



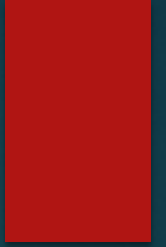
A midsummer's night high: A case based review of drug overdoses for the emergency provider

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No disclosures



Outline

- ▶ Discuss a general approach to the intoxicated patient
- ▶ Review presentation and management of alcohol intoxication and withdrawal
- ▶ Discuss opioid intoxication and management
- ▶ Review other common drugs of abuse

Small town Saturday night...

- ▶ It's Saturday night, and there's a local music festival in town, as well as a large influx of people.
- ▶ You are a provider covering the emergency department in your local town of about 10,000
- ▶ You have a few inpatient beds should someone need to be admitted.
- ▶ The larger transfer hospital is about 40 minutes drive away.

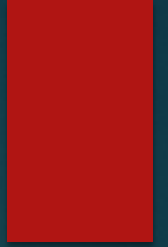
Slow start to the night...



Back to the Basics

- ▶ Alwaysremember ABCs!
- ▶ Vitals
- ▶ MATTERS history

Toxicology MATTERS!



- ▶ Medication
- ▶ Amount/Concentration
- ▶ Time
- ▶ Taken
- ▶ Emesis
- ▶ Reason
- ▶ Signs/Symptoms

Toxidromes

Opioid

- Hypoventilation, drowsiness, miosis, bradycardia, hypotension

Withdrawal

- Diarrhea, lacrimation, yawning, mydriasis, piloerection, tachycardia, hallucinations, seizures (ETOH/Benzo)

Toxidromes

Sympathomimetic

- Effects:
 - Tachycardia, hypertension, hyperthermia, seizures, mydriasis, agitation/combativeness, diaphoresis
- Drugs
 - Amphetamines
 - Cocaine
 - Ecstasy
 - ADHD Medications
 - Some Antidepressants

Toxidromes

Sympatholytic-Sedative-Hypnotic

- Effects
 - Bradycardia, hypotension, hypothermia, bradypnea, somnolence/coma, miosis
- Drugs
 - Benzodiazepines
 - Insomnia Medications
 - Opioids
 - Clonidine

Toxidromes

Cholinergic

- Effects
 - Diarrhea, diaphoresis, urination, miosis, bronchosecretions, bradycardia, emesis, lacrimation, lethargic, salivation
- Drugs
 - Pesticides/Insecticides
 - Organophosphate warfare agents (Sarin)
 - Certain mushrooms

Toxidromes

Anticholinergic

- Effects
 - Hyperthermia, flushed dry skin, mydriasis, delirium/hallucinations, tachycardia, urinary retention
- Drugs
 - Antihistamines
 - Tricyclic Antidepressants
 - Cyclobenzaprine
 - A lot of other medications

Toxicology Workup

Vital Signs

Blood Glucose

Neurologic
Exam

Skin Exam

EKG

Labs

- Acetaminophen
- Salicylate

Patient 1

Frat Boy Fred and his Friends



Frat Fred

- ▶ Vitals: Temp 98.6 HR 85 BP 120/84 RR 18 O2 98%
- ▶ Bar fight. Has a laceration to his forehead
- ▶ Slurring words, swinging at staff who try to touch him, no cooperative
- ▶ With his two friends who are laughing and also intoxicated.

Alcohol Intoxication

Euphoria,
Coordination
Deficits

Slurred speech,
impaired
judgement

Ataxia

Nausea,
Vomiting

Incoherent
Thoughts

Respiratory
Depression,
Coma

Treatment

- ▶ Largely supportive
- ▶ O₂, IV fluids
- ▶ Vitamins
- ▶ Agitation? Antipsychotics



Alcohol withdrawal

- ▶ Symptoms generally begin 6- 24 hours after last drink.
- ▶ Can see symptoms before alcohol level is 0.
- ▶ Can range from mild to life threatening.
- ▶ Treatment? 2 main options. Benzodiazepines, or...alcohol.

Alcohol Withdrawal

Anxiety,
palpitations

Tremor

Sweating

Delirium

Hallucinations

Seizures

Alcohol Withdrawal Treatment

- ▶ Benzodiazepines
- ▶ Clonidine
- ▶ Precedex
- ▶ Carbamazepine



Frat Fred

- ▶ You give Fred a friendly dose of 5 mg IM Haldol
- ▶ His friends are escorted out by security.
- ▶ He sleeps for a few hours in the ED until he wakes up, eats a sandwich and is discharged with a sober ride.

