

# Newsletter of the COMMUNITY PRACTICE SERVICE

College of Veterinary Medicine, Washington State University  
[www.vetmed.wsu.edu/ClientED/community\\_practice.asp](http://www.vetmed.wsu.edu/ClientED/community_practice.asp)

Winter 2005

## Dental Disease: It's More than Just Bad Breath

Dental disease is the most common ailment veterinarians find in pets. A recent poll of veterinarians reported that 85 percent of small animal patients have some degree of dental disease.

"We believe that any animal with an unhealthy mouth is, in fact, an unhealthy animal," explains Dr. Raelynn Farnsworth, a WSU Community Practice veterinarian. Why then, is this common disease so often overlooked and under treated?

One reason may be that owners rarely examine the mouths of their animals. Unless a pet has difficulty eating or exhibits pain, a pet owner is not likely to bring it in for an oral examination, Dr. Farnsworth said.

Dental disease is not as obvious as other problems, such as limping, scratching, vomiting, or diarrhea. Thus, it is easy to ignore and remains hidden in many patients. Another reason dental disease may be overlooked is that it often takes time to develop and does not become apparent until the later stages of the disease.

Annual examinations by a veterinarian help to identify dental disease before it becomes apparent in the later stages of the disease. As a patient ages, more frequent examinations are necessary.

"This is truly an instance where an ounce of prevention is worth a pound of cure," Dr. Farnsworth said. "We hope that if our clients learn about the effects of dental disease on their animals, they will raise healthier pets."

### Causes and Signs

The early stages of dental disease consist of gingivitis, or inflammation of the gums. Left untreated, gingivitis progresses to periodontitis, characterized by loss of the bone and ligament tissues that support the teeth. The end stage of periodontitis is tooth loss.

Gingivitis is reversible, but periodontitis is not. "This makes intervention in the early stages of periodontitis very important," Dr. Farnsworth said. "If stopped, we can arrest further progression of the disease and avert tooth loss."

As plaque and tartar build up on the teeth, the gums become irritated and swell. This allows an overgrowth of bacteria under the gum line. If this continues, it can cause an infection that may eventually lead to tooth loss.

Because there is a good blood supply to the gums, every time an animal with periodontitis eats, bacteria are released into the bloodstream. This can occur in humans, too. Most of the time an animal's immune system will destroy these bacteria. But sometimes, especially in older patients with compromised immune systems, the bacteria are not destroyed and lodge at distant sites in the body to cause secondary diseases. Many studies in human medicine document secondary diseases due to periodontitis, including heart disease, liver disease, pancreatitis, and kidney disease.

### Treatment

Options to treat dental disease depend on the extent that it has progressed, but generally involve a cleaning by a veterinarian, just like people get from a dentist. Tooth extraction may be needed as well if the degree of disease is severe. "One major fear our owners have is that their pet must be anesthetized to have a dental procedure performed," Dr. Farnsworth said. "There is always some risk associated with anesthesia, but we carefully screen our patients with a complete physical exam, blood work, and a urinalysis to identify potential problems prior to anesthesia."

There are also newer, safer anesthetic agents available to increase patient safety, she said. Each patient has an IV catheter placed for fluids, and is closely monitored for blood pressure, oxygen levels, and heart rhythms for any problems. For higher risk, or critical patients, board certified anesthesiologists are available.

"Having dental care performed on your pet by a veterinarian is an important part of protecting them from life-threatening diseases as your pet ages," Dr. Farnsworth said. "It's not just about having a pet that you can sleep nose to nose with at night; it is about ensuring the long-term health of your best friend."

## February is National Pet Dental Health Month!

Terri A. Schneider, DVM  
Raelynn Farnsworth, DVM  
Matthew Mickas, DVM  
Ian Voelzel, DVM elective surgeon  
Danielle Wallace, RVT  
Denise Waiting, RVT

To make an appointment call:  
**509-335-0711**

### In this issue:

Gene Mutation Key To Collie Illness .....	2
Food Allergies in Pets .....	2
Seasonal Tips .....	3
Patients' Corner: Thor the Labrador .....	4
WSU Pet Loss Hotline .....	5
Community Practice Updates .....	5
Vaccination Recommendations .....	6

**In honor of "National Pet Dental Health Month," the WSU Community Practice will provide a free pre-dental exam with a scheduled dental procedure during February and March if you mention this article.**

WASHINGTON STATE  
UNIVERSITY

World Class. Face to Face.



## Gene Mutation Key to Collie Illness

Kenny, a 5-year-old collie at WSU, has a hidden secret. If given a simple treatment for mites or intestinal worms, he'll die.

