

A Toxicologist and ER Vet Walk into a Bar – Lively Case Discussion Ensues!

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Ahna Brutlag, DVM, MS, DABT, DABVT

Associate Director of Veterinary Services

Pet Poison Helpline

Mark Olcott, DVM, MBA

CEO / Co-Founder

VitusVet



What is Pet Poison Helpline?

- 24/7 animal poison control center
- Veterinary & human expertise
 - 20 DVMs, 35 CVTs
 - DABVT, DABT
 - DACVECC
 - DACVIM
 - 7 PharmDs
- Case fee of \$49 includes
 - Unlimited per case consultation
 - Fax or email of case report
- Educational center
 - Free webinars (archived)
 - Tox tools
 - Wheel of Vomit
 - Pot of Poisons (toxic plants)
 - Textbook
 - iPhone app
 - Newsletters for vet professionals
 - Free resources for clinics
 - Videos
 - Electronic material
 - Clings

Email us for info!



SAVING PETS' LIVES, 24 HOURS A DAY, 7 DAYS A WEEK

PET POISON HELPLINE





What is VitusVet?

- A pay-for-performance, complete reminder solution and app branded to your practice
- We offer:
 - Reminders and confirmations (push, text, email and postcards)
 - Appt and refill requests
 - Text and picture messaging
 - Targeted marketing
 - Full reporting dashboard
- Our app gives pet parents a product of value, offering access to complete medical records in case of an emergency.
- Pet parents can also access the Pet Poison Helpline through our app.
- Visit www.vitusvet.com or email info@vitusvet.com for more information

Case #1



“Meeko”

- Presentation
 - HR 240 bpm
 - Panting
 - T = 104.6 F
 - 170/120 mmHg
 - Very agitated, slight tremors, mydriasis
- History
 - PMH: Food allergies
 - Signs for 3-4 hours
 - Owner denies “toxin” exposure
 - Claims there are no Rx meds in the home



“Meeko”, 4 yo, 9 lb,
MN Pomeranian

“Meeko”

- Labs
 - Chem/CBC/UA WNL
- Treatments
 - IVF for perfusion/cooling @ 1x maintenance
 - Valium for sedation
 - External cooling?
 - warm water rinse, alcohol on pads, fans, etc.



“Meeko”, 4 yo, 9 lb,
MN Pomeranian



“Meeko”

- Treatment Results
 - IVF for perfusion/cooling @ 1x maintenance
 - HR drops to 200 bpm (from 240 bpm)
 - Valium for sedation
 - Result: **CHAOS! Vocalizing, more agitated, etc.**



“Meeko”

- Call placed to poison control
 - Big variation between drugs...
- Recommendations
 - Ask more historical questions!
 - Illicit drugs? OTCs? Garbage? Yard?
 - **Acepromazine** for sedation
 - Why? How much?



“Meeko”



- Results
 - History
 - Owner mentions son on Ritalin (methylphenidate)
 - Sedated from ace., remains tachycardic (~200 bpm)
 - BP decreased to 160/100
 - Mild tremors remain
 - Temp now 100F
- What now?
 - Continue supportive care & monitoring
 - Tincture of time

ADD/ADHD Drugs



Amphetamine – Toxicity / MOA

- Rapidly absorbed from GI, cross BBB
- Toxic dose for most Rx = ~ 1 mg/kg
- Mechanism
 - \uparrow norepinephrine
 - Direct alpha- and beta-adrenergic receptor stimulation
- Rapid onset (<30 min)
- Signs persist many hours



Amphetamine – Clinical Signs

- Sympathomimetic
 - ↑ temperature
 - ↑ heart rate
 - CNS stimulation
 - Mydriasis
 - Head bobbing (poor prognosis)
 - Tremors, seizures
 - Coma
 - Death (DIC, rhabdomyolysis)



Amphetamine – Video

Amphetamine - Treatment

- Decontaminate?
- Sedate, sedate, sedate!
 - **Phenothiazines (large doses!)**
 - Up to **1+** mg/kg of acepromazine?
 - 10-18 mg/kg chlorpromazine
 - Not benzodiazepines?
 - General anesthesia
- Supportive
 - Cooling measures. Stop at 103.5F
 - IV fluids for perfusion
 - Methocarbamol (injectable)
 - Beta-blockers (use, if needed, after ace to prevent hypotensive crisis)
 - **Goal: Keep HR <160 bpm in large dogs, <180 bpm in small dogs**



Case #2



“Rico”

- Presentation
 - HR 140 bpm
 - Sedation, mild tremors
 - T = 100.6 F
 - 140/xx mmHg
- History
 - Owner came home to chewed bottle of Prozac (fluoxetine)
 - Got an unknown number of 20mg capsules
 - Signs for unknown length of time



5yo, 50 lb, MN
Australian Shepherd

“Rico”

- Labs
 - Chem/CBC WNL
- Treatments
 - What would you do?



