Illicit Drug Intoxications
Overview

• History taking
• Urine drug screens
• Drugs
  • Methamphetamines/amphetamines
  • GHB
  • LSD
  • Cannabis and Synthetic cannabinoids
  • Opioids
  • Cocaine
  • PCP
  • Emerging drugs
History Taking

• How do you get an accurate history?
  • Difficult due to owner willingness or poor history
  • Owners may fearful of legal repercussions or losing their pet
  • Owners may be intoxicated
  • Owners are unaware of exposure (public location, drugs belong to someone else)
History Taking

• Tips for getting a good history
  • Threatening is not recommended
  • Reassure we want to help their pet
    • Not interested in getting them in trouble with the law
    • No trying to take their pet away
  • We can help their pet better if we know what we may be dealing with
History Taking

• Always give owners an out
  • Public location?
  • Friend or family member visiting that could have left or dropped something?
• Were they at a friend or family members house?
• Could something have blow or dropped in their yard?
• Is the pet outdoors unattended?
Caution!

- Even with a good history, remember to treat the patient and not the poison
  - Many drugs are laced with other drugs
  - Treating the patient symptomatically is always best
Police and Other Working Dogs

• Special considerations
  • Potential for much larger exposure than pets
  • History may be more accurate or not
  • Handler may have started treatments
    • Emesis
    • Activated charcoal
    • Naloxone
When should you give activated charcoal?

www.aspcapro.org/freebies
Drug Screens

• Over the counter (OTC) urine drug screens, should you use them?
  • YES!

• Helpful when:
  • Owners are reluctant to provide information but strong suspicion illicit drug exposure occurred
  • Pet was in a public area and is showing suspicious signs
  • Potential for different toxins to be involved
  • Signs are not consistent with what is expected
Drug Screens

• Try to obtain sample before giving any medications, if possible
• Cross reactions do occur
• Issues with false negatives with THC still occur
Drug Screens

• What do they test for?
  • THC
  • Barbiturates
  • Cocaine
  • Amphetamines/methamphetamines
  • PCP
  • MDMA
  • Opiates
  • Benzodiazepines
Amphetamines and Methamphetamines
Methamphetamines

• Mechanism of action
  • Sympathomimetic agents that are structurally related to norepinephrine (NE)
  • Peripherally they promote release of NE from storage in adrenergic nerve terminals and stimulate alpha and beta adrenergic receptors
  • Inhibit catecholamine metabolism by inhibiting monoamine oxidase enzymes
  • Centrally they stimulate cerebral cortex, medullary respiratory center and reticular activating system
Clinical Signs

- Agitation, hyperactivity
  - Hypervigilant
- Tachycardia
  - Reflex bradycardia
- Hypertension
- Hyperthermia
- Mydriasis
- Circling

- Head bobbing
- Tremors
- Disorientation
- Seizures (rare)
- Rhabdomyolysis (rare)
- DIC (rare)
Decontamination

• Emesis may be induced and/or a dose of activated charcoal may be given
  • Likely only if recent exposure
  • Pet is not showing any clinical signs

• Bathe if suspect drug may be on pet’s coat
Monitoring

• CV and CNS signs
  • Heart rate, blood pressure
• Temperature
• Myoglobinuria
  • Renal values, urine color

• Signs can last 24-72 hours
Treatment

• Phenothiazines
  • Acepromazine or chlorpromazine
  • Acepromazine –
    • Start 0.02-0.05 mg/kg IV and titrate to effect up to 1.0 mg/kg if needed to control CNS signs

• Beta blocker
  • If calm but still tachycardic
  • Propranolol if normotensive
  • Esmolol if hypertensive
Treatment

• IV fluid diuresis
  • Enhance renal excretion
  • Protect kidneys
• Minimize stimulation
• Thermoregulation
• Antiepileptics
  • Diazepam is ok for SEIZURES
    • Avoid diazepam for hyperactivity
• Urinary acidification – can be attempted but use with caution as often not needed
Prognosis

