

# WOODVALE PARK

## VETERINARY HOSPITAL



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# Acetaminophen Toxicity

## Basics

### OVERVIEW

- Results from owners overdosing the pet with over-the-counter medications containing acetaminophen, a medication intended to control pain or fever in humans

### GENETICS

- Cats—genetic deficiency in a pathway that breaks down or changes (metabolizes) drugs in the liver (known as the “glucuronide conjugation pathway”); makes cats vulnerable to acetaminophen toxicity

### SIGNALMENT/DESCRIPTION OF PET

- Cats
- Dogs
- Most common drug toxicity in cats; considerably less frequent in dogs
- Young and small dogs and cats—greater risk from owner-given single-dose acetaminophen medications

### SIGNS/OBSERVED CHANGES IN THE PET

- May develop 1–4 hours after dosing
- Progressive depression
- Rapid breathing
- Darkened mucous membranes (moist tissues of body, such as gums)
- Drooling (salivation)
- Vomiting
- Abdominal pain
- Rapid breathing (known as “tachypnea”) and bluish discoloration of skin and moist tissues of body (known as



“cyanosis”) due to an abnormal compound (methemoglobin) in the blood (condition known as “methemoglobinemia”) that disrupts the ability of the red blood cells to carry oxygen to the body

- Fluid buildup (edema)—face, paws, and possibly forelimbs; after several hours
- Chocolate-colored urine due to the presence of blood in the urine (known as “hematuria”) and the presence of methemoglobin in the urine (known as “methemoglobinuria”); especially in cats
- Death

## CAUSES

- Acetaminophen overdosing

## RISK FACTORS

- Nutritional deficiencies of glucose and/or sulfate
- Simultaneous administration of other glutathione-depressing drugs

## Treatment

### HEALTH CARE

- With methemoglobinemia (abnormal compound [methemoglobin] in the blood that disrupts the ability of the red blood cells to carry oxygen to the body)—must evaluate promptly; inpatient care
- With dark or bloody urine or yellowish discoloration of skin and moist tissues of the body (known as “jaundice” or “icterus”)—inpatient care
- Gentle handling—imperative for clinically affected pets
- The veterinarian will induce vomiting (known as “emesis”) and may perform flushing of the stomach (known as “gastric lavage”)—useful within 4–6 hours of ingestion of acetaminophen
- Low red blood cell count (known as “anemia”), blood in the urine (hematuria), or presence of hemoglobin in the urine (known as “hemoglobinuria”)—may require whole blood transfusion
- Fluid therapy to maintain hydration and electrolyte balance
- Drinking water should be available at all times

### ACTIVITY

- Restricted

### DIET

- Food—offered 24 hours after initiation of treatment

## Medications

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive

- Activated charcoal—administered immediately after the veterinarian has induced vomiting or flushed the stomach (gastric lavage) and after vomiting is controlled; activated charcoal is used to attract and keep the remaining acetaminophen in the gastrointestinal tract
- *N*-acetylcysteine (Mucomyst®) is administered; considered to be an antidote for acetaminophen toxicity
- Other sulfur donor drugs—if *N*-acetylcysteine not available; sodium sulfate
- 1% methylene blue solution—combats methemoglobinemia without inducing red blood cell destruction (known as a “hemolytic crisis”)
- Ascorbic acid—slowly reduces methemoglobinemia

## Follow-Up Care

### PATIENT MONITORING

- Continual clinical monitoring of methemoglobinemia (abnormal compound [methemoglobin] in the blood that disrupts the ability of the red blood cells to carry oxygen to the body)
- Serum liver enzyme activities to monitor liver damage
- Blood glutathione level—provide evidence of the effectiveness of therapy

## PREVENTIONS AND AVOIDANCE

- Never give acetaminophen to cats
- Give careful attention to acetaminophen dose in dogs; acetaminophen should only be given to dogs under a veterinarian's supervision

## POSSIBLE COMPLICATIONS

- Liver damage and resulting scarring (fibrosis)—may compromise long-term liver function in recovered pets

## EXPECTED COURSE AND PROGNOSIS

- Rapidly progressive methemoglobinemia (abnormal compound [methemoglobin] in the blood that disrupts the ability of the red blood cells to carry oxygen to the body)—serious sign
- Methemoglobin concentrations greater than 50%—grave prognosis
- Progressively rising serum liver enzymes 12–24 hours after ingestion—serious concern
- Expect clinical signs to persist 12–48 hours; death owing to methemoglobinemia possible at any time
- Dogs and cats receiving prompt treatment that reverses methemoglobinemia and prevents excessive liver damage may recover fully
- Dogs—death as a result of liver damage may occur in a few days
- Cats—death as a result of methemoglobinemia occurs 18–36 hours after ingestion

## Key Points

- Never give acetaminophen to cats
- Acetaminophen should only be given to dogs under a veterinarian's supervision
- Most common drug toxicity in cats; considerably less frequent in dogs
- Treatment in clinically affected pets may be prolonged and expensive
- Pets with liver injury may require prolonged and costly management

## Notes

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