

## ***ASPCA Tips to Manage a Poison Emergency***

Jill A. Richardson, DVM,

Christine Allen, CVT

ASPCA Animal Poison Control Center

<http://www.apcc.asPCA.org>

### **ASSESS**

Assess the condition of the animal.

Is the animal seizing? Is the animal breathing? What is the animal's heart rate? What color are the animal's mucous membranes? Is the animal in shock? What is the core body temperature? Is there any evidence of hemorrhaging?

What is the basic history of the exposure? What is the toxicant? How long ago was the exposure? How old is the animal? How much does it weigh? Find out this general triage information to be sure that adequate measures can be taken for stabilization and treatment. Once animal is stable, a more thorough medical history should be obtained including complete medical background of the animal, exact toxicant information (including brand name, generic name (especially if it is a medication), and active ingredients.

A more complete history of the exposure should also be obtained including exposure time, amount of toxicant the animal was exposed to, and by what route was the animal exposed (orally, dermally, etc.) Ideally, a support staff member could be taking the history from the owner and phoning the APCC as soon as possible while the animal is being treated.

### **STABILIZATION**

Stabilization is a priority – **TREAT THE PATIENT, NOT THE POISON!**

Follow the ABC's – Airway, Breathing, and Circulation. Be prepared to intubate the animal upon presentation. Not only will this secure an airway, but also it will help prevent aspiration in the event that gastric lavage is necessary. This may or may not be necessary in every case, but preparation is the key. Have oxygen and an AMBU bag standing by in case they are needed. It is best to try to insert an I.V. catheter upon presentation to allow access for administration of medications and fluids. Once the catheter is placed, draw blood (at least one 3cc EDTA tube and two serum tubes are ideal) for any diagnostic tests to be performed later. If possible these samples should be taken before any other meds are administered.

Monitor the animal for any cardiovascular abnormality. Atropine at a dose of 0.02-0.04 mg/kg I.V. (Plumb, 3<sup>rd</sup> ed.) may be recommended for correction of bradycardia. Propranolol is the drug of choice for treating tachycardia, administered slow I.V. at a dose of 0.02-0.06 mg/kg in dogs and 0.04 mg/kg in cats (Plumb, 3<sup>rd</sup> ed.). These drugs as well as detailed protocols for their administration (in case a veterinarian is not readily available) should be easily accessible in a crash cart.

Control seizures. If an animal is seizing when it presents, controlling the seizures is a top priority. Drugs to have on hand for this purpose are diazepam, barbiturates, methocarbamol (Robaxin®), or inhalant anesthetics such as isoflurane, or halothane. It may be necessary to mask an animal down to get the seizures under control. Specific doses of these drugs are going to vary depending on the agent involved.

### **PREVENTION OF TOXICANT ABSORPTION**

Perform the appropriate method(s) of decontamination. What that method is depends greatly on the agent involved and the condition of the animal at presentation. We will go into great detail about this later in the presentation.

## **CONTROL SIGNS**

Administer the specific “antidote”, if applicable. Antivenins or antitoxins should be administered at this point. Keep in mind that in more cases than not, there is NO specific antidote. Remember, TREAT THE ANIMAL NOT THE POISON. Preventive measures such as gastric protection or antibiotics may be needed. Administer the proper fluids to correct acid base balance, hydration, and electrolyte imbalances. The two most commonly used fluids are Lactated Ringers Solution and normal saline due to their versatility and availability. Intravenous is the preferred route of administration of fluids, due to the speed of delivery.

## **ANCILLARY SUPPORT**

Once the animal is stable, it is time to evaluate the damage. Ancillary procedures should be performed to prevent damage from the toxicant. The systems that are most likely affected by the toxicant should be monitored. Complete serum chemistry panels, coagulation panels, or diagnostic tests may be needed. Appropriate supportive care should be given until the animal completely recovers.

## **PREVENTING ABSORPTION OF THE TOXICANT**

### **External Exposures**

#### **Ocular Irrigation**

With any ocular exposure, the eyes should be flush repeatedly with water or saline solutions for a minimum of 20-30 minutes. Only normal saline or tepid distilled water should be used – not contact solutions as they can have cleaning agents in them. A large syringe (60 cc) is ideal for flushing eyes. Always remember to flush eyes from the inner corner out so contamination of the opposing eye does not occur. After flushing, the eyes should be treated with lubricant ointments (not medicated) and examined for corneal damage. The eyes should be monitored for excessive redness, lacrimation, or pain. Follow up examinations may be needed to establish level of corneal damage.

