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# VIRGINIA VETERINARY NOTES

VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE

January - March 1999

No. 90

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## THOUGHT FOR THE MONTH

Can you imagine laughter as the only thing being contagious?

Kent C. Roberts, DVM  
Extension Veterinarian



This newsletter is published quarterly in support of the outreach program of the Veterinary Teaching Hospital VMRCVM, Blacksburg, VA and is prepared for and distributed to veterinarians in the Mid Atlantic Region.



## RENAL CALCULI IN DOGS AND CATS

Urinary renal calculi of renal origin (i.e. located in renal pelvis or ureter) are uncommon in dogs and cats. Less than 4% of all cases of urolithiasis in dogs and cats are reported to include renal calculi. A study was conducted in which 317 specimens of urinary calculi of renal origin from 214 female dogs and 103 male dogs, and 71 specimens of urinary calculi of renal origin from 38 female cats and 33 male cats were analyzed for mineral content between July 1, 1981, and December 31, 1993. Among dogs, 45 breeds were affected with renal calculi. Among cats, 10 breeds and a crossbred group were represented.

More than one-half of the renal calculi in both dogs and cats were from the first known episode of urolithiasis. The risk of formation of renal calculi was found to be higher for cats than for dogs, when compared to other stone-forming cats and dogs (approximately 4.95 per 100 stone-forming cats and 2.88 per 100 stone-forming dogs). Among dogs, breeds at highest risk of developing renal calculi were Miniature Schnauzers, Shih Tzus, Lhasa Apsos, Yorkshire Terriers, and female Pugs. Also at high risk were male Dalmatians and male Basset Hounds. Among smaller dogs, females generally were at higher risk of developing renal calculi than were males. Regardless of size, terrier breed males generally were at high risk of developing renal calculi. Breeds of dogs at low risk for development of renal calculi included crossbreds, German Shepherd Dogs, Labrador Retrievers, Golden Retrievers, and female Dachshunds. When only one kidney was involved, the risk of left renal calculus was greatest for both dogs and cats, but bilateral renal involvement was relatively common in both species (19% and 9%, respectively). Among dogs, specimens composed of one material substance (e.g. struvite) occurred more often in males (58.3%) than in females (37.9%). Female dogs formed renal calculi containing struvite or oxalate more often than did males; males formed calculi containing urate more often than did females.

Calculi containing oxalate, apatite, or some combination of these minerals predominated among cats; only one specimen from 38 female cats and only 4 specimens from 33 male cats contained neither oxalate nor apatite. Crossbred cats were significantly less likely to have renal calculi than were other breeds. A single renal calculus specimen was identified in several uncommon breeds including Tonkinese and Birman cats, and Affenpinscher, Clumber Spaniel, English Shepherd, and Field Spaniel dogs. No significant differences were observed between male and female dogs or between male and female cats with regard to mineral type of the specimen and the presence of urinary tract infection. **-Taken from: Ling, G., et al. J Vet Intern Med 12:11-21, 1998, as reported in Vet Med, Vol 4, Issue 6, Nov. 1998, Iowa State University, Ames, IA.**

## GENETIC LINK TO BLINDNESS IN DOGS

Two groups of researchers collaboratively studying dogs' genetic make-up have discovered a correlation between a canine genetic defect and a major cause of blindness in dogs, with implications for a similar human disease. Scientists at Cornell University's James A. Baker Institute for Animal Health and the Fred Hutchinson Cancer Research Center in Seattle recently reported that the genetic defect responsible for progressive rod-cone degeneration (prcd), or retinal atrophy, appears to be the canine version of the human gene defect producing RP17, a form of retinitis pigmentosa, which causes blindness in humans. Researchers hypothesize that both prcd and RP17 spring from the same mutations in corresponding genes in humans and dogs. They predict this discovery will eventually lead to a diagnostic test and gene therapy methods for canines that can serve as a model for human treatment. Work to develop a diagnostic test for prcd is underway at Cornell; the first subjects will be those breeds shown to inherit this defect: Labrador Retrievers, Portuguese Water Dogs, Poodles and English and American Cocker Spaniels. **-Taken from: AVMA Animal Health News & Feature Tips, p 1, Summer 1998, as reported in Vet Med, Vol 4, Issue 6, Nov. 1998, Iowa State University, Ames, IA.**

## DIFFICULTIES IN ELIMINATING *E. COLI* O157:H7 FROM THE FOOD SUPPLY

*Escherichia coli* O157:H7 is one of the most virulent pathogens known to enter the world food supply. It causes diarrhea, abdominal pain, and in some cases, intestinal bleeding and kidney failure in humans. The initial symptoms of *E. coli* O157:H7 illness generally occur within two days after eating contaminated food, though three to five days have been reported. Symptoms increase in intensity during the next 24 to 48 hours, lasting from 4 to 10 days. Less than 10 *E. coli* O157:H7 cells may be enough to cause foodborne illness in humans. A low infectious dose of 2 to 2,000 cells has been associated with outbreaks. *E. coli* O157:H7 can survive in acidic environments that are lethal to other pathogens, such as in fermented foods like sausage and apple cider.