• Generally good, as long as aggressive treatment can be provided and clinical signs respond to therapy

• Guarded to poor if seizures or DIC occur
Drug Screen

• Possible false positives

• Amantadine
• Bupropion
• Ephedrine
• Labetalol
• MDMA
• Phenylephrine
• Promethazine
• Phenylpropanolamine

• Pseudoephedrine
• Ranitidine
• Selegiline
• Trazodone
MDMA
MDMA

• MDMA (3,4 methylenedioxy-methamphetamine) is a popular party drug called Molly, and can be mixed with caffeine to make Ecstasy

• While many urine drug screens test for MDMA, it may also cross react and cause a positive for amphetamines or methamphetamines
Clinical Signs and Treatment

• MDMA is an amphetamine
• Treatment, monitoring and clinical signs will be similar to methamphetamines
GHB
GHB

• Gamma Hydroxybutyric Acid
• Used to treat narcolepsy
  • Xyrem® (sodium oxybate)
• Also used as date rape drug and club drug
• Mechanism of action
  • Structurally related to GABA
  • Two sites of action in CNS (GHB specific receptors and GABA (B))
  • Ultimate effect is to increase dopamine in the brain
**GHB**

- Rapidly absorbed
  - Rapid onset of action
  - Peak plasma levels are 15-45 minutes post exposure

- Not a common exposure in pets

- Not typically detected on urine drug screens
Clinical Signs

- Depression
- Bradycardia
- Hypotension
- Vocalization
- Disorientation
- Hypothermia
- Miosis
- Coma
- Apnea
- Seizures
Decontamination

• Due to rapid absorption and onset of clinical signs, it is unlikely emesis or activated charcoal will be able to be performed or given safely
Treatment

• IV fluids
• Thermoregulation
• Atropine
  • Bradycardia
• Antiepileptics
• Positive pressure ventilation

• Signs typically resolve within 8-12 hours
LSD
LSD

• Lysergic acid diethylamide
• Not a common exposure
• Outward signs are generally fairly mild
• Not typically found on urine drug screens
LSD

• Mechanism of action
  • Is a partial/full agonist at serotonin receptors
• A closely related but less active compound, lysergic acidamide
  • Found naturally in seeds of morning glory and Hawaiian baby wood rose
Clinical Signs

- Disorientation
- Sedation
- Hyperactivity
- Changes in behavior (abnormal posture, increase play or grooming)
- Hallucinations?
- Serotonin syndrome
Treatment

- Confine to prevent injury
- Minimize stimulation
- Benzodiazepines
- IV fluids, if needed
- Cyproheptadine (if seeing signs of serotonin syndrome)

- Possible at home monitoring and care may be appropriate
Opioids
Opioids

• Heroin
  • Heroin – diacetylmorphine
    • Extensive first pass effect with oral exposure
• Exposures to legal opioids is common
  • Typically oxycodone or hydrocodone
  • Others include fentanyl, morphine, carfentanil, loperamide, buprenorphine, tramadol
    • Carfentanil is schedule II, but may be co-exposure with other illicit drugs or obtained illegally
Clinical Signs

- CNS depression
  - Mild to severe (coma)
  - Ataxia
  - Disorientation
  - Agitation

- GI
  - Vomiting
  - Drooling
  - Diarrhea

- Respiratory depression
- Bradycardia
- Hypotension
- Hypothermia
- Vocalization
Decontamination

• If patient is not already showing signs
  • Emesis
    • Remember apomorphine will worsen CNS signs
    • Naloxone will not affect emetic effects of apomorphine
  • Activated charcoal
  • Gastric lavage (if large exposure)

