



TOXICOLOGY

Anne Arundel Veterinary Emergency Clinic

“All things are poisons, for there is nothing without poisonous qualities. It is only the dose which makes a thing poison.”

- PARACELSUS (SWISS PHYSICIAN IN 1500s)



QUICK! REMOVE THE TOXIN!

A patient has recently ingested a **toxin**, a poisonous substance, and they need us to help them get rid of it. The entire process of removing that toxin is called **decontamination**.



TOXIN TERMINOLOGY



- **EMESIS** - Vomiting
- **ANTIDOTE** - A remedy to counteract the effects of the toxin
- **REVERSAL** - Medication that reverses specific drugs
- **GASTRIC LAVAGE** - When we flush out the contents of the stomach
- **GASTRIC TUBE** - A tube used that goes through the esophagus to the stomach to help us gastric lavage
- **DIURESIS** - Increasing urine production by giving more fluids to flush out the toxins
- **ENEMA** - Injecting water into the colon to help stop constipation and remove toxins
- **HYPERNATREMIA** - High volume of salt in the blood



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CALL POISON CONTROL

CALL THE TOXICOLOGIST

A **toxicologist** is a veterinarian who works remotely to answer concerns regarding animal exposure to a large array of potentially toxic chemicals, foods, and environmental toxicants.

- ASPCA Poison Control
- Pet Poison Helpline

We tend to use ASPCA Poison Control, but Pet Poison Helpline is also a great resource.



APCC MOBILE APP

A searchable database of hundreds of different substances including but not limited to:

- Household hazards
- Medications
- Warm and cold weather toxins commonly found in or around an animal's surroundings.

The app uses color-coding to help you identify the toxins of most concern.





TO INDUCE

IF THEY HAVE HAD A
RECENT INGESTION
WITHIN THE LAST 1-2
HOURS.

OR

NOT TO INDUCE

- TREMORS
- LARYNGEAL PARALYSIS
- INCREASED RISK OF PNEUMONIA
- MOTOR OIL, GAS
- CORROSIVES (BATTERIES, DRAIN CLEANER)

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MAKE 'EM YAK



HOW TO INDUCE VOMITING IN DOGS



APOMORPHINE
INJECTION

0.03mg/kg IV or
0.04mg/kg IM



APOMORPHINE
EYE DROPS

1 drop in each eye



HYDROGEN PEROXIDE
3% ONLY

1-2ml/kg
by mouth



WHEN THE VOMIT COMES
HAVE PEE PADS READY
WEAR GLOVES
AND DON'T THROW IT AWAY

INDUCING VOMITING IN CATS

Dexmedetomidine: 1mcg/kg IM (*What we use)

Xylazine: 0.44mg/kg IM (*We do not stock)

- * Have pee pads available
- * Wear Gloves
- * Do not throw away vomit until doctor has seen



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STOP THE YAK



HOW TO STOP VOMITING

Cerenia (Maropitant): 1 mg/kg

- * Refrigerated once opened
- * IV: Dilute 1:1 Saline, Give over 1 minute
- * SC: Can be painful, no dilution

Rinse Out the Eyes if You Gave Drops

FOR CATS: Reverse Dexmedetomidine with Antisedan. Draw up the same ml amount that you drew up for dexmedetomidine.

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TREATMENTS



WHAT IS UAA GEL (ACTIVATED CHARCOAL)?



- Gel that absorbs poison in the GI Tract
- Does NOT bind with “ols” or metals (xylitol, zinc)
- Most effective within 1 hour of ingestion
- Comes in 2 types: With and Without Sorbitol

WHAT IS SORBITOL?

Sorbitol is meant to promote GI motility and helps move the toxins out of the body faster by putting water in areas like the colon. It is a sugar alcohol laxative.

- We worry about:
- Dehydration
- Diarrhea
- Hyponatremia (Decrease in Sodium)

If a patient presents with these problems from the start we will not give UAA with sorbitol.



