
- Time and route of exposure (oral, IV, smoke, rectal)
- Any co-ingestants
- Reason for ingestion (accident, suicide attempt, therapeutic misuse)
- Search environment for pill bottles, drug paraphernalia, suicide note (police)
- Security to help search patient (expose, search clothes for pills, weapons)
Rectal...don’t try this!
Toxidromes

- Anticholinergic
- Cholinergic
- Opioid
- Sympathomimetic
- Serotonin syndrome
- Sympatholytic
- Sedative-hypnotic
Anticholinergic

- **Mechanism**
  - Anticholinergic toxicity is produced by the inhibition of cholinergic neurotransmission at muscarinic receptor sites
  - Caused by substance that blocks the neurotransmitter Acetylcholine in the CNS and PNS. Classic example: Atropine
Reuptake and Enzymatic Degradation

Two Mechanisms of Neurotransmitter Deactivation

Reuptake

Deactivating Enzymes
Anticholinergic

- Dry as a bone (dry mouth, skin)
- Red as a beet (flushed)
- Blind as a bat (dilated pupils)
- Mad as a hatter (confused, agitated)
- Hotter than Hades (fever)
Anticholinergic

- **VS:** Fever, tachycardia, HTN
- **CNS:** Agitation, delirium, psychomotor activity, hallucinations, mumbling speech, unresponsive
- **Pupils:** Dilated, minimally reactive to light
- **Skin:** Dry, warm, flushed
- **GI/GU:** Decreased BS, Ileus, Urine retention
Anticholinergics

- Anti-emetics, anti-vertigo
- Anti-Parkinson’s
- Anti-spasmodics (GI)
- Anti-spasmodics (GU)
- Anti-migraine
- Bronchodilators
- Preanesthetics
- Mydriatics (dilate pupil)

Anticholinergic side effects

- Anti-arrhythmics
- Anti-diarrheals
- Anti-histamines (Benadryl)
- Muscle relaxants
- Anti-ulcer
- Antidepressants
- Antipsychotics
- Herbals
Actual cases in ER

- 79 y/o male with urinary retention after starting benadryl for allergies
- 5 y/o female that “is not acting right” after a phenergan suppository (flushed with dilated pupils)

Antidote for severe cases:
- Physostigmine: inhibitor of acetylcholinesterase, the enzyme responsible for the breakdown of acetylcholine, thus increasing neuronal transmission due to increased acetylcholine
Cholinergic

- Mechanism
  - Substances like organophosphates or nerve agents inhibit Acetylcholinesterase, an enzyme that normally breaks down Ach, leading to an accumulation of Ach in the body leading to overstimulation of muscle
Cholinergic:  SLUDGE

- S: Salivation
- L: Lacrimation
- U: Urinary Incontinence
- D: Diarrhea
- GE: Gastrointestinal emesis
Cholinergic

- VS: bradycardia, HTN or hypotension, fast or slow RR
- CNS: Agitation, confusion, seizures, coma
- Pupils: Miosis, eye pain, lacrimation
- Skin: Diaphoresis
- GI/GU: Salivation, vomiting, diarrhea, incontinence
- MS: Muscle fasciculations, weakness, paralysis
Cholinergic examples

- Organophosphate and Carbamate insecticides
  - Chlorpyrifos, malathion, parathion, diazinon, fenthion, diclorvos, ethion
- Nerve agents (sarin and soman)
  - Gulf war syndrome
- Cholinesterase inhibitors
  - Physostigmine
  - Edrophonium
Pesticides are poison
Opioid Toxidrome

- Morphine and other synthetic opioids/narcotics
- Clonidine (used for HTN) can act similar
- Lomotil (diphenoxylate/atropine) can be life threatening in children
- Others: Fentanyl, Heroin, Dilaudid, Percocet (oxycodone + tylenol), Lortab (hydrocodone + tylenol), oxycontin, et al
I DON'T ALWAYS TRY TO REFILL MY HYDROCODONE EARLY

BUT WHEN I DO, ITS BECAUSE THE PHARMACY SHORTED ME AND I DROPPED THE FEW THAT WEREN'T STOLEN DOWN THE SINK AS I WAS ON MY WAY OUT OF TOWN FOR A FUNERAL AND MY DOCTOR SAID IT WAS OK.
Opioids