Though potentially deadly to humans, *E. coli* O157:H7 is not pathogenic to cattle. A single cow, or cattle within the same herd, may contain more than one strain of *E. coli* O157:H7. Some strains are thought to have greater acid tolerance than others. The source of *E. coli* O157:H7 contamination on carcasses is likely due to fecal contamination during animal production and slaughter operations. Carcasses may become contaminated during hide removal or by cross-contamination with equipment and workers' hands. HACCP (Hazard Analysis and Critical Control Point) systems in processing plants cannot eliminate *E. coli* O157:H7 from foods unless a treatment is added near the end point that will routinely kill the pathogen, such as heat pasteurization or irradiation. Current research shows that competitive exclusion has the potential to eliminate *E. coli* O157:H7 from cattle before slaughtering. Competitive exclusion involves the use of non-pathogenic microorganisms to outgrow pathogens in the gastrointestinal tracts of animals.

If swallowed, fecally contaminated water in freshwater swimming areas may cause *E. coli* O157:H7 infection in both cattle and humans. Fresh bovine manure used to fertilize garden fruits and vegetables may contaminate them with *E. coli* O157:H7. Do not use fresh bovine manure to fertilize garden fruits or vegetables. The largest reported *E. coli* O157:H7 outbreak, which caused thousands of illnesses, occurred in Japan in 1996. Radish sprouts were implicated as the source of infection.

### Consumer Food Safety Tips

1. Wash hands well before handling food and after handling raw meat or poultry, petting animals (especially cattle, deer, or dogs), changing diapers, providing day care to children or adults, etc.
2. Wash fruits and vegetables thoroughly prior to handling or eating.
3. Drink only pasteurized milk and apple juice.
4. Cook ground beef and venison thoroughly (minimum 160° F) before eating.
5. Avoid cross-contaminating food with raw meat.
6. Avoid swimming in lakes or ponds used by cattle.
7. Avoid drinking surface water that has not been treated to eliminate pathogens.

**-Abstracted from: Inst. of Food Tech., September 1997, as reported in Vet Med, Vol 4, Issue 1, January 1998, Iowa State University, Ames, IA.**

### WORTH NOTING

More than 40 million people in this country receive their primary health care through hospital emergency rooms each year.

The polar bear is the largest land carnivore in the world. It can reach a height of nine feet and weigh over 1,100 pounds. The orangutan inhabits the tropical forests of Borneo and Sumatra in Southeast Asia. These primarily solitary primates are the only great apes that don't live in Africa.  
-World Wildlife Fund, KCR Oct. 1998.

## STRESS DURING HANDLING AND TRANSPORT

Fear motivates animals to avoid predators and is a very strong stressor. The amygdala in the brain is probably the central fear system that is involved in fear behavior and conditioned fear. Highly variable results of handling and transportation studies are likely due to different levels of fear stress. Fear stress may be initiated by restraint, contact with people, or exposure to novelty. Both previous experience and genetic factors affecting temperament will interact in complex ways to determine how fearful an animal may become when it is handled or transported.

Animals with previous experiences with rough handling will remember it and may become more stressed when handled in the future. Cattle trained and habituated to a squeeze chute may have baseline cortisol levels and be behaviorally calm, whereas animals reared with little human contact may have elevated cortisol levels in the same squeeze chute.

Temperament is a heritable and relatively stable trait. Rough handling may be more detrimental and stressful to animals with an excitable temperament, such as Brahman cross cattle.

In the wild, novelty and strange sights and sounds are often a sign of danger. Novelty is a strong stressor when an animal is suddenly confronted with it. The squeeze chute may be perceived as neutral and non-threatening by one animal; to another animal, the novelty of it may trigger intense fear. To prevent cattle from becoming averse and fearful of a new squeeze chute or corral system, painful or highly aversive procedures should be avoided the first time cattle enter the facility.  
**-Abstracted from: Grandin, T., J. An. Sci. 75:249-257, 1997, as reported in Vet Med, Vol 4, Issue 3, May 1998, Iowa State University, Ames, IA.**

## RABIES IN BATS

Every state except Hawaii has reported rabies in bats, with the highest numbers of cases reported from California and Texas. Although bats are not the most common wildlife species diagnosed with rabies (positive bats range from 8 to 27% of rabies-positive wildlife cases per year), almost all recent human rabies deaths from exposures acquired in the United States have been traced to bats. This fact was determined by genetic analyses of rabies viruses recovered from humans. These tests can distinguish bat rabies virus from other virus strains such as raccoon, skunk, coyote/dog, etc.