• Bath
Treatment

• Naloxone
  • 0.01-0.04 mg/kg IV, IM, SQ or IO
    • As low as 0.001-0.003 mg/kg IV Q1-2 minutes
    • As high as 0.1-0.2 mg/kg IV (fentanyl, buprenorphine)
  • Repeat as needed
  • IV – onset is 1-2 minutes, IM is 5 minutes
  • Duration of action is 45-90 minutes up to 3 hours
• Nasal spray
  • 0.04-0.1 mg/kg suggested dose
  • Unit contains 4 mg, one time use (may need more than one)
  • 40 lbs and up
Treatment

• IV fluids
• Thermoregulation
• Atropine
• Anti emetic
• Positive pressure ventilation
Marijuana
Marijuana

• Very common exposure
• Rarely fatal
• Lots of different forms
  • Dried plant leaves and flowers
  • Marijuana butter/edibles
  • Hashish - small blocks of cannabis resin
  • Hash oil
  • Dabs/butane hash/shatter/wax
Clinical Signs

- Ataxia
- Lethargy
- Depression
- Vomiting
- Bradycardia
- Hyperesthesia
- Urinary incontinence
- Mydriasis
- Hypothermia
- Tremors
- Disorientation
- Head bobbing
- Recumbent
- Hypotension
- Seizures
- Agitation
Drug Screen

• While true positives do exist, a fair number of false negatives still occur

• Less likely to see cross reactions
Decontamination

• May not be needed
  • Emesis or charcoal
  • With edibles may have more time for decontamination
• Not advised with symptomatic patient
  • Aspiration
• Remember marijuana is used to address nausea and vomiting with chemotherapy
Treatment

- Supportive
- Maintain hydration
- Atropine for bradycardia
- Thermoregulation
- Diazepam for hyperesthesia
Prognosis

• Generally good – rarely fatal
  • Deaths have been reported
  • Caution with more concentrated forms

• Quality control is an issue

• Typically don’t see much from chocolate

• Also remember- CBD products will likely still have some THC in them
Synthetic Marijuana
Synthetic Marijuana

• K2, Spice
• THC homologs
  • Cannabinoid receptor agonists but are not structurally related to marijuana
  • May be 28x as potent as THC
• Mixed into a solvent and then sprayed onto plants and/or herbal blends
  • Very little is known about solvents and herbals
Synthetic Marijuana

• Illegal in US and some European countries
• Typically sold over the internet or in specialty stores as incense
• Signs may look like classic marijuana signs ... but
  • More likely to cause severe signs agitation, seizures, tremors, hypertension, hyperthermia, tachycardia, rhabdomyolysis
• Acute renal injury has been reported in humans
Treatment

• More likely to need hospitalization
• Benzodiazepines for seizures
• Benzodiazepines or methocarbamol for tremors
• IV fluids
• Thermoregulation

• Not detected on urine drug screens
Cocaine
Cocaine

• Mechanism of action
  • CNS effects
    • Blocks reuptake of monoamines (dopamine, serotonin and norepinephrine) in CNS neurons
    • Net effect: CNS excitation and increased sympathetic activity
  • Cardiovascular
    • Antagonism of voltage-gated sodium channels in myocytes
Clinical Signs

- Agitation
- Vomiting
- Drooling
- Seizures
- Hypertension
- Hypothermia
- Tachycardia
- Acidosis
- Rhabdomyolysis
- DIC
- Cardiac arrest
- Acute renal injury
- Hepatic injury
- Serotonin syndrome
Decontamination and Treatment

- Quickly absorbed with quick onset of action (15 minutes)
  - May not have time for emesis or charcoal
  - Consider if large exposure in packaging
    - Gastric lavage if symptomatic and stable
- IV fluids
- Benzodiazepines for seizures
- Acepromazine or chlorpromazine for agitation
- Cyproheptadine
Treatment

- Lipid emulsion therapy may be helpful

- Adulterants
  - In 2009, DEA reported 69% of the bulk cocaine shipments were adulterated with levamisole
  - Others include: caffeine, lidocaine, benzocaine, diltiazem
PCP
**PCP**