- **VS**: Hypothermia, bradycardia, normal or low blood pressure, slow, shallow respiratory rate
- **CNS**: Lethargy, coma
- **Pupils**: Pinpoint (except Demerol)
- **Skin**: Cool, pale or moist. Track marks if IVDA with heroin
- **Misc**: Hyporeflexia, pulmonary edema, seizures (demerol & propoxyphene), ventricular dysrhythmias (propoxyphene)
Opioids

- Antidote available
- Narcan (naloxone) 0.4mg-2mg IV
  - If long acting narcotic, may need narcan infusion and ICU admit
  - Will precipitate withdrawal symptoms in chronic opioid user
Real life ER cases

- Elderly male with history of severe low back pain, narcotic dependent presents by EMS with Decreased LOC
- Pt sedate but opens eyes to noxious stimuli
- BP 100/50, HR 70, Sats 93% RA
- IV Narcan given
- Security had to be called as patient now agitated, combative, hypertensive
- Multiple doses of IV Ativan given
Sedative-Hypnotic Toxidrome

- **Examples**
  - Alcohols, benzodiazepines, barbiturates, zolpidem (ambien), chloral hydrate
- **VS:** Hypothermia, pulse normal or low, hypotension, slow RR
- **CNS:** Drowsiness, slurred speech, ataxia, lethargy, coma
- **Pupils:** Midsize or miosis, nystagmus
- **Misc:** Hyporeflexia, alcohol smell
Sedative-Hypnotic Toxidrome

- Supportive care
  - Intubation if GCS < 8
  - Flunazenil is antidote for benzodiazepines but can precipitate withdrawl seizures in chronic users. Do not use in polypharmacy OD
  - No specific antidote but Naloxone does have some benefit in non-narcotic overdoses with decreased LOC
Alcohol...
Alcohol toxicity

- Ethanol
- Isopropanol
  - Solvent, disinfectant
  - Mouthwash, rubbing alcohol
  - Metabolized by alcohol dehydrogenase to acetone
  - CNS depressant and fruit odor due to acetone
  - Does not cause metabolic acidosis
Alcohol toxicity

- Methanol
  - Industrial and marine solvent and paint remover
  - Window washer fluid, shellacs, and photocopying fluid
  - Metabolized
    - in liver via alcohol dehydrogenase into formaldehyde
    - Formaldehyde metabolized via aldehyde dehydrogenase into formic acid
  - Toxicity from metabolic acidosis and visual loss
Alcohol toxicity

- Ethylene glycol
  - Odorless, colorless, sweet-tasting liquid
  - Antifreeze
  - Metabolism
    - Oxidized via alcohol dehydrogenase into glycoaldehyde which is metabolized into glyoxylic acid and ultimately to calcium oxalate crystals
  - Toxicity
    - Renal failure, coma, seizures, dysrhythmias
    - Autopsy has shown calcium oxalate in kidneys, brain, heart and lungs
    - Metabolic acidosis
MUDPILES...anion gap acidosis

- M: metformin, methanol
- U: uremia
- D: DKA
- P: propylene glycol, paraldehyde
- I: Isoniazide
- L: Lactate
- E: ethylene glycol
- S: salicylates
Ethanol

**Level**
- < 25 mg/dL
- 25-50 mg/dL
- 50-100 mg/dL
- 100-250 mg/dL
- > 250 mg/dL
- > 450 mg/dL

**Symptom**
- Warmth and well being
- Euphoria and decreased judgement
- Incoordination, decreased reflexes, ataxia
- Ataxia, slurred speech, nystagmus
- Coma
- Respiratory depression, loss of reflexes, death
Treatment

- **Ethanol and Isopropyl alcohol**
  - Supportive

- **Methanol and Ethylene Glycol**
  - Fomepizole or Ethanol
    - Blocks alcohol dehydrogenase
    - Fomepizole: 15mg/kg load then 10mg/kg q 12 hours x 4 doses
  - Metabolic acidosis
    - IVF resuscitation
    - Sodium bicarbonate infusions

- **Hemodialysis**
  - pH < 7.1
  - Methanol or ethylene glycol > 50 mg/dL
Serotonin Syndrome Toxidrome

- Constellation of symptoms due to excess serotonin activity at CNS and peripheral serotonin receptors.
- VS: Hyperthermia, tachycardia, hypertension, tachypnea
- CNS: Confusion, agitation, lethargy, coma
- Pupils: Dilated
- Skin: Diaphoretic, flushed
Quit being annoying or I'll have you sedated, intubated, and restrained in 5 minutes.