5yo, 50 lb, MN
Australian Shepherd



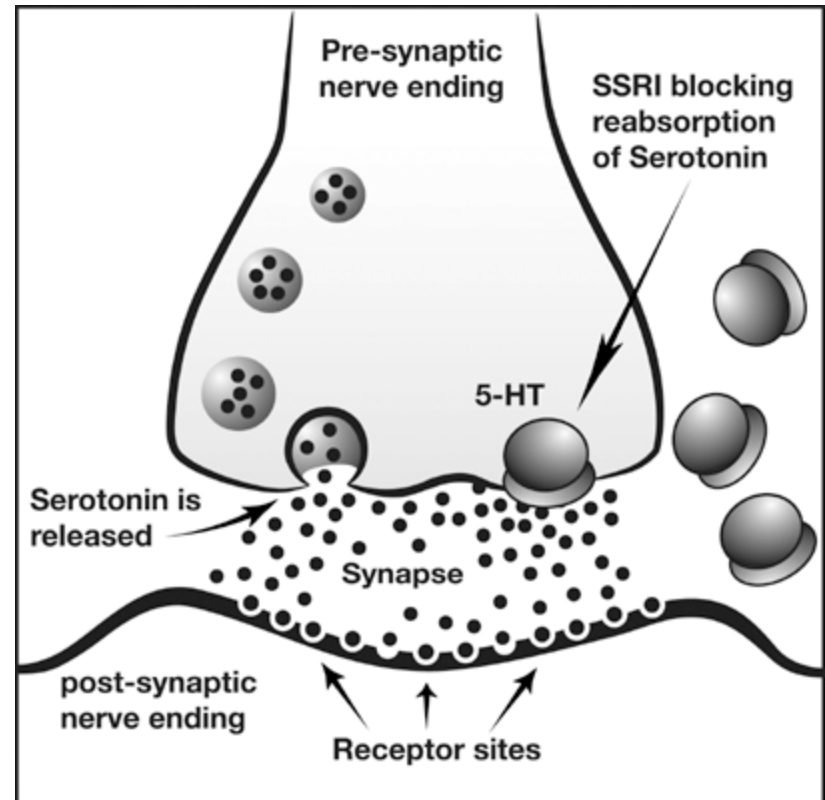
SSRI—treatment

- Decontamination
 - Emesis?
 - In Rico's case we did not induce emesis
 - Activated charcoal with a cathartic.
 - Secure airway if needed
- Cyproheptadine (serotonin antagonist)
 - Oral or rectal
- Methocarbamol (for tremors)

- Outcome:
 - Rico clinically normal within 24 hours
 - Discharged uneventfully

SSRIs (Prozac[®], Reconcile[®], Zoloft[®])

- MOA—inhibits the uptake of serotonin
- Range of toxicity
 - 2-3 x overdose
 - **Cats typically more sensitive**
 - Higher doses increase risk of serotonin syndrome
- Rapid absorption



SSRIs—Clinical Features

- Clinical Signs
 - Onset 30 min – few hrs post ingestion
 - Low doses—mild to moderate sedation
 - High doses
 - Salivation, ataxia, tremors, seizures
 - Possible serotonin syndrome (SS)
 - Agitation, vocalization, muscle rigidity, transient blindness, hyperthermia



Case #3



Photo courtesy Dr. David Dorman, NCSU

“Foxy”

- Presentation
 - 10 yo FS DLH; barn cat
 - T = 99.6 F
 - 170/xx mmHg
 - Rear limb ataxia
 - decreased conscious proprioception
- History
 - Found at evening feeding time
 - Put out rat baits previous weekend



Photo courtesy Dr. David Dorman, NCSU

“Foxy”

- Call placed to poison control
 - Get help. Fast.
- Recommendations
 - Find out which rat bait they used!
- Bromethalin.....not an anti-coagulant!