#### **Bathing**

The animal should be bathed in a mild hand dishwashing detergent (NOT AUTOMATIC DISHWASHING DETERGENTS). Baths may need to be repeated to completely remove the toxicant. Afterwards the animal should be rinsed well with warm water. Great care should be taken in bathing very young or debilitated animals to maintain normal body temperature. The animal should be towel dried, not blow-dried, to prevent chilling.

### **Oral Ingestion**

#### **Dilution**

Dilution with milk or water in combination with demulcents is recommended in cases of corrosive ingestion. A demulcent is an agent that coats or soothes the stomach. Examples of demulcents would be Kaopectate, Mylanta, or milk of magnesia. A dosage of 1-3mg/lb is a suggested dose.

#### **Emesis**

Emesis (vomiting) is most productive if performed within 2-3 hours post ingestion. Feeding the animal a small moist meal before inducing vomiting can increase chances of an adequate emesis. Emetics generally empty 40-60% of the stomach contents and are assumed to be more beneficial than gastric lavages. Dogs, cats, ferrets, and potbelly pigs are examples of house pets that can vomit. Emetics should not be used in rodents, rabbits, birds, horses, and ruminants.

Emesis is contraindicated with ingestion of alkalis, acids, corrosive agents, or hydrocarbons due to the risk of chemical burns or aspiration. The pre-existing condition of the animal also determines the indication for using an emetic. Emesis should not be induced at home in an animal that has a history of epilepsy, cardiovascular disease, or is debilitated. Veterinary supervision is recommended in these situations. Recent histories of

abdominal surgery or potential for a gastric torsion are other factors that could make emesis a contraindication. It may be safest, depending on the situation, to induce vomiting in brachycephalic (short-nosed) breeds at the veterinary hospital versus at home due to aspiration risk. Emesis should not be attempted if the animal has already vomited or is exhibiting clinical signs.

Some drugs can have anti-emetic effects. Examples of such drugs include phenothiazines, antihistamines, barbiturates, narcotics, antidepressants, and marijuana. It is important when taking the history to find out if the animal has been taking these or any other medications.

### **Emetic Agents**

**Three-percent hydrogen peroxide** is an effective emetic for the dog, pig, ferret, and cat. Do not induce emesis in rodents, rabbits, birds, horses, or ruminants. The dosage is 1 teaspoon per 5 lbs., not to exceed 3 tablespoons. It should be administered undiluted – not mixed into water or food. However it is helpful to feed a small, moist meal of either canned food or a slice of bread before inducing vomiting, as it makes emesis more productive by giving the toxicant something to adhere to. Bulb syringes, feeding syringes, or turkey basters aid in administration. Hydrogen peroxide causes vomiting through mild gastric irritation. **Vomiting usually occurs within minutes and can be repeated once if not initially successful at causing emesis.**

*Syrup of ipecac* acts by causing gastric irritation and also stimulates the central nervous system to induce vomiting. In dogs, 2.2 ml/kg (not to exceed 30 ml) is administered by mouth. 3.3ml/kg should be diluted 1:1 and administered to cats via nasogastric tube. Syrup of ipecac should not be administered to cats at home. The syrup should only be used once because repeated dosages have the potential to be cardiotoxic. Never use ipecac fluid-extract because it is about 14 times more cardiotoxic than the syrup. Ipecac fluid-extract is no longer commercially available in the United States.

*Apomorphine Hydrochloride* should be used cautiously in cats. It is considered to be the emetic of choice in dogs by many clinicians. Apomorphine can be administered parentally or topically to the eye. The recommended dose is 0.04mg/kg IV or conjunctivally. When given intravenously in dogs, emesis occurs very rapidly. Topical administration to the conjunctival sac is usually effective. Apomorphine is a centrally acting emetic, meaning it stimulates receptors of the central nervous system to cause vomiting. Side effects such as CNS and respiratory depression, ataxia, excitement, and protracted vomiting can be seen with apomorphine but are more common after IV usage. When severe side effects are seen, apomorphine can be reversed with Naloxone (0.04mg/kg IV, SQ, and IM.)