Love,
Your paramedic
Serotonin Syndrome

- Neuromuscular: Hyper-reflexia, tremor, clonus, rigidity
- Very similar clinically to alcohol withdrawal!! Differences: History (alcohol abuse), multiple psychiatric meds and rigidity on exam

Treatment:
- Supportive care
- Benzodiazepines for agitation, seizures
Serotonin Syndrome

- Meds that contribute
  - SSRI’s: Celexa, Lexapro, Paxil, Prozac, Zoloft
  - NSRI’s: Cymbalta, Effexor, Pristiq
  - MAOIs: Marplan, Nardil
  - Wellbutrin, Zyban
  - Migraine meds: Axert, Amerge, Imitrex, Zomig
  - Pain meds: Actiq, Fentora, Fentanyl, Talwin, Ultram
  - Lithium
  - Dextromethorphan
  - Nausea meds: Kytril, Reglan, Zofran
Sympatholytic Toxidrome

- Drugs: alpha₁ blockers, beta blockers, alpha₂ agonists, calcium channel blockers
- VS: Bradycardia, hypotension, slow RR, hypoventilation
- CNS: normal, lethargy, coma, seizures
- Pupils: mid size to pinpoint
- Treatment
  - Glucagon, Calcium, IVF, pressors,
Sympathomimetic Toxidrome

- Examples: Cocaine, PCP, amphetamines
- VS: hyperthermia, tachycardia, hypertension, tachypnea,
- CV: HTN, Cardiac ischemia, Dysrhythmias
- CNS: enhanced alertness, agitation, delerium, seizures, coma
- Pupils: Mydriasis
- Skin: Diaphoretic, hot
- Neuromuscular: Hyperreflexia
Sympathomimetic Toxidrome

- **Treatment**
  - **Agitation**
    - Antipsychotics
      - Droperidol, haloperidol, or butyrophenones antagonize CNS dopamine receptors
      - Benzodiazepines enhance GABA transmission and sedation (also good for seizures)
  - **Hypertension and tachycardia**
    - Labetolol preferred as has anti-alpha and beta adrenergic properties but others such as metoprolol, carvedilol, and esmolol also good
    - Afterload reduction with hydralazine or nitroprusside also necessary on occasion.
Sympathomimetic Toxicity

- Coronary ischemia
  - Standard ACS treatment
- Rhabdomyolysis
  - Follow CK levels
  - IV crystalloid and observe I and O closely
  - Bicarbonate infusions prevent precipitation of myoglobin in renal tubules
  - Hemodialysis in severe cases
Sympathomimetic Toxidrome

- **Special circumstances**
  - **Body-packers**
    - Swallow or pack a selected orifice with drugs in an attempt to conceal and illegally transport drugs across international borders
    - Tightly packaged
  - **Body stuffers**
    - Patients who rapidly swallow illegal contraband such as cocaine or heroin in an attempt to avoid prosecution when confronted by police
    - Poorly wrapped drugs
Whole bowel irrigation
Surgical consult
DECONTAMINATION
Gastric Lavage

- NOT routinely indicated
  - Indications
    - Life threatening ingestions
    - No adequate antidote available
    - Within 1 hour of ingestion

- Clinical Toxicology 2013 Position paper
  - 69 articles from 2003-2011 reviewed
  - “No evidence that gastric lavage should be used routinely in the management of poisonings”
Risks of Gastric Lavage

- Esophageal perforation
- Aspiration
- If performing, should have protected airway
- Never in corrosive ingestions or hydrocarbon ingestions
Activated charcoal: 1 g/kg

- Clinical Toxicology position paper 2005:
  - “activated charcoal should not be used routinely”
  - AC can be considered if
  - Ingestion of potentially toxic amount of poison that will be absorbed by charcoal within one hour of arrival
  - Airway intact or protected
  - Consider using beyond one hour if massive pill OD that decreases GI transit time
Volunteer studies showed effectiveness of activated charcoal decreased with time.