- Phencyclidine
  - Dissociative anesthetic, abused for hallucinogenic effects

- Pharmacology: Stimulates alpha adrenergic receptors, potentiating effects of and inhibits reuptake of norepinephrine, epinephrine and serotonin
  - May stimulate opioid receptors
  - May inhibit NMDA receptors
PCP

• Signs (humans)
  ◆ Tachycardia, hypertension, hallucinations, euphoria, disinhibition, nystagmus, agitation, hyperthermia, rhabdomyolysis, seizures, coma, metabolic acidosis, death (trauma)

• Adulterants
  • Phenylpropanolamine, benzocaine, procaine, ephedrine, caffeine, ketamine

• Also found in illegal manufactured products claiming to be THC, LSD, psilocybin and mescaline
Treatment

• Similar to other stimulants
• May need to monitor renal function, liver enzymes, CK and coags if severe stimulation or hyperthermia is seen
• May show up on some urine drug tests
  • Many false positives
Kratom
Kratom

- Plant native to Southeast Asia
  - *Mitragyna sp.*
- Alternative names: thang, kakuam, thom, ketom and biak
- Contains mitragynine and other related alkaloids
  - Psychoactive properties
  - Opioid-like effects
  - Structurally similar to yohimbine
Kratom

• Many forms
  • Extract, capsules, pellets and gum
• Purchases online or specialty stores
• Banned in some European and Asian countries
  • US – just public health advisory
• Not found on urine drug screens
• Currently, salmonella outbreak in people is attributed to kratom supplements
Clinical Signs

• Humans
  • Low doses – mild stimulant effects, anxiety, agitation
  • High doses – opioid like effects
    • Sedation, euphoria, analgesia
  • Seizures, death rarely reported
  • Length of effect – 2-5 hours
Treatment

• Consider decontamination in large exposure
  • If not symptomatic
• Symptomatic and supportive
• Agitation, tremors
  • Benzodiazepine
• Naloxone may be considered in more severe case
  • Unclear if it will help
Bath Salts
Bath Salts

• Not Epsom salts

• Synthetic cathinones
  • Family of drugs containing one or more synthetic chemicals related to cathinone, an amphetamines-like stimulant naturally found in the Khat plant
  • Methcathinone and 4 methylmethcathinone (mephedrone)

• Mechanism of action
  • Likely promote release of dopamine, norepinephrine and serotonin
Clinical Signs (Humans)

- Agitation
- Tachycardia
- Hypertension or hypotension
- Mydriasis
- Hyperthermia
- Seizures
- Arrhythmias
- Rhabdomyolysis
- Acute renal injury
- Acidosis
- Elevated hepatic enzymes
Decontamination and Treatment

- Decontamination
  - Rapid onset of signs may preclude emesis, charcoal safely
- Treatment - similar approach as to amphetamine and cocaine
  - IV fluids
  - Sedation (acepromazine)
  - Benzodiazepines for seizures
  - Thermoregulation
  - Cyproheptadine
- Not found on urine drug screen
Salvia
Salvia

• Plant: *Salvia Divinorum*
  • Contains salvinorin A, a potent hallucinogen, full agonist at opioid kappa receptors
  • Ingested, smoked or drank (tea)

• No fatalities reported (humans)

• Oral absorption may be minimal
  • Transmucosal or inhaled

• Onset of signs would be fast, short lived (3-5 min) and last 1-4 hours
Clinical Signs

• Hallucinations, agitation, lethargy, hypothermia/hyperthermia, anxiety
  • Animals studies suggest CV effects are possible

• Onset of signs would be fast – and short lived (3-5 min) and last 1-4 hours
Decontamination and Treatment

• Due to rapid absorption, onset of signs and short duration of signs decontamination may not be warranted

• Home monitoring may be appropriate for mild signs

• Treatment is symptomatic
  • Diazepam for agitation
Questions?  apcc@aspca.org

For animal poison-related emergencies, contact us at 888.426.4435