Kenny's toxic susceptibility is one that has puzzled veterinarians for decades. After years of research, Dr. Katrina Mealey, an assistant professor in the WSU Department of Veterinary Clinical Sciences, has discovered a mutant gene in susceptible collies that is the simple cause of the problem.

In most animals, the gene called MDR1 produces a key protein, called P-glycoprotein. P-glycoprotein acts as a "pump" to move substrate drugs from the brain back into the bloodstream across the blood-brain barrier. Back in the blood, the drugs are further metabolized and removed from the system.

The blood-brain barrier is important to the normal function of the brain. Through a series of tissues and substances like p-glycoprotein, certain substances are allowed to pass in and sometimes out of the brain while others are naturally excluded. This protects the brain from "foreign" substances, including many drugs and hormones and neurotransmitters produced throughout the body. It also helps the brain maintain a stable environment.

Dogs with a mutation of the MDR1 gene produce a non-functional form of P-glycoprotein. When veterinarians administer a common drug named Ivermectin or others that rely on the same transport system, toxic levels of the drugs build up in the brain with no way to get back out into the bloodstream. The results can be fatal.

It's not just collies that are affected either. Percentages of Shetland sheepdogs, Australian shepherds, Old English sheepdogs and especially collies seem to be susceptible, even with very low doses.

"The reaction can be fatal if not treated," Dr. Mealey said. "It can be an even bigger problem because susceptible dogs can be exposed to high concentrations of the drug inadvertently by ingesting Ivermectin that is carried through the feces of sheep, cattle, or horses who have been treated."

Ivermectin is an antibiotic produced from a fungus first isolated from a Japanese soil sample. Veterinarians use it commonly to eliminate certain parasites in a wide variety of animals. The threshold is so low for dogs susceptible to the drug that a toxic effect can begin at dosages as low as 1/200th of the toxic dose for normal dogs.

Some side effects of Ivermectin toxicity include dilated pupils, drooling, an uncoordinated gait, and vomiting, all of which can progress to respiratory paralysis, coma, and death.

Ivermectin is not the only drug that can affect susceptible dogs. Others substrates for P-glycoprotein include loperamide, digoxin, ondansetron, and many chemotherapeutic drugs including vincristine, vinblastine, doxorubicin, and others.

### Human Cancer Research to Follow

Perhaps the most exciting development from Dr. Mealey's

work may be the direct impact on treatment of brain cancer in humans.

"The biggest challenge to attacking these deadly human diseases is trying to get cancer fighting drugs past the blood-brain barrier," explained Dr. Mealey. "By knowing how these drugs can easily gain access to the brain in collies carrying this mutant gene, we may unlock the key to fighting a host of diseases that affect the brain in people. That's truly exciting."

### Screening test available

With the discovery of the mutant MDR1 gene, Dr. Mealey has developed a simple DNA testing to screen for dogs with the mutation. With this tool, pet owners and veterinarians can discover susceptible dogs and breeders can use the information to avoid the mutation in susceptible breeds.

"The test relies on just a little gum tissue from a tooth brush that the owners can send in to the laboratory," Dr. Mealey said. A simple test that can save Kenny's life, and the lives of many other animals just like him.

For more information, contact the Veterinary Clinical Pharmacology Laboratory at 509-335-3745 or visit the website at [www.vetmed.wsu.edu/depts-VCPL](http://www.vetmed.wsu.edu/depts-VCPL).

### Update

By reading about this dramatic discovery online, people who are otherwise not affiliated with WSU have begun

sending donations to support Dr. Mealey's research.

"I'm surprised and very pleased," said Dr. Mealey. "The generosity of the public tells me two things. First, they love their animals and will do anything to protect them and to improve the quality of their lives. Second, they recognize the value of research like this and how their gifts can help. I'm truly grateful."

## Food Allergies In Pets

Food allergies can be difficult to understand and diagnose in pets. It can be a challenge to discover if a pet truly has an allergy, what might be the source of the allergy, and what to do when it does. First, it is important to differentiate a food allergy from a food intolerance.

A **food allergy**, also known as food hypersensitivity, is when a body's immune system reacts negatively to a certain food. It occurs when there is an unusual sensitivity to a substance that the body perceives as foreign, usually a protein, carbohydrate, or both. The immune system can react ferociously to these agents. Food allergies are the third most common allergy in cats and dogs after fleabite allergies and atopy, or inhaled allergies.

**Food intolerance** includes food poisoning, and is an adverse reaction to food that does not involve the immune system. A food intolerance can occur on the first exposure to a particular food, whereas it takes time to develop a food allergy. In food allergies, the immune system must first be exposed to a substance before an animal's immune system recognizes it as



Dr. Mealey and friend