Using 50 grams of Activated Charcoal:

<table>
<thead>
<tr>
<th>Minutes</th>
<th>Mean reduction in absorption</th>
</tr>
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<tbody>
<tr>
<td>30</td>
<td>47.3%</td>
</tr>
<tr>
<td>60</td>
<td>40.07%</td>
</tr>
<tr>
<td>120</td>
<td>16.5%</td>
</tr>
<tr>
<td>180 min</td>
<td>21.13%</td>
</tr>
</tbody>
</table>
Contraindications for AC

- Bowel obstruction/perforation
- Esophageal perforation
- Unprotected airway
- Caustics and hydrocarbons
- Activated charcoal does not bind:
  - Metals, lead, iron
  - Lithium
  - Pesticides
  - Hydrocarbons
  - Alcohols
  - Solvents and caustics
Whole bowel irrigation

- Indications
  - Toxic foreign bodies (body packers)
  - Sustained release or enteric coated products
  - Lithium
  - Metals, especially iron due to high morbidity and mortality of this poisoning and AC does not bind
Whole bowel irrigation

- Polyethylene glycol electrolyte solution (PEG-ES)
  - 1-2 L/hour (adults)
  - 500cc/hour pediatrics
  - Concentration of PEG does not cause electrolyte changes
Syrup of Ipecac

- Over the counter
- Not recommended in medical setting
- Clinical Toxicology position paper 2005
  - No evidence from clinical studies that ipecac improves outcome of poisoned patients and ED use should be abandoned (I would argue EMS as well)
  - Insufficient data to support or exclude ipecac given immediately after ingestion (home use questionable)
ENHANCED ELIMINATION

Methods to increase the clearance of a substance from the body
Multidose activated charcoal

- Multi-dose activated charcoal
  - Phenobarbital
  - Theophylline
  - Carbamazepine (Tegretol)
  - Dapsone
  - Quinine

- Clinical Toxicology position paper
  - Volunteer studies and case reports
    - MDAC increases elimination of these meds
    - 12.5 g/hour by NG until symptoms improve
    - No proven benefit of adding cathartic (sorbitol) and not recommended in children
Urinary alkalinization

- Increases elimination by IV sodium bicarbonate to produce urine with pH $\geq 7.5$
  - Elimination of a weak acid by the kidneys is increased in an alkaline environment and manipulation of the urine pH can enhance renal excretion

- Clinical Toxicology paper 2004
  - UA should be first line treatment for patients with moderately severe salicylate poisoning who do not meet criteria for dialysis
Hemodialysis

“ISTUMBLEd”

- I: Isopropanol
- S: Salicylates
- T: Theophylline, Tenormin (atenolol)
- U: Uremia
- M: Methanol
- B: Barbiturates (phenobarbital)
- L: Lithium
- E: Ethylene Glycol
- D: Depakote (esp if level > 500)
Why are there never any good side effects? Just once I'd like to read a medication bottle that says, "May cause extreme sexiness."
ANTIDOTES
<table>
<thead>
<tr>
<th>TOXIN</th>
<th>ANTIDOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acetaminophen</td>
<td>N-Acetylcysteine (IV or PO)</td>
</tr>
<tr>
<td>Anticholinergicic agents</td>
<td>Physostigmine</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>Flumazenil</td>
</tr>
<tr>
<td>Beta blockers or calcium channel blockers</td>
<td>IVF, Calcium, Glucagon, Insulin</td>
</tr>
<tr>
<td>Carbon Monoxide</td>
<td>Oxygen or hyperbaric O₂</td>
</tr>
<tr>
<td>Digoxin</td>
<td>Digoxin specific Fab fragments (Digibind)</td>
</tr>
<tr>
<td>TOXIN</td>
<td>ANTIDOTE</td>
</tr>
<tr>
<td>-------</td>
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</tr>
<tr>
<td>Cocaine, Methamphetamine</td>
<td>Benzodiazepine (Ativan)</td>
</tr>
<tr>
<td>Cyanide</td>
<td></td>
</tr>
<tr>
<td>Ethylene glycol</td>
<td>Amyl nitrate, sodium nitrate, sodium thiosulfate, hydroxycobalamin</td>
</tr>
<tr>
<td>Heparin</td>
<td>4-Methylpyrazole (Fomipazol), ethanol</td>
</tr>
<tr>
<td>Hydrofluoric acid</td>
<td>Protamine sulfate</td>
</tr>
<tr>
<td></td>
<td>Calcium gluconate</td>
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</tbody>
</table>
## Antidotes