*Xylazine* is an alpha 2-adrenergic agonist, which can cause emesis in dogs and cats. Xylazine can cause bradycardia, hypotension, reduced respiratory rate, and CNS depression. The side effects of Xylazine usually outweigh the benefits for its use as an emetic. The dosage for cats is 0.44 mg/kg IM while the dosage for dogs is 1.1mg/kg SQ or IM. Xylazine can be reversed with Yohimbine at a dose of 0.1 mg/kg IV.

### **Activated Charcoal**

Activated charcoal adsorbs a chemical or toxicant and facilitates its excretion via the feces. It basically acts like a magnet, attracting and holding the toxicant to its surface so that it passes through the gastrointestinal tract without being absorbed by the body. It is administered when an animal ingests organic poisons, chemicals or bacterial toxins or if enterohepatic recirculation of metabolized toxicants can occur. Enterohepatic recirculation occurs with some compounds that are metabolized in the liver. The metabolites are emptied in the bile and are reabsorbed in the intestines, which would allow for a persistent pharmacological effect. The recommended dose of activated charcoal for all species of animals is 1-3 gm/kg body weight. Repeated doses of activated charcoal every 4-8 hours at half the original dose may be indicated when enterohepatic recirculation occurs.

Activated charcoal can be given orally with a large syringe or with a stomach tube. In symptomatic or uncooperative animals, anesthesia may be needed. A cuffed endotracheal tube should be used in the sedated or clinically depressed animal to prevent aspiration.

Activated charcoal **should not** be given to animals that have ingested caustic materials. These materials are not absorbed systemically, and the charcoal may make it more difficult to see oral and esophageal burns. Other chemicals that are not effectively absorbed by activated charcoal include ethanol, methanol, fertilizer, fluoride, petroleum distillates, most heavy metals, iodides, nitrate, nitrites, sodium chloride, and chlorate.

### **Cathartics**

Cathartics enhance elimination of the activated charcoal. Without cathartics, the toxicant bound by charcoal can eventually be released and reabsorbed. Cathartics are not to be used if the animal has diarrhea or is dehydrated.

*Saline cathartics* such as sodium sulfate (Glauber's salt) or magnesium sulfate (Epsom salt) should be added at a dose of 250 mg/kg. Magnesium can cause depression and muscle weakness and should not be used in animals with compromised renal function.

*Sorbitol* is an osmotic cathartic that can be used safely at a dose of 3 ml/kg with repeated charcoal administration. Some premixed solutions of activated charcoal will have sorbitol added. It has a sweet taste that sometimes entices the animal to drink it.

*Bulk cathartics* are indicated in the case when bulky products or physical agents are ingested and its elimination needs to be aided. Psyllium can be given at ½-1 teaspoon every 12-24 hours. Bran fiber or vegetable fiber (pumpkin, sweet potato) could also be used.

### **Enemas**

Enemas are helpful when elimination of toxicants from the lower gastrointestinal tract is desired. Activated charcoal can be used in enema solution to help adsorb toxicant. Premixed enema solutions for humans are contraindicated in small animals due to potential electrolyte/acid-base imbalance. General technique is to use plain warm water or soapy warm water.

### **Gastric Lavage**

Gastric lavage should not be performed in cases of caustic or petroleum distillate ingestion. General anesthesia should be performed when performing a lavage. The type of toxicant involved in the exposure should always be considered when choosing an anesthetic agent. Isoflurane is the optimal anesthetic agent, but diazepam or a short-acting barbiturate may be appropriate.

### **Enterogastric Lavage**

May be necessary when potentially lethal oral exposures have occurred. Examples of agents when enterogastric lavage may be indicated would be strychnine, metaldehyde, tricyclic antidepressants, 5-fluorouracil, and isoniazid. Gastric lavage should be performed before attempting the enterogastric lavage. The stomach tube is left in place after the gastric lavage. An enema is performed to eliminate large pieces of fecal matter from the colon and upper large intestines. With the enema tube still in place, digital pressure is applied at the rectal orifice to form a seal. Then attach the distal end of the tube to a water faucet. Body temperature water should be slowly allowed to fill the intestinal tract until it flows from the stomach tube. The process should continue until the fluid is clear. **THIS SHOULD ONLY BE PERFORMED UNDER THE DIRECT SUPERVISION OF A VETERINARIAN.** A pre-anesthetic dose of atropine (0.02 mg/kg) should be given, unless contraindicated, to relax the smooth muscle in the gastrointestinal tract and to prevent abdominal distention. Complications of the procedure include intestinal rupture and possible gastroenteritis.