Since 1981, 24 people have died from rabies infections acquired in the United States, and 21 of the deaths were due to strains of rabies virus associated with bats. In addition, case studies revealed that bat bites may go unnoticed or are disregarded as "insect bites". Only 1 of the 21 human bat rabies cases had a documented bat bite, while another 10 involved some retrospective account of contact with bats. Thus, it appears that only 52% of the victims had any known exposure to bats. Because bat bites and virus transmission may go unrecognized by victims, public health authorities have changed their recommendations regarding post-exposure vaccination of people. It is now recommended that vaccine treatment should be considered under many circumstances where there is no demonstrable bite or scratch, e.g., a sleeping person awakens to find a bat in the room, or an adult finds a bat in a room with a child or incapacitated person. Treatment is indicated if the bat cannot be tested. **-Taken from SCWDS Briefs 14:2:3-5, 1998.**

## Would You Believe?

In our world, at least 1.5 billion people subsist on less than \$1 per day. **KCR, November 1998.**

## THE ITCHY CAT

Pruritus, the sensation which evokes the desire to itch, is a complex process which can be mediated centrally, peripherally, or peripherally with significant central modification. For years, psychogenic pruritus was thought to be important in the cat. Today we know that the vast majority of itchy cats are perfectly sane; their skin tingles, tickles, burns, or itches and they simply respond in the expected fashion by licking or scratching. The premature diagnosis of psychogenic pruritus does the cat and owner a great disservice.

For some unknown reason, cat skin appears to be programmed to itch. Cats have a much more rapid and profound eosinophilic response than do dogs. The major basic protein found in eosinophils can dampen an allergic reaction by breaking down histamine, but it can also accelerate the reaction by damaging collagen and by causing mast cell degranulation. In normal cats, the number of mast cells around the superficial dermal blood vessels can be nearly double the number found in dogs (20/hpf vs 12/hpf). The number in allergic cats is usually even greater. Consequently, the pruritus is often well out of proportion to the allergic stimulus. At the initial allergic event, some mast cells degranulate and attract eosinophils into the area. Pressure on the skin caused by licking or scratching causes additional mast cell degranulation, initiating a vicious cycle. As a result of this amplification process, itchy cats usually require a longer course of steroids than do dogs.

Cats have fewer steroid receptors than do dogs, so they require higher doses of drug to control the same level of pruritus. The attack dose of prednisolone for the cat is 2.2 mg/kg/day; most itchy cats will require a minimum of 10 to 14 days of treatment before the fire is taken out of the skin.

### Allergic Disorders

Allergic diseases are the most common reasons for cats to itch, and they appear to be increasing in frequency. As in dogs, some cats have more than one allergic disorder (e.g. flea bite hypersensitivity and atopy), so the diagnostic evaluation must continue until the cat is itch-free. Unlike dogs, allergic cats have no predictable pattern of pruritus. Atopic cats can have miliary dermatitis, facial pruritus, anterior body pruritus, whole body pruritus, traumatic alopecia on any part of the body, eosinophilic plaques, or eosinophilic granulomas.

### **Flea Bite Hypersensitivity**

Worldwide, flea bite hypersensitivity (FBH) is the most common allergic skin disease of cats. FBH is fairly easy to diagnose but often difficult to control. Products like Program®, Advantage®, and Frontline® have made treatment much more effective and easier for most owners. However, the expense of these products may preclude their use in multiple-cat households where only one cat has clinical disease. In such cases, environmental infestation should be minimized by means of household sprays or growth regulator "flea" collars, and the allergic cat should be treated with the most aggressive control program available. Purified flea saliva may soon be available, so it may be possible to address FBH in a more specific manner within the next few years. —William H. Miller, Jr., VMD, DACVD.

"Reprinted with permission from *Feline Health Topics* (July-September 1998 issue), a publication of the Cornell Feline Health Center, College of Veterinary Medicine, Ithaca, New York."

To be continued in the next issue of **Virginia Veterinary Notes**.

## SUCCESS IS NO ACCIDENT

Recruiting, hiring and managing people to work effectively and efficiently for a veterinary practice are not small tasks. There are always good people looking for a “better” job; the secret is to find them, hire them and keep them happy and productive. The prospective employee and the employer certainly have expectations regarding the position to be filled. What do today’s job seekers want? What do practice owner/managers need to offer to hire and retain capable workers?

Undoubtedly the best way to attract the quality of employee applicants you want is to have a satisfied staff with very positive feelings about the practice, the work they do, and the opportunities the practice offers for self improvement and self fulfillment. A competitive salary is essential, but we all know that beyond a certain point, money is not a prime motivator for competent workers. A practice web site offers real potential in locating prospective employees.

