

Evaluation and Management of the Unknown Toxidrome

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Disclosures

- None

Outline

- Definitions
- Epidemiology
- Substances
 - Examples
 - Mechanism of Action
 - Toxidrome
 - Treatment
- Special Cases
- Questions

Definitions

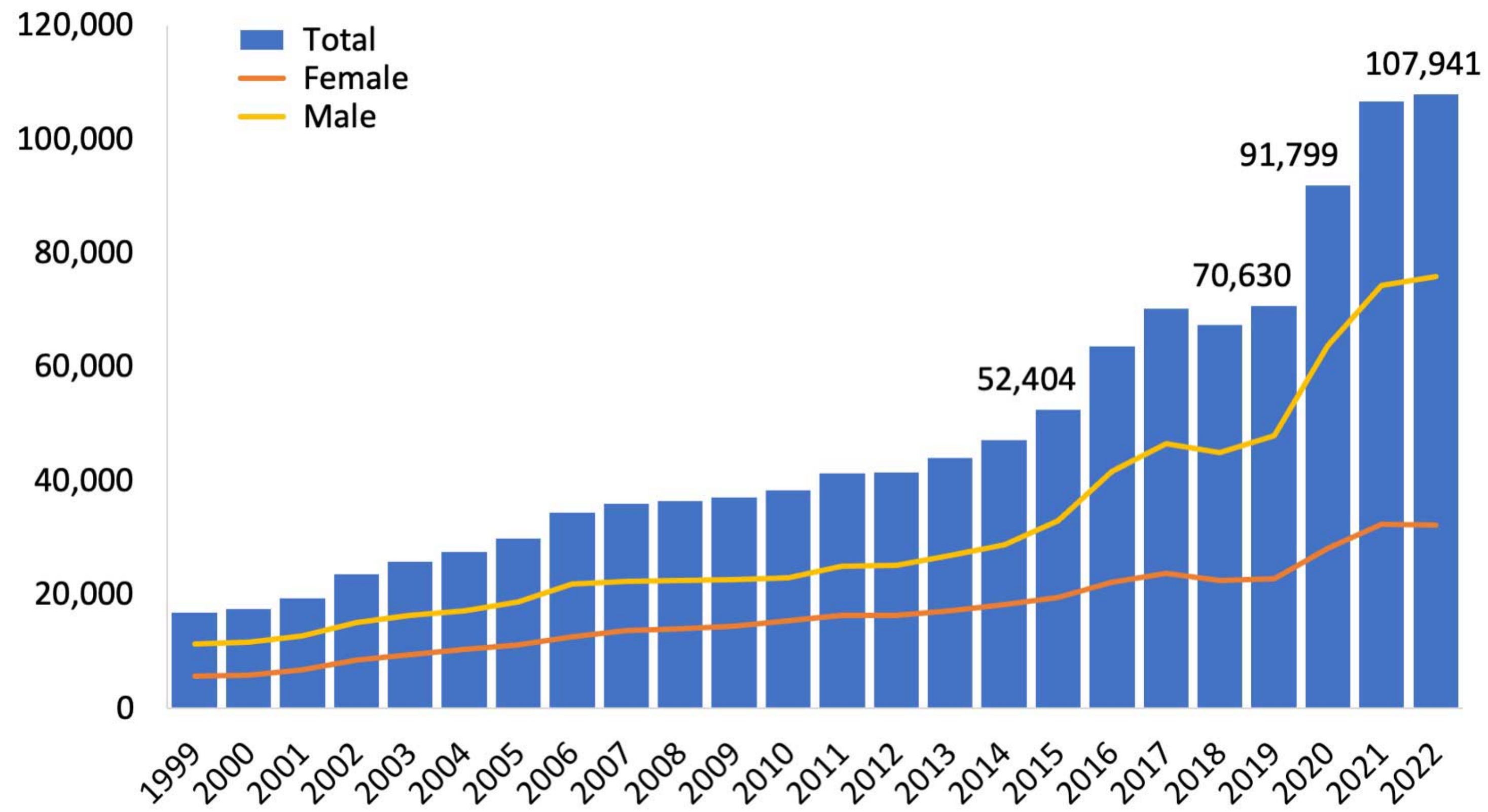
- Poisoning
- Overdose
- Withdrawal
- Antidote