### **Decontamination Do's and Don'ts**

## **Do**

Treat the patient not the poison.

Stabilize the animal before attempting decontamination procedures.

Get complete history of the animal and the exposure data.

Keep the ASPCA APCC phone number handy in your clinic.

**1-888-4ANI-HELP**

## **Don't**

Bathe a seizing animal. (*Always stabilize the animal first.*)

Use salt as an emetic agent.

Induce emesis in a seizing, extremely stimulated, or hyperactive animal.

Induce emesis in a vomiting animal.

Induce emesis in a severely lethargic, comatose, or debilitated patient.

Induce emesis in an animal that has had recent abdominal surgery.

Induce emesis in an animal that has a megaesophagus.

Induce emesis with a corrosive ingestion.

Induce emesis with hydrocarbon/ petroleum distillate ingestion. (*In most cases*)

Induce vomiting on a bird, rabbit, rat, horse or ruminant.

Use apomorphine as an emetic agent in the cat. (*This is controversial.*)

Administer xylazine or apomorphine as an emetic in a depressed animal.

Administer activated charcoal for most heavy metals, corrosives, or petroleum distillates.

Administer activated charcoal to a vomiting animal.

Administer activated charcoal to an animal in ileus or a gastric obstruction.

Administer a cathartic to a dehydrated animal or one with diarrhea.

Use a magnesium sulfate cathartic in a renal compromised animal.

Use pre-mixed enema solutions such as hypertonic phosphate solutions.

Perform a gastric lavage without using a cuffed endotracheal tube.

## **DRUGS COMMONLY USED IN TOXICOLOGY**

### **Drugs used for decontamination**

Hydrogen peroxide

Syrup of Ipecac

Apomorphine (in dogs only)

Xylazine (Rompun ®)

Activated charcoal (Liqui Char Vet ®)

Cathartics (Sorbitol, Magnesium sulfate, Sodium sulfate)

### **Drugs used to control tremors or seizures**

Diazepam (Valium ®)

Barbiturates (Pentobarbital/ Phenobarbital)

Methocarbamol (Robaxin ®)

Inhalant anesthetics

### **Miscellaneous Drugs**

Yohimbine hydrochloride

Pyridoxine

Flumazenil (Romazicon®)

N-acetylcysteine (Mucomyst ®)  
Naloxone (Narcan®)  
Digibind ®  
Propranolol (Inderal ®)  
Metoprolol (Lopressor®)  
Atropine  
2-PAM, pralidoxime chloride (Protopam®)  
Phenothiazines (Chlorpromazine/Acepromazine)  
Methylene blue  
Vitamin K1  
4 MP, fomepizole (Antizole-Vet ®)  
Ethanol  
Pamidronate  
Calcitonin  
Sodium Bicarbonate  
Cholestyramine  
Gastrointestinal protectants (misoprostol, carafate, H2 blockers)  
Physostigmine  
Vitamin C  
Calcium gluconate  
Furosemide  
Ammonium Chloride

#### **Chelators**

Succimer (Chemet ®) *Lead, Arsenic, Mercury*  
Deferoxamine mesylate (Desferal ®) *Iron*  
Calcium EDTA *Lead*  
D- penicillamine *Mercury and Lead*  
BAL in Oil ® (British Anti-Lewisite or dimercaprol) *Lead, Arsenic, Mercury*

#### **Miscellaneous**

**EGT-** Ethylene Glycol Test Kit  
1-800-874-9764

\*\*\* The information above is a partial list of drugs used in veterinary toxicology. Please note this list is not all-inclusive.

Address (URL): [http://www.vspn.org/Library/Misc/VSPN\\_M01158.htm](http://www.vspn.org/Library/Misc/VSPN_M01158.htm)