Patient 2

Heroin Hannah



Heroin Hannah

- ▶ Young-looking woman
 - ▶ Minimally responsive
 - ▶ Pinpoint pupils
 - ▶ Shallow breathing (6 respirations/min)
 - ▶ Police found syringe and white powder near patient
-
- ▶ Vitals: HR 65 BP 105/86 RR 6 O2 84 %

Opioids

Mechanism

- Binds to opioid receptors in the CNS
- Blocks perception and response to pain

Natural

- Morphine
- Codeine
- Opium

Synthetic

- Heroin
- Hydromorphone
- Hydrocodone
- Oxycodone
- Fentanyl
- Meperidine
- New Fentanyl Derivatives

Others

- Tramadol
- Tapentadol
- Methadone
- Buprenorphine

Opioid Intoxication

Apnea,
Pulmonary
Edema

Stupor,
Drowsiness

Miosis

Nausea,
Vomiting,
Constipation

Bradycardia,
Hypotension

Compartment
Syndrome,
Rhabdomyolysis

Treatment of Opioid Overdose

Airway, Breathing, Circulation

- Restore oxygenation and ventilation

Skin Examination

- Examine skin for patches, needles, compartment syndrome

Obtain History/Labs

- CMP, CBC, EKG, acetaminophen/salicylate level

Naloxone

Completely reverses all effects of opioids

Can be given IV, IM, Nasal, Sub-Q, Inhaled

Dosing of Naloxone

0.04mg

0.5mg

2mg

4mg

10mg

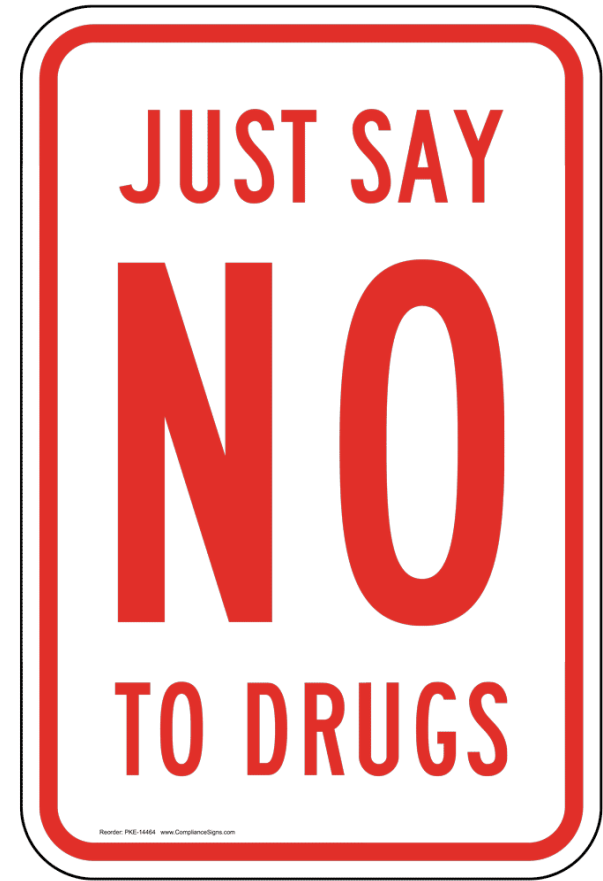
15mg

If continuous infusion naloxone needed:

- Start at 2/3rd dose of effective naloxone bolus dose per hour
- Bolus with each rate increase

Heroin Hannah

- ▶ 0.4 mg Narcan given IV.
- ▶ Patient awakens, frustrated to be in the ED.
- ▶ Agrees to be observed for one hour.
- ▶ Doing well after an hour. Discharged with substance abuse resources.



Patient 3

Methed Out Mike



Methed Out Mike

- ▶ Young-looking man brought in by police
- ▶ Violent, screaming
- ▶ Temp: 102 degrees
- ▶ BP: 182/100 mmHg
- ▶ Pulse: 137 bpm
- ▶ Police suspect he is high on something

Stimulants



Amphetamine Overdose

Agitation,
Anxiety,
Hallucinations,
Seizure

Hyperthermia,
Hypertension,
Tachycardia

Mydriasis,
Diaphoresis,
Vasculitis

Hyponatremia,
Kidney Failure

Muscle Rigidity,
Rhabdomyolysis,
Metabolic
Acidosis

Aortic
Dissection,
Myocardial
Infarction

Management

ABCs

Temperature Management

- Rapid cooling measures
- Avoid physical restraints
- Acetaminophen doesn't work