Photo courtesy Dr. David Dorman,
NCSU

New products

- All consumer baits must be sold with a bait station
- Problem? **Just one station per pound!**



Interspecies Differences

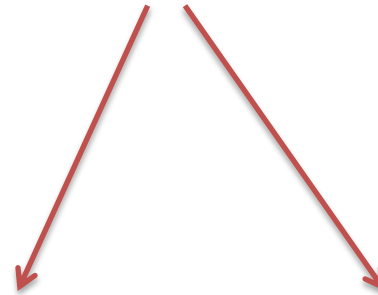
- Cats **10 x more sensitive** than dogs
- Cat LD₅₀: 0.54 mg/kg
 - **Lowest toxic dose reported 0.24mg/kg**
- Dog LD₅₀: 3.7 mg/kg
 - **Lowest toxic dose reported 1-1.5mg/kg**



Toxic Syndromes in Cats and Dogs



Paralysis
(any toxic dose)



Paralysis
(toxic dose < LD50)

Convulsions
(toxic dose > LD50)



Experimental bromethalin intoxication in a cat. Animals placed on their back exhibit extensor rigidity (left image) and a lack of conscious proprioception (unable to place their feet appropriately) (right image) of all four limbs.

Courtesy of Dr. David Dorman, NCSU.

Bromethalin - Treatment

- Early and aggressive decontamination
 - Emesis
 - Activated charcoal, repeated doses
 - Enterohepatic recirculation



- Monitor for/treat signs of cerebral edema!

What about anticoagulants?

- Cats are remarkably resistant!
- Brodifacoum
 - Canine LD₅₀: 0.2-4 mg/kg
 - Feline LD₅₀: 25 mg/kg
- Bromadiolone
 - Canine LD₅₀: 11-15 mg/kg
 - Feline LD₅₀: >25 mg/kg
- **Diphacinone**
 - Canine LD₅₀: 0.9-9 mg/kg
 - Feline LD₅₀: 15 mg/kg



In depth on rodenticides

PPH webinar:

Rodenticides: It's more than just Vitamin K!

<http://www.petpoisonhelpline.com/veterinarians/webinars/previous-webinars/rodenticides-just-vitamin-k/>

Case #4



“Gracie”

- Presentation

- HR 120 bpm
- Panting
- T = 101.6 F
- 140/xx mmHg

2yo, 65 lb, FS
Golden Retriever

- History

- PMH: Inhalant allergies, takes Zyrtec daily as needed
- Ate a bag of green grapes about an hour prior

“Gracie”

- Labs

- Declined for financial reasons

2yo, 65 lb, FS
Golden Retriever

- Treatments

- IV Apomorphine for emesis
 - 0.03 mg/kg IV

- Discharged w/ recommendation for follow-up renal values in 72 hrs

“Gracie”

2yo, 65 lb, FS
Golden Retriever

- How big a deal is this?
- What kind of prognosis should I have given them?

Audience Poll



Which fruits are toxic?

***Vitis* spp.** (grape family,
nephrotoxic)



***Ribes* spp.** (NOT related to
grapes, no renal damage)



Grapes/Raisins/Currants

- Clinical signs:
 - Vomiting 1-3 hours post-ingestion
 - Negative prognostic indicator?
 - Diarrhea (intact fruit!)
 - CNS depression
 - ARF
- Diagnosis:
 - History
 - Grapes/raisins in stool/vomit
 - ↑BUN, creatinine, Ca, P
 - Oliguria (0.5-1.0 ml/kg/hour) or anuria (<0.5 ml/kg/hour)
 - Must get USG *prior* to any fluids!

Vitis spp. - Treatment

- Aggressive decontamination
 - Delayed emesis is OK
 - Activated charcoal with cathartic X 1
- Fluid therapy
 - Vasodilate renal vessels
 - Appropriate hemodilution is PCV/TS: 35%/5
 - 24-48 hours
- Monitoring baseline blood work
 - Presentation: CBC, chemistry, UA, USG
 - Recheck PCV/TS q 12-24 hr, renal panel q. 24 X 2-3 days; repeat 2-3 days post-discharge
- If no signs or lab abnormalities by 48 hrs, wean and send home! Recheck renal panel in 2 days.