Cause of Toxic Syndromes

- Recreational use of illicit
- Intentional ingestions
- Accidental poisonings
- Transportation of drugs
- Environmental
- Exposure
- Mass Casualty

Overdose Deaths

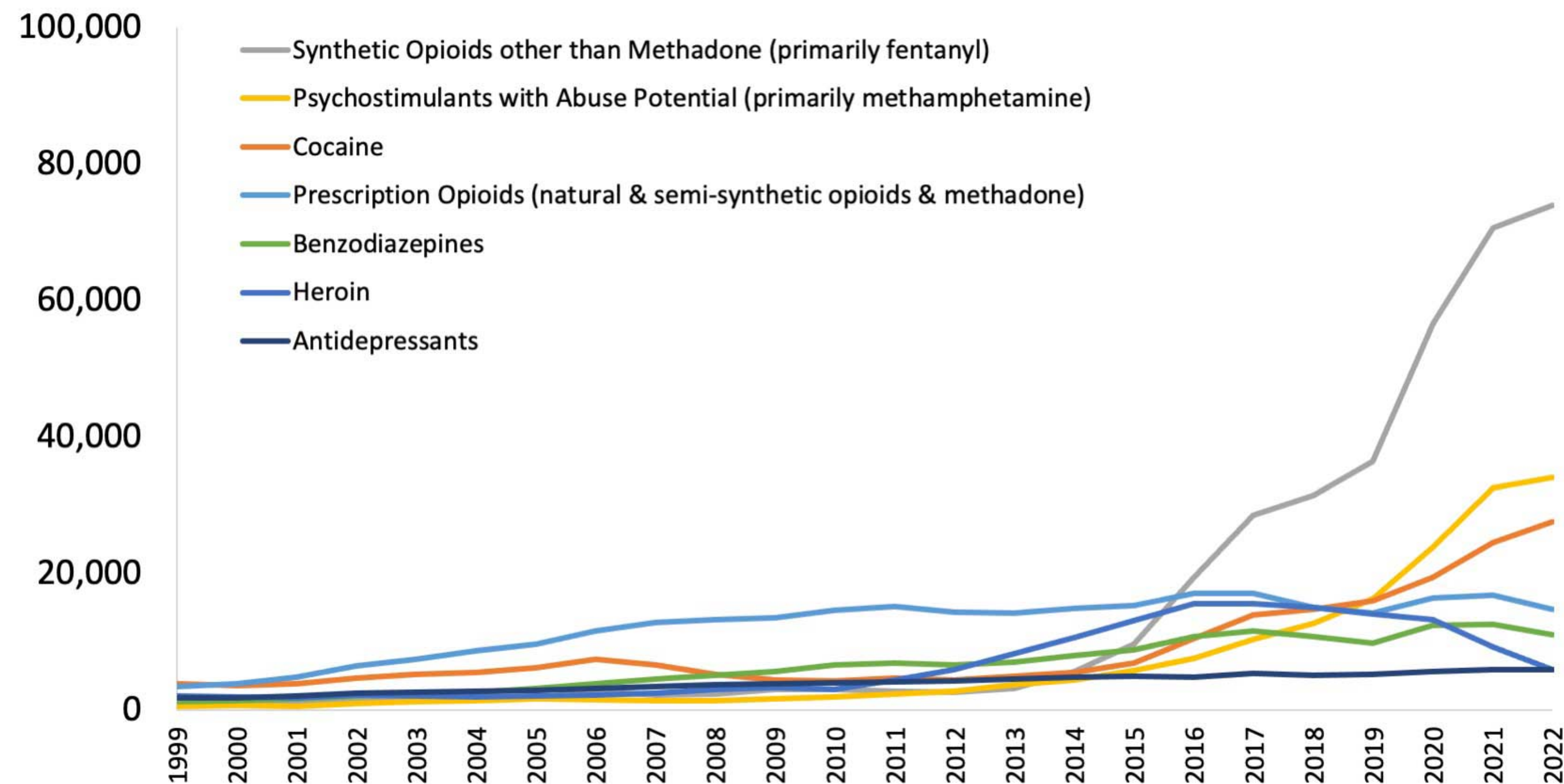
Figure 1. National Drug Overdose Deaths*, Number Among All Ages, by Sex, 1999-2022



*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2022 on CDC WONDER Online Database, released 4/2024.