Benzodiazepines

Fluid Rehydration

Cocaine Overdose

Hypertension,
Tachycardia,
Hyperthermia

Mydriasis, Loss of
Vision, Nasal
Septum
Perforation

Headache,
Seizures, Brain
Hemorrhage,
Stroke

Crack Lung,
Chest Pain/MI,
Dysrhythmias,
Aortic Dissection

Abdominal
Distension,
Vomiting
(Packers)

Diaphoresis,
Rhabdomyolysis

Management

ABCs

- Benzodiazepines for blood pressure
- Nicardipine, Nitroglycerin
- No beta blockers or alpha/beta blockers
- Sodium bicarbonate/lidocaine for dysrhythmias

Temperature Management

- Rapid cooling measures/Benzodiazepines
- Avoid physical restraints
- Acetaminophen doesn't work

Fluid Rehydration

Bath Salt Overdose



Management

ABCs

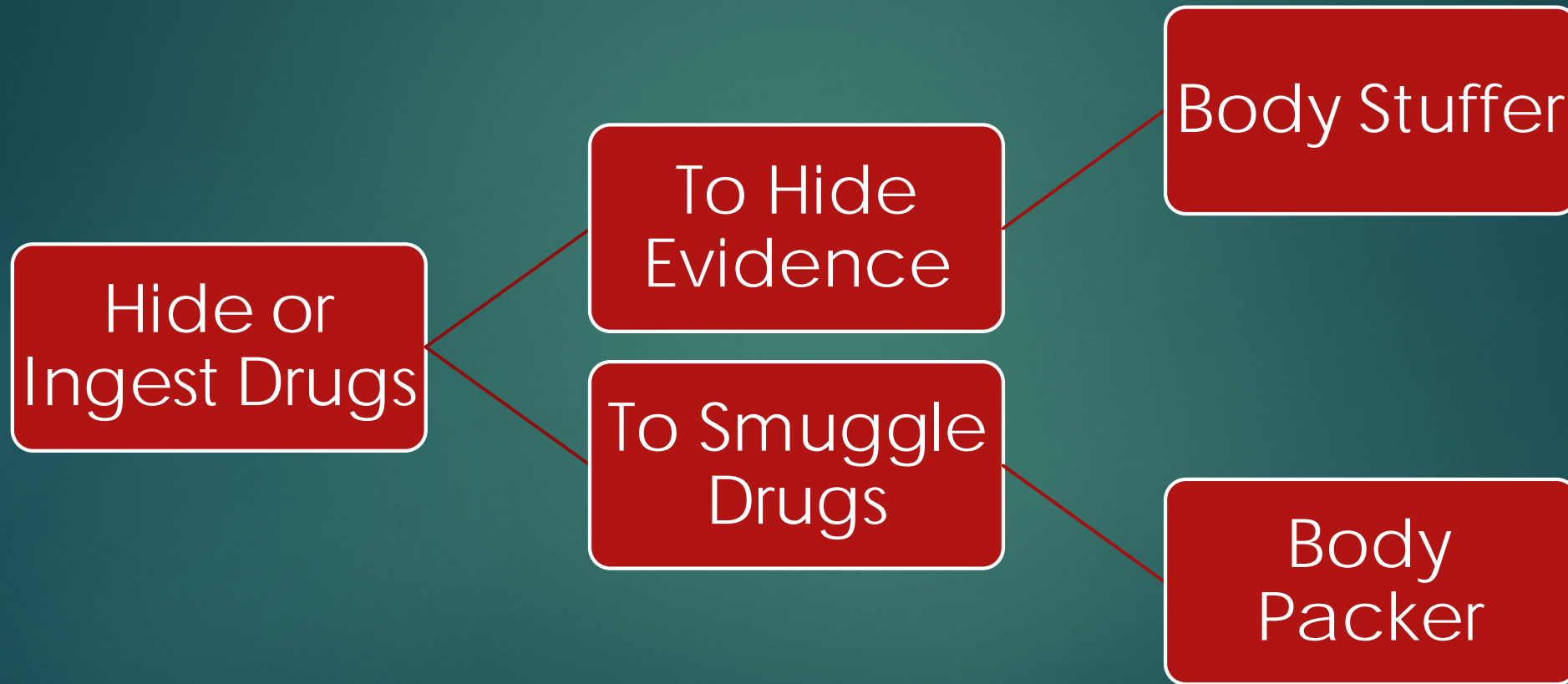
- Benzodiazepines for blood pressure
- Nicardipine, Nitroglycerin
- No beta blockers or alpha/beta blockers
- Sodium bicarbonate/lidocaine for dysrhythmias