WHEN TO GASTRIC LAVAGE?



Patient is sedate, non-responsive
When patient has ingested deadly medications

STEPS:

- Grab a Trash Bin
- Lube the Tube
- Down the Esophagus to 2nd to Last Rib
- Flush Out Stomach
- Pinch the Tube Before Removal

[https://www.youtube.com/watch?v=Ov3HA5Ez
yx0](https://www.youtube.com/watch?v=Ov3HA5Ez
yx0)

HOW TO DO AN ENEMA?



If the patient is constipated and we want to help promote fecal expulsion we are going to:

STEPS:

- Wear Gloves. Mix water and sterile lube
- Inject with a syringe and red rubber into the anus
- Line bedding with pee pads

<https://www.youtube.com/watch?v=BK1FShovQt4>

FLUID THERAPY : FLUSH OUT TOXINS!



- Increase Vasodilation
- Increase Perfusion
- Renal Excretion
- Replace Dehydration

- Should be 2 – 4XM
- Watch for Fluid Overload!
- Always have water available
- Weigh patients every 4-6 hours

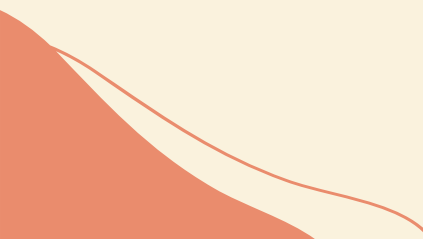
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MEDICATIONS



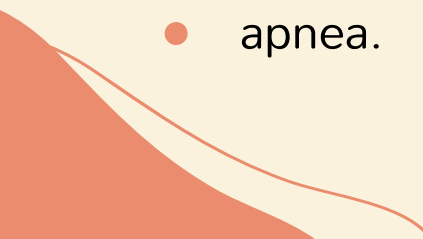
MEDICATIONS: GI SUPPORT



- **Omeprazole** 0.5 -1mg/kg every 24 hours, Decreases acid production in the stomach
 - **Pantoprazole (Protonix)** 0.5 -1mg/kg every 24 hours, Decreases acid production in the stomach, *Kept in the fridge
 - **Misoprostal (Cytotec):** Oral medication treats stomach ulcers
*Risk of miscarriage
 - **Famotidine (Pepcid):** decreases acid in the stomach
 - **Ranitidine (Zantac):** decreases acid in the stomach
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MEDICATIONS: NEURO SUPPORT



- **For patients with these toxicities:** Chocolate, SSRI Antidepressants, ADD medications, Bromethalin (Rat Poison), Compost/Garbage, pyrethrins (cats)
 - **Acepromazine & Butorphanol** – Sedatives used to relax patients
 - **Methocarbamol (Robaxin)** – Muscle Relaxant used to reduce tremors
 - **Diazepam (Valium) & Phenobarbital** – To Treat Seizures
 - **Levetiracetam (Keppra)** – To Treat Seizures
 - **Propofol CRI** – Sedative – Not ideal because of respiratory
 - apnea.
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COMMON FOOD TOXINS

DEADLY SWEETS!

- **Xylitol** - Artificial sweetener found in gum, candy, toothpaste, and some peanut butters. Can cause liver failure in less than 3 days, hypoglycemia, vomiting, lethargy, and seizures.
- **Chocolate, Coffee, Caffeine** - Causes vomiting, diarrhea, hyperactivity, abnormal heart rhythms, seizures and death. Dark is worst than milk or white chocolate and baking chocolate is the most dangerous.
- **Grapes & Raisins** - Unknown toxic substance, but causes kidney failure



OTHER FOOD KILLERS



- **Macadamia Nuts** - Causes lethargy, vomiting, tremors, hyperthermia in dogs.
- **Milk & Dairy** - Give patients diarrhea since they cannot break down lactose.
- **Nuts** - Contain high amounts of oils and fats causing vomiting and diarrhea and potentially pancreatitis.
- **Onions, Garlic, Chives** - Causes GI irritation, RBC damage, and usually cats are more susceptible.
- **Raw Bread Dough** - Causes painful bloat, produces ethanol as a by product and makes the patient drunk.