Overdose Deaths

Figure 2. National Drug Overdose Deaths*, Number Among All Ages, 1999-2022



*Includes deaths with underlying causes of unintentional drug poisoning (X40–X44), suicide drug poisoning (X60–X64), homicide drug poisoning (X85), or drug poisoning of undetermined intent (Y10–Y14), as coded in the International Classification of Diseases, 10th Revision. Source: Centers for Disease Control and Prevention, National Center for Health Statistics. Multiple Cause of Death 1999-2022 on CDC WONDER Online Database, released 4/2024.

Substances

Anticholinergic

Toxins and Mechanism of Action

- Diphenhydramine
 - Atropine
 - Itraproprium Bromide
 - Antipsychotics
-
- Mechanism of action
 - Blocks binding of the Acetylcholine receptors

Anticholinergic Toxidrome and Treatment

- Toxidrome
 - Confusion, agitation, flushed dry skin, dilated pupils, hypertension, tachycardia, hyperthermia, urinary retention, constipation
- Antidote
 - Supportive Care
 - Physostigmine

Cholinergic

Toxins and Mechanism of Action

- Organophosphate
 - Carbamates
 - Physostigmine
 - Sarin
 - Soman
-
- Mechanism of action
 - Blocks Cholinesterase

Cholinergic

Toxidrome and Treatment

- Toxidrome
 - Anxiety, headache, confusion, dizziness, ataxia, tearing, sweating, chest tightness, vomiting, nausea, diarrhea, bradycardia, bronchoconstriction
- Treatment
 - ABC's (aggressive)
 - Atropine/Pralidoxime (Dose can be 2mg - 5mg every 5 mins until improved symptoms)

Opioid

Toxin and Mechanism of Action

- Fentanyl
- Opium based products
- Mechanism of Action
 - Mu type receptors

Opioid

Toxidrome and Treatment

- Bradypnea, confusion, decreased consciousness, pupillary constriction, constipation, dry mucus membranes
- Treatment
 - Naloxone

Sedative/Hypnotics

Toxin and Mechanism of Action

- Alcohol
 - Benzodiazepines
 - Zolpidem
-
- Mechanism of Action
 - Enhanced GABA receptor binding

Sedative/Hypnotics

Toxidrome and Treatment

- Decreased consciousness, ataxia, dysarthria
- Treatment
 - Supportive care
 - Flumazenil (Only in certain cases)

Sympathomimetics

Toxins and Mechanism of Action

- Cocaine
 - Epinephrine
 - Oxymetazolin
-
- Mechanism of Action
 - Adrenoreceptor activation

Sympathomimetics

Toxidrome and Treatment

- Hypertension, Tachycardia, agitation, tremors, seizures, dilated pupils, hyperthermia
- Treatment
 - Sedation
 - Benzodiazepine

Acetaminophen

Toxin and Mechanism of Action

- Combination opiates, Tylenol, Cough and Cold medications
- Mechanism of Action
 - Possible COX pathway inhibition

Acetaminophen

Toxidrome and Treatment

- Nausea, confusion, thrombocytopenia, liver failure
- Treatment
 - N-Acetylcysteine

Salicylates

Toxin and Mechanism of Action

- NSAIDs, Aspirin
- Mechanism of Action
 - Blocks COX pathway

Salicylates

Toxidrome and Treatment

- Altered mental status, tachycardia, tachypnea, hypokalemia, dehydration, metabolic acidosis
- Treatment
 - Charcoal
 - Urine Alkalization with/without HD

Special Cases

- Tokyo Sarin Gas
- Litvinenko
- Markov
- Navalny

Tokyo Subway Attack

- 13 People died
- Sarin
- Released from canisters



Litvinenko

- Polonium-210
- Administered from drinkware



Markov

- 1978
- Bulgarian
- Ricin



Navalny

- Russian Opposition Leader
- Novichok



Questions

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