In depth of toxic foods

PPH Webinar:

***Know When to Feast and When to Fret:
Foods Toxic to Pets***

<http://www.petpoisonhelpline.com/veterinarians/webinars/previous-webinars/know-feast-fret-foods-toxic-pets/>

Case #5



“Max”, 4 yo, 70 lb, MN
Labradoodle



“Scruff”, 5 yo, 20 lb, MN
mixed breed

- “Max”: Vomited at home. Extreme sedation, HR 80-90 with normal pulses but heart is “beating hard”
- “Scruff”: ataxic, dribbling urine, head bobbing
- Dogs alone all day, present ~4 pm
- Owner denies “toxin” exposure



“Max”, 4 yo, 70 lb, MN
Labradoodle



“Scruff”, 5 yo, 20 lb,
MN mixed breed

- Marijuana chocolate chip cookies!
 - 3 dozen cookies total, ~2 dozen missing
 - 1 ounce medical marijuana
 - 10 ounces of Nestle chocolate chips
- Max vomited a “large” amount of cookies at home

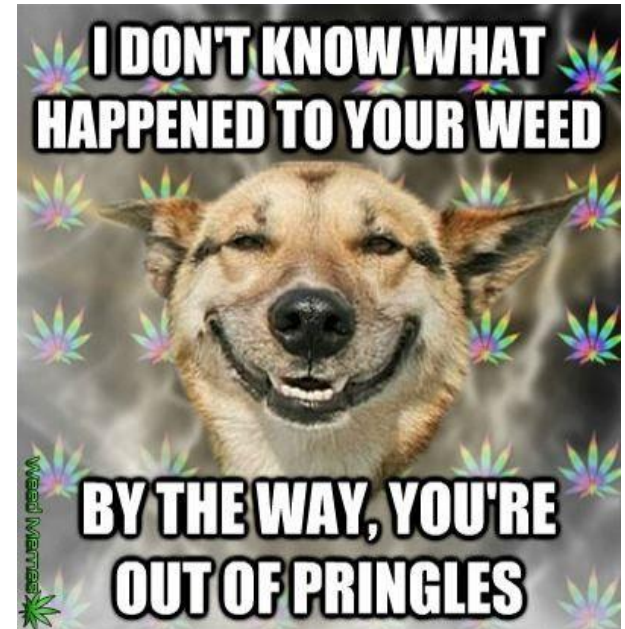
Marijuana Trends at PPH

- 330% increase in cases over 5 yrs
- Sources
 - Food (“medibles”) = 66%
 - Of food, 71% contain chocolate
 - Dried plant = 19%
 - Medical = 9%*
 - Likely under-represented
 - Unknown = 5%



“Medibles”

- #1 source of PPH marijuana cases
- Common sources
 - Brownies & cookies
 - Chocolate bars/choc covered fruit
 - Gummi bears
 - Butter/coconut oil
- Risk
 - High concentration THC
 - Better bioavailability (butter/oil)
 - Co-ingestants



Dried plants

- #2 source at PPH
- Not your parent's plants...
 - Up to 20% THC
 - Joint = 15-30 mg THC
- Tend to see more vomiting



Mature plant courtesy of Dr. Laura Bultman, Minnesota Medical Solutions (cannabis manufacturer)

THC Concentrates

- 50-90% THC
- Smoked or “vaped”
- High risk to pets

Hash Oil



Shatter



Wax



<http://honestmarijuana.com/trichomes/>

OTC On-Site Urine Drug Tests

- Designed for human urine
- Cheap!
 - \$10-35/test in stores
 - cheaper online
- Do they work for pets?
 - **False negatives for THC**
- Gold standard = GC/MS
 - Select veterinary diagnostic labs
 - www.aavld.org



OTC On-Site Urine Drug Tests

- False positives in humans = lots of drugs!
 - PCP: Tramadol, Effexor, Benadryl, and Valium
 - Opiates: Fluoroquinolones (Baytril? Zeniquin?), ibuprofen, naproxen, codeine, and poppy seeds (Seinfeld)
 - Methadone: Benadryl
 - Marijuana/barbiturates: Ibuprofen and naproxen
 - Heroin: Elavil, penicillin and tetracyclines
 - Cocaine: Amoxicillin, ampicillin, and novocaine
- False positives currently unknown for pets

