

TID BITS & STATISTICS TO HELP WITH CLIENT EDUCATION

By Nan Boss, DVM
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To educate clients more effectively, one of the strategies I use is to combine a story and a statistic. Using a little of both helps to teach clients who are logical learners, as well as those who base decisions more on relationships and feelings. Giving the clients information the way they like to receive it helps improve understanding and also compliance with your recommendations.

Unfortunately, you learn a lot of statistics in veterinary school but few of them relate to wellness. I thought I'd write up some of the ones I use most frequently when discussing products and services with clients. Some of these are to help you to understand the importance of teaching your clients about the topic. Others are to help teach the client. Good times to use them are when discussing prognosis and deciding on a treatment plan.

The story part is something you'll need to develop more on your own. After 25 years in practice, I have stories about a lot of diseases and treatments that I use all the time. Usually I just need to pay attention to the cases I'm seeing so I can apply what I've seen or learned to the next patient. Because teaching someone else is a very effective way to learn and remember information, telling these stories also keeps them in my own memory bank, so I don't forget what has worked or not worked for me in the past.

Stories can be very simple, just a line or two, such as "*We had another heartworm case just last week,*" or "*A cat died from heartworm at a clinic nearby just last month.*" These types of short stories make the topic seem relevant and close to home. You can also use phrases that are statements of feeling. "*Molly will feel so much better after we extract those infected teeth.*"

Sometimes stories are longer and more complex. For example, it can be a hard task to convince a client that putting their frail, ill cat through a laparotomy or endoscopic biopsies is worthwhile. I had a patient whose owner I struggled to talk into endoscopy. She finally was desperate enough to do it when her formerly 14 lb. cat was down to 5 lbs. Jim's biopsy result came back as low-grade lymphoma. Within 3 weeks of starting prednisolone and chlorambucil he had gained back 3 lbs., and he went on to live 5 more years, finally succumbing to renal failure, not his lymphoma. Jim is my poster child for not giving up too soon.

Alice Villalobos has a story she has published about a 19 year old collie whose owner consented to a splenectomy and the dog lived to be 21. I use stories and anecdotes from journal articles, lectures and discussions with other veterinarians. The point is not to talk clients into things they aren't comfortable with but to give them some hope and perspective. Sure they may lose their pet. But often the prognosis isn't hopeless and pets can get better.

Most veterinarians learn a lot from our own pets. I have learned some of life's most valuable lessons by diagnosing and treating my own cats and dogs. Those lessons, too, I frequently use when talking to clients. Sometimes my pets have provided the opposite side of the story. When I'm talking about lymphoma cats I may also talk about one of my cats. I syringe fed Cassidy three times a day for two months waiting to see if the chlorambucil would work for her. Unfortunately, her lymphoma was not so low-grade and she didn't get better – plus she started having seizures and I believe cancer had spread to her brain.

There are no guarantees in medicine, but many times having attempted to get a diagnosis or cure gives pet owners the comfort that at least they tried their best. My cat was easy to medicate and syringe feed, so it was a good option for me to try to treat her. For a fractious or

frightened cat this would not have been a good plan. An esophageal feeding tube would have been a better option there. Clients have a tough time agreeing to feeding tubes, so you'll need some stories for convincing clients that they are the best thing since sliced bread. (Take some pictures to show them, too.)

Anything that strikes fear in the heart of a client needs a story. Statistics won't do in these cases. Anesthesia is another area that calls out for good anecdotes. For example, one of my first cats lived to be 19. I did his last dental cleaning when he was 18 years old. He was diabetic, hypertensive and had CKD with a creatinine of about 3.5. He did fine with his dental treatment and lived his final year comfortably. He helps me to teach clients that age itself is not a disease and is certainly not a barrier to anesthesia. Memphis also needed arthritis medication, so I can tell stories about how important it is to provide pain management to older cats. Allergies, lymphoma, immune-mediated arthropathy, rehabilitation for orthopedic problems – my pets have taught me a lot.

I still use stories from my veterinary school cases, too, as well as years and years of practice since then. Start writing down or telling your own stories – it will make you a far better client educator. In addition, here are some tid-bits you may find useful.

Arthritis: One in five dogs of any age is arthritic (20% of your canine case load!) and the bigger picture is that out of 44 million dogs in the U.S., that's 8.8 million with arthritis.

90% of cats over age twelve have visible arthritis on x-rays. 20% of these older cats are painful. (The older or heavier the cat, the more likely it has arthritis pain.)

Hardie, E., Roe, S., Martin, F. Radiographic evidence of degenerative joint disease in geriatric cats: 100 cases (1994-1997), *JAVMA* 2002;220:628-632

Clarke SP, Bennett D. Feline osteoarthritis: A prospective study of 28 cases. *J Small Anim Pract* 2006;47:439-445

Overt lameness is not the most common clinical sign of arthritis in cats. Activities and behaviors such as jumping up and down, height of jump, general movement, "grumpiness" on handling, and seeking seclusion are signs that should be followed. The North Carolina State University Comparative Pain Research Laboratory, www.ncsu.edu/project/cvm-pain/ is a good website to visit for more information.

Peterson N, Degenerative Joint Disease in Cats, *Veterinary practice News*, August 2007

There is little correlation between radiographic changes and the degree of lameness in the pet.

Purina's 14 year study in Labrador retrievers showed that overweight dogs develop arthritis symptoms two years sooner than normal weight dogs.

A 10-15% weight loss results in improved clinical signs of arthritis, and as little as 5% to 10% weight loss improves mobility, according to owners.

Impellizeri JA, Tetrick MA, Muir P. Effect of weight reduction on clinical signs of lameness in dogs with hip dysplasia. *J Am Vet Med Assoc* 2000;216:1089-1091

Consumerlabs.com did a study on human glucosamine supplements. They took 40 brands off the shelves and analyzed them, to find that only two of them contained exactly what was listed on the label. In addition, human glucosamine products are often glucosamine sulfate. Glucosamine HCl is absorbed much better in dogs. Clients should buy good quality glucosamine supplements from us, not from the grocery store or on-line.

Multimodal therapy means that using a combination of drugs or treatments usually leads to a much better outcome. For example, giving the drug butorphenol gives 1.5 hours of pain

relief. Giving the drug metetomadine gives 2.5 hours of pain relief. Giving the two drugs together gives 6 hours – using the combination provides longer, better relief than using either drug alone. This concept also applies to chronic pain conditions, such as arthritis. Using an NSAID by itself buys you a certain amount of relief. Combining it with glucosamine, fatty acids and/or MSM gives you better results.

Behavior: The number one cause of death in young adult dogs is euthanasia for behavior problems. We cannot possibly be doing our best to help our patients lead long, healthy lives if we do not address behavior issues.

The Centers for Disease Control and Prevention (CDCP, at www.cdc.gov) keeps current statistics on dog bite injuries to humans