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COMMON PLANT TOXINS



PLANT TOXINS



- **Tulips** - Vomiting, Diarrhea, and Hypersalivation
 - **Lillies** - Causes Kidney Failure in Cats
 - Azaleas - Vomiting, Diarrhea, and Cardiac Failure
 - **Sago Palm** - Vomiting, Bloody Diarrhea, Liver Damage, Hemorrhagic Gastroenteritis, Clotting Problems and even Death.
 - **Poinsettias** - Vomiting and Irritant to Mouth and Stomach.
 - **Oleanders** - Drooling, Abdominal Pain, Diarrhea, Depression, Coma, Death.
 - **Daffodils** - Vomiting, Salivation, Diarrhea, Seizures, Hypotension, Cardiac Arrhythmias
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DARK FALSE MUSSELS! OH NO!



Native to the Chesapeake Bay, these tiny small mussels are the size of fingernails. They serve as food for ducks and crabs in the bay.

We have no idea why, but it causes severe liver failure in dogs and it happens pretty quickly.

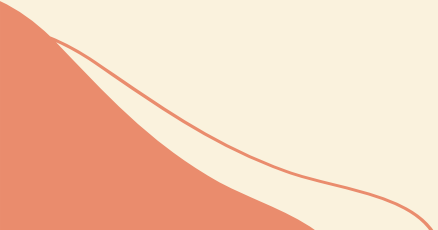


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COMMON HOUSEHOLD
TOXINS

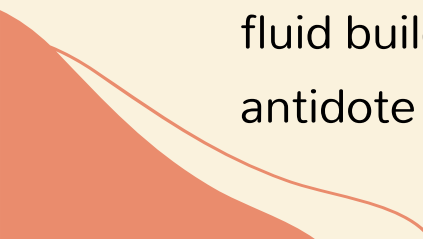
HOUSEHOLD TOXINS



- **Essential Oils** - In cats it can cause GI upset, CNS depression, liver damage and if inhaled can cause aspiration pneumonia.
 - **Fabric Softener Sheets** - Drooling, vomiting, oral and esophageal ulcers and fever.
 - **Petroleum Jelly** - Can act as a laxative and cause diarrhea and vomiting.
 - **Mosquito Repellent** - DEET on cats may cause neurological problems such as tremors and seizures and even death.
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HOUSEHOLD MEDICATION TOXINS



- **Adderall** - Hyperactivity, tremors, seizures, fever, abnormal heart rate and arrhythmias, coma or death.
 - **Aspirin** - GI upset and liver failure
 - **Nicotine Patches or E Cigarettes** - Severe vomiting, tachycardia, hypotension, seizures, respiratory distress and death
 - **NSAIDS (Ibuprofen)** - GI ulcers and kidney failure
 - **Tylenol (Acetaminophen)** - interrupts the ability of the red blood cell to carry oxygen to the tissues of the body, abdominal pain, nausea, fluid build up in face, paws, and forelimbs. N-acetylcysteine is the antidote for this overdose.
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GARAGE TOXINS



- **RAT POISON** - Bromethalin causes brain swelling and Warfarin causes the patient to bleed out. We would use Vitamin K for Warfarin and Mannitol for Bromethalin.
 - **ANTIFREEZE (Ethylene Glycol)** - Small amounts are fatal. Causes kidney failure. First 30 minutes can have vomiting, seizures, and appear drunk. Then they improve for a short time and then suddenly have severe kidney failure, seizures, coma or death. Fomepizole is the antidote and we have an in-house test for this toxin.
 - **SNAIL BAIT** - Metaldehyde can cause patients to have seizures with as little as a teaspoon/10 lbs. The patients usually die if they are not treated quickly since there is no antidote.
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THANKS!

Do you have any questions?

sgarcia@aavec.com