### TOXIN
- Iron
- Isoniazide
- Lead
- Mercury
- Methanol
- Opioids (narcotics)
- Organophosphates (pesticides)
- Sulfonylureas (DM)
- Tricyclic antidepressants

### ANTIDOTE
- Deferoxamine
- Pyridoxine
- DMSA, EDTA, BAL
- BAL
- 4-Methylpyrazole, ethanol
- Naloxone (Narcan)
- Atropine + pralidoxime
- Glucose + octreotide
- Sodium bicarb, benzo’s
A day in the life in the Emergency Department

OVERDOSE CASES
CC “vomiting”

- 24 y/o female calls EMS as has been vomiting x 3 hours and feels weak, fatigued
- VS 98.5, HR 110, RR 20, BP 110/68, SaO2 97% RA.
- Appears ill, lethargic, actively vomiting
- Skin: mild jaundice
- CV: tachycardic
- Resp: lungs clear
- Abdomen: soft, tender RUQ, neg Murphey’s
- Psych: Pt depressed, poor eye contact
CC “vomiting”

- IVF, Zofran given
- Labs: PT 14.2/1.4 INR (80’s PTT)
- BUN/Creat 47/1.8
- Glucose: 80
- AST 5,423, ALT 6,087

Pt now admits she took OD of tylenol yesterday, 24 hours ago
  - 100 XS tylenol (500mg)
  - Pt’s weight 80kg
Tylenol overdose

- Serum acetaminophen level 40mg/dL
  - 24 hours after ingestion
  - Is this serious?
  - What do we need to do??

- If in doubt, call Poison Control and they will fax you protocol

- Rumack-Matthew Nomogram
  - For a single acute overdose
Nomogram: acetaminophen plasma concentration vs time after acetaminophen ingestion (adapted with permission from Rumack and Matthew, Pediatrics, 1975;55:871-876). The nomogram has been developed to estimate the probability of whether a plasma acetaminophen concentration in relation to the interval postingestion will result in hepatotoxicity and, therefore, whether acetylcysteine therapy should be administered.

CAUTIONS FOR USE OF THIS CHART:
1. Time coordinates refer to time postingestion.
2. Graph relates only to plasma concentrations following a single, acute overdose ingestion.
Acetaminophen toxicity

- **When to consider?**
  - History of overdose (OTC acetaminophen or combination cold meds, Lortab/Percocet OD)

- **APAP toxicity**
  - At therapeutic doses
    - 90% of APAP conjugated and renally excreted
    - 2-4% metabolized by P450 enzyme in liver to NAPQI
    - NAPQI conjugated to glutathione as non-toxic metabolite
  - In overdose, glutathione stores depleted and NAPQI accumulates leading to hepatotoxicity
Acetaminophen toxicity

- Four stages of toxicity:
  - I: 0-24 hours. Asymptomatic or mild anorexia, nausea, vomiting, malaise
  - II: 24-48 hours. Transaminases start to rise at 12 hours. Abdominal pain, RUQ tenderness, vomiting, decreased urine output
  - III: 72-96 hours. Transaminases peak at 72 hours. PT rises, multi-system organ failure or recovery
  - IV: 4d-2 weeks. Resolution of hepatotoxicity
- Toxic single ingestion 150mg/kg
N-Acetylcysteine (NAC)

- PO dosing: 140mg/kg load, followed by 70mg/kg q 4 hours x 17 doses
- IV dosing: 150mg/kg load over 15 min followed by 50mg/kg over 4 hours followed by 100mg/kg over 16 hours
Pearls of APAP OD

- Need a 4 hour level in an acute overdose
- Rules of 150’s
  - If single ingestion > 150mg/kg and no vomiting, could draw labs but start NAC treatment
  - If 4 hour level is > 150, start NAC treatment
  - IV dosing 150mg/kg load IV
Transplant Guidelines

- King’s College guidelines
  - pH <7.3 after fluid resuscitation
  - Or
  - PT > 100
  - Creatinine > 3.4
  - Grade III or IV encephalopathy
  - Lactate > 3.5 mmol/L
Case #2

- “Doctor...there is someone out in the waiting room that won’t wake up”
- 24 y/o male
  - Discharged from ED 5 hours ago after receiving one liter NS and IV Zofran 4mg for vomiting
  - Diagnosed with gastroenteritis....but no history of diarrhea
  - No previous labs done
  - Discharge VS: HR 110, BP 95/40, RR 24
In waiting room...