Marijuana—Clinical Signs

- Common signs
 - CNS depression
 - Ataxia
 - Bradycardia (occasional tachycardia)
 - Urinary incontinence
 - ~25% develop agitation
- Other signs
 - Vocalizing, vomiting, diarrhea, hypothermia, hypersalivation, mydriasis, seizure, coma



Omaha, NE
\$3 million seizure

Marijuana–Treatment

- Decontaminate
 - Emesis—may be difficult
 - Activated charcoal
- **Supportive care!**
 - No antidote
 - Monitor body temp
 - IV crystalloids for perfusion
- Agitation/seizures
 - Diazepam
 - Acepromazine
- Monitor
 - Temp
 - Heart rate
 - Blood pressure
- Lipid therapy?
 - Fat soluble agent
 - 20% intravenous lipid emulsion
 - Mixed results @ PPH

When in doubt, call 1-800-213-6680

- Something you're not familiar or comfortable with
- Human drugs
- Corrosive injuries
- Mixed drug ingestions
- Severe clinical signs
- Animals with preexisting disease



SAVING PET'S LIVE 24 HOURS A DAY, 7 DAYS A WEEK

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Tox Goodies!

Free to order: info@petpoisonhelpline.com



10 MOST COMMON TOXINS

As reported by
PET POISON HELPLINE
800.289.0358
www.petpoisonhelpline.com

Compiled by
midwest
veterinary.uspc

**Our iPhone app
Details 200+ toxins
\$1.99**

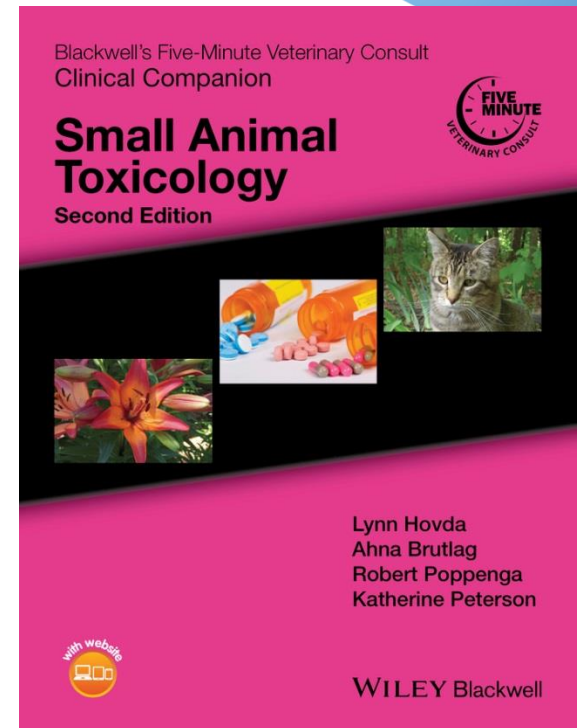


Small Animal Toxicology

2nd Edition

Drs. Lynn Hovda, Ahna Brutlag, Robert Poppenga, Katherine Peterson

- Provides concise, bulleted information focused on the most important facts needed when treating a poisoned cat or dog
- Carefully organized for ease of use in an emergency, with important toxicants arranged alphabetically within categories
- Details clinically relevant information on the most common toxicants encountered by small animals
- Presents a wealth of color photographs to aid in plant identification
- Includes 14 new topics to this edition covering cyclosporine A, sleep aids, tacrolimus, bath salts, synthetic marijuana, poisonous lizards, imidacloprid, spring bulbs, and sodium monofluoroacetate



Paperback | May 2016 | 960 pages | 978-1-119-03654-8 | \$109.99 · CAN \$120.99

www.wiley.com/go/vet

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WEBINAR ATTENDEE SPECIAL OFFER

60-Day
FREE Trial
and waived set-up fee

The VitusVet logo, consisting of a blue stethoscope icon and an orange paw print icon above the text "VitusVet" in a blue, sans-serif font.

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2. **I attended the webinar but wasn't the person who logged in. Can I still get interactive CE credit?** Yes. Send your name and email address to info@petpoisonhelpline.com by **1pm central time on February 1, 2017** (strict deadline).
3. **Can I watch the recorded webinar online for CE credit?** Yes. You can receive non-interactive CE credit. Go to the "For Vets" page on our website, www.petpoisonhelpline.com for more info.

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