Quality of life in the workplace is a major concern for today’s workforce. Their first question often is (and should be): “What will I learn in this job?” As employers we must provide a significant learning opportunity tailored to each employee. This should be non-negotiable. Mentoring is a very powerful tool in the hands of a good employer and a caring staff. Sharing is the secret of good teaching. Assign an experienced employee to mentor and look out for each new hire.

The practice atmosphere should be one of “niceness”, not abruptness, rudeness or lack of concern. There must be good, honest and continuing communication among employees, and between employees and managers. This should carry over into effective communication with clients and the community.

The celebration of success and achievement is extremely important – for even small things. Recognition is a powerful management tool that helps employees bond with the practice and feel good about their roll in practice success. Flexible hours and unpaid leave (trading dollars for time) are attractive inducements in today’s world. The work ethic and work attitudes have changed for many of today’s workers. Younger workers vote with their feet; they may change jobs often.

Employee orientation and training are critical and must be a primary concern and commitment for owner/managers. Job benefits and expectations should be spelled out specifically. Evaluations of individual job performance are important and should be as positive as possible. Don’t reward incompetence and laziness! This has a very detrimental effect on competent employees. Employees are the practice’s internal clients and warrant as much thought and effort as the external clients. And please remember; the absence of complaints doesn’t mean there aren’t any.

–**Kent Roberts, DVM, VMRCVM – Virginia Tech, Blacksburg, VA.**

## WORTH NOTING

A mature hurricane (force 4) is the most powerful event on earth – by far. It is estimated that the combined nuclear arsenals of the United States and the former Soviet Union don’t contain enough energy to keep such a hurricane going for one day.

As for size, this hurricane encompasses a million cubic miles of the earth’s atmosphere, and has enough energy to provide the electric power needed by the United States for three to four years.

The Labor Day hurricane of 1935 hit New England with winds surpassing 200 miles per hour, and people caught outdoors in those winds were literally sand blasted to death. Only their shoes and belt buckles were found by rescue workers. A hurricane hit Providence, Rhode Island in 1938 that put the downtown area under ten feet of Atlantic Ocean. The impact from the waves generated by that storm triggered seismographs in Alaska five thousand miles away. –**The Perfect Storm by Sebastian Junger, W.W. Norton & Co. KCR. October 1998.**

**CONTINUING EDUCATION OPPORTUNITIES  
WINTER 1999**

<u>Date</u>	<u>Topic</u>	<u>Location</u>	<u>Contact Hours</u>
February 5-6	Case-based Canine Neurology	Roanoke/Blacksburg	10
February 19-20	Surgery of the Canine Hindlimb	Blacksburg	14
March 5-6	Diagnostic Cytology	Blacksburg	10
March 19-20	Operative Dentistry	Blacksburg	10
March 26-27	Diagnostic Ultrasonography	Blacksburg	10
April 30-May 1	Gastrointestinal Endoscopy Introductory Level	Blacksburg	10

Please note: The courses listed above are limited enrollment and feature a hands-on laboratory experience under the guidance of clinical faculty members. Program brochures provide course details. For registration or additional information, please contact Dr. J.M. Bowen, VMRCVM – Virginia Tech, Blacksburg, VA 24061, (540) 231-4621, or Anne Clapsaddle (540) 231-5261, or Conference Registration, (540) 231-5182. On-line information and registration available under Service, at: <http://www.vetmed.vt.edu>.

**VMRCVM CLASS OF 2002**

The present first year students in the four-year veterinary college program at Virginia Tech have a varied background of formal education and experience. The class of 2002 was selected from 952 applicants, of whom 195 were interviewed and 90 accepted for admission in August 1998.

Of the 90 students accepted, 78 have a college degree, including 68 bachelors, 7 masters, 1 PhD, and 2 law degrees.

The college or university previously attended include 21 students at Virginia Tech, 5 at the University of Maryland, 4 at William & Mary and Old Dominion, and 3 at Randolph-Macon College, Towson State and the University of Virginia. Harvard, Cornell, Georgetown, Penn State, and Notre Dame were also represented among others.

As for undergraduate and graduate majors among the first year class, 35 were biology majors, 16 majored in animal science, 4 in zoology, 3 in marine science, and 2 in chemistry, dairy science, economics, English, law, psychology, veterinary technology, and business administration.

Grade point averages ranged from 2.81 to 4.00 with a class average of 3.53, while GRE test scores averaged 1867.

The age of those accepted ranged from 21 to 56 years with an average of 25. Female total applicants outnumbered males 721 to 231 and those accepted are 23 men and 67 women. **–Kent Roberts, DVM, VMRCVM-Virginia Tech, Blacksburg, VA.**

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COLLEGE OF VETERINARY MEDICINE  
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BLACKSBURG, VIRGINIA 24061**

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