



# Illicit Drug Intoxications

**ASPCA** ANIMAL POISON  
CONTROL CENTER

# 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 be fearful of legal repercussions or losing their pet
  - Owners may be intoxicated
  - Owners are unaware of exposure (public location, drugs belong to some one 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

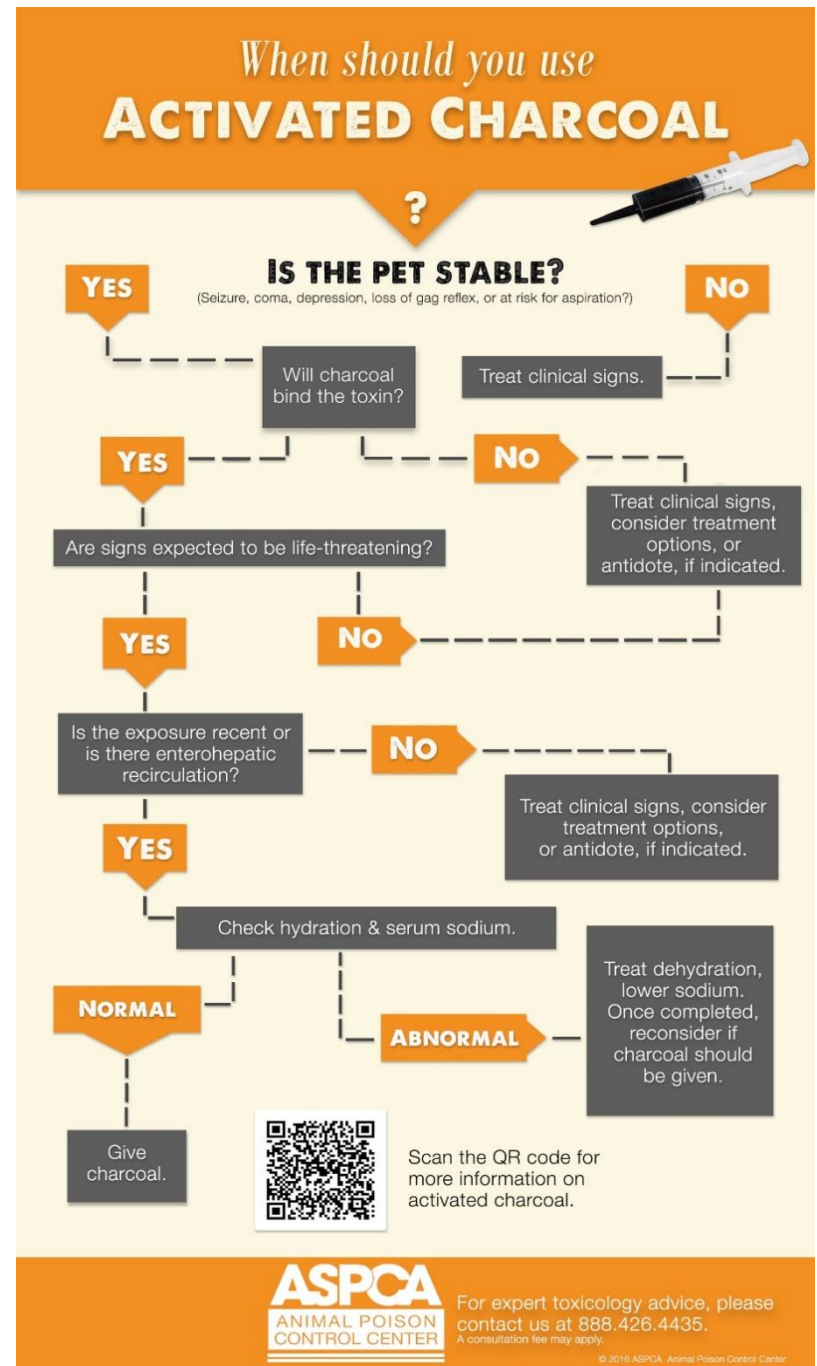


# Police and Other Working Dogs

- 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](http://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<sup>®</sup> (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 acid amide
  - 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 salvirin 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](mailto:apcc@aspca.org)**

**For animal poison-related emergencies,  
contact us at **888.426.4435****