- Pt is sitting in chair, slumped over against wall
- Unresponsive
  - GCS 7
  - BP 80/35, HR 130, RR 30’s, sats 94% RA
  - Undressing him....an empty bottle of aspirin falls out of his pocket!
Salicylate Toxicity

- Causes acid-base, fluid, and electrolyte abnormalities
- Phase 1: hyperventilation resulting from direct respiratory center stimulation, leading to respiratory alkalosis and increased potassium and sodium bicarbonate in urine (12 hours)
- Phase 2: Increased aciduria after potassium has been depleted from urine
Salicylate toxicity

- Phase 3: Dehydration, hypokalemia, progressive metabolic acidosis.
  - May begin 4-6 hours after ingestion in infant
  - May begin 24+ hours after ingestion in adult

- Earliest signs
  - Nausea and vomiting, vertigo, hyperventilation, tachycardia and hyperactivity.

- Late signs
  - Agitation, delerium, hallucinations, seizures, lethargy coma.
Salicylate Toxicity

- Categories of toxicity
  - < 150mg/kg: mild toxicity  
  - 150-300 mg/kg: moderate toxicity  
  - 301-500 mg/kg: serious toxicity  
  - > 500mg/kg: potentially lethal  

# pills (70kg)
- < 30 pills
- < 60 pills
- < 100 pills
- > 100 pills
Salicylate toxicity

- Auditory: Tinnitus, deafness, hearing loss
- Pulmonary: Hyperventilation, Dyspnea due to noncardiogenic pulmonary edema, respiratory arrest, apnea
- CV: Tachycardia, hypotension, Dysrhythmias, asystole, EKG abnormalities (U waves, flattened T waves, QT prolongation)
- Neuro: CNS depression, lethargy, seizures, coma
Salicylate toxicity

- GI: vomiting, epigastric pain, GI hemorrhage, pancreatitis, hepatitis, esophageal strictures
- GU: Acute renal failure
- Hematologic: DIC (multisystem organ failure)
- Electrolyte imbalances: Increased BUN/Creatinine, hypocalcemia, acidosis, hypokalemia
Salicylate levels

- Therapeutic range 15-30 mg/dL
- Mild symptoms: 40-50 mg/dL
- Serious or life threatening: > 100 mg/dL

- For chronic poisoning > 60 mg/dL toxic
- Acute overdose, levels may not increase for 4-6 hours
- A 6 hour level > 100mg/dL potentially lethal and is indication for hemodialysis
Salicylate toxicity

- Monitor levels every 2 hours until start to fall

- Treatment
  - Decontamination and enhanced transport
    - Activated charcoal, single vs multi-dose
    - Whole bowel irrigation more effective in decreasing absorption
  - Urine alkalization
    - IV sodium bicarbonate to urine pH 7.5-8
    - Urine pH to 8, 18 fold increased in renal clearance.
  - IVF resuscitation, pressors,
  - Hemodialysis
  - Done Nomogram
Serum salicylate level & severity of intoxication
Single dose acute ingestion nomogram

Serum salicylate (mg/dL)

- Probably Lethal
- Severe
- Moderate
- Mild

Asymptomatic

Hours since ingestion

0  6  12  24  36  48  60
Salicylate toxicity

- Indications for dialysis
  - Serum level > 120 mg/dL
  - > 100mg/dL six hours post ingestion
  - Refractory acidosis
  - Coma
  - Seizures
  - Renal failure
Back to ER patient

- Salicylate level 100.
- IVF resuscitation, pressors, intubation
- Admitted to ICU
- Hemodialysis
- Complications
  - Compartment syndrome bilateral legs requiring bilateral fasciotomies
  - Hearing loss
Summary

- Call Poison Control in all but the most straightforward overdoses

- 1-800-222-1222
QUESTIONS ?

NURSES ARE LIKE

THANK YOU LORD, THE PATIENT IS LEAVING AMA.
THE LOOK I GIVE MY PATIENT

WHEN THEY'RE TRYING TO GET OUT OF BED.
References

- Salicylate Toxicity. Medscape. Waseem, Muhammed. 2013
- Clinical Toxicology. 2013. 51. 140-146. Position paper update: Gastric lavage for GI decontamination.
References

That’s all folks!

AINT GOT NO INSURANCE

EMERGENCY ROOM IS FREE