Temperature Management

- Rapid cooling measures/Benzodiazepines
- Avoid physical restraints
- Acetaminophen doesn't work

Fluid Rehydration

Stuffers and Packers



Body Packer Management

Surgical removal immediately if symptomatic from cocaine

Naloxone if symptomatic from heroin

Abdominal X-Ray/CT

Whole Bowel Irrigation

- Until all packets passed

Confirmatory Abdominal X-Ray/CT

Body Stuffer Management

X-Ray/CT usually not helpful



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graph TD; A[X-Ray/CT usually not helpful] --> B[Consider activated charcoal or whole bowel irrigation]; B --> C[Monitor patient for at least 6 hours]; C --> D[If symptomatic, treat like any overdose of that type];
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Consider activated charcoal or whole bowel irrigation

Monitor patient for at least 6 hours

If symptomatic, treat like any overdose of that type

Methed out Mike

- ▶ Physical exam reveals an open baggy of white powder lodged in patient's rectum
- ▶ You administer multiple doses of IV Ativan
- ▶ Passive cooling measures initiated
- ▶ Patient transferred to bigger hospital for close ICU monitoring.

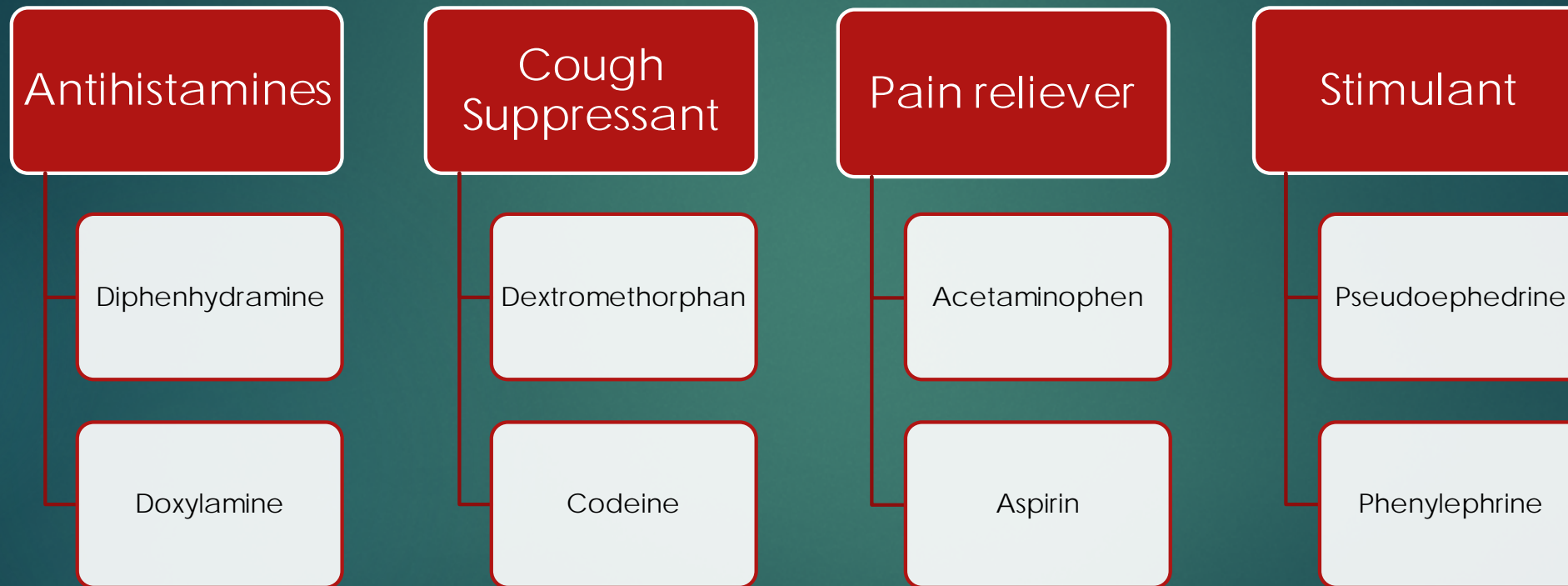
Shift end...



Drug Potpourri



OTC Cough/Cold Products



Effects

Antihistamine

- Hyperthermia, flushed dry skin, mydriasis, delirium/hallucinations, tachycardia, urinary retention

Cough Suppressant

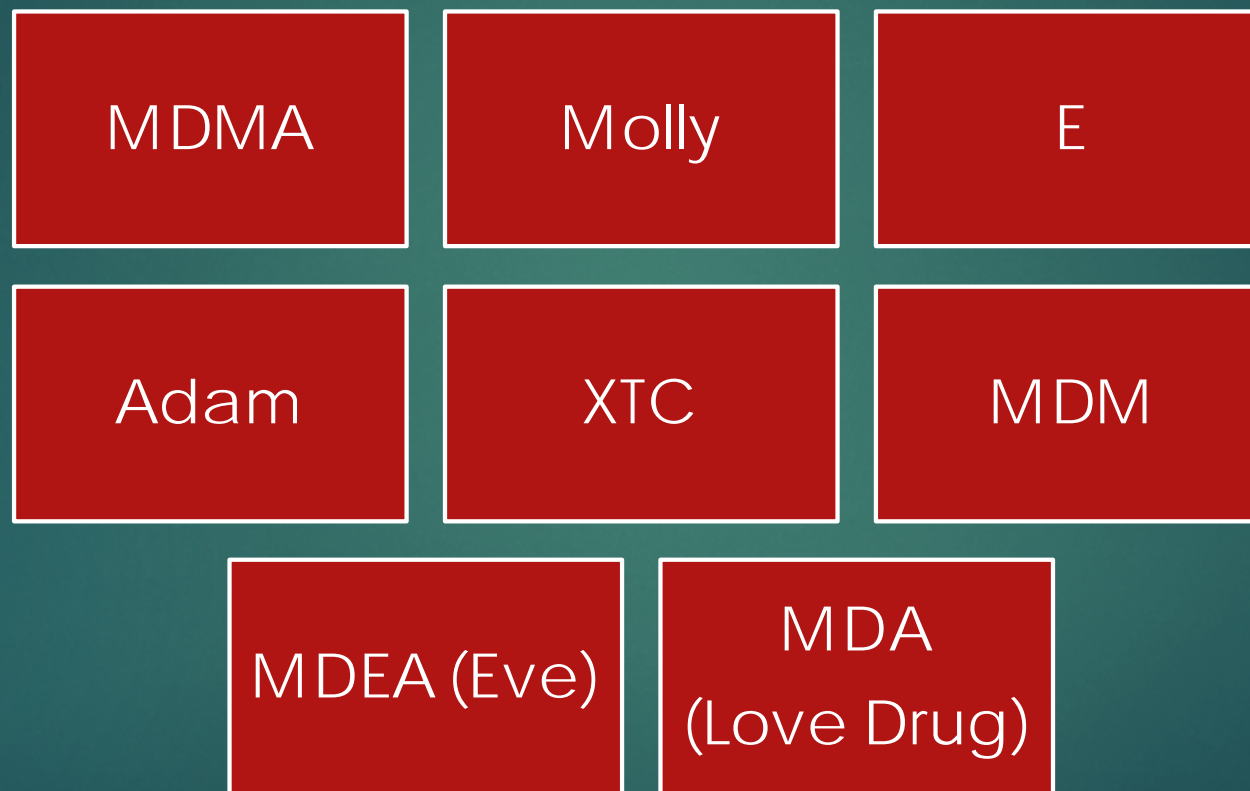
- Dextromethorphan
 - Dysphoria, euphoria, hallucinations

Antihistamine Management

- ▶ Benzodiazepine
- ▶ Fluid Hydration
- ▶ Physostigmine
- ▶ Other supportive cares



Ecstasy



Ecstasy Overdose

RARE TO
OVERDOSE

Hyperthermia,
Tachycardia,
Dysrhythmias

Hallucinations,
Mydriasis,
Dizziness

Hyponatremia,
Seizures

Hypertension,
Intracranial
Hemorrhage

Psychosis,
Serotonin
Syndrome

Carfentanil

- ▶ Newer drug on the streets
- ▶ 100 times more potent than fentanyl, 10,000 times more than morphine
- ▶ Has been used as an elephant tranquilizer
- ▶ Starting to be seen in larger cities in the United States
- ▶ Some being laced in with regular heroin
- ▶ Can take very large doses of naloxone to regain respiratory drive/level of consciousness.



Take Aways

- ▶ Remember the MATTERS
- ▶ Toxidromes
- ▶ Benzodiazpines = mainstay treatment for many overdoses
- ▶ When in doubt, call your local Poison Control

Special Thanks

- ▶ Kyle Dvorcek, PharmD Avera McKennan
- ▶ Regions Hospital Toxicology, St. Paul, MN

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Questions

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- ▶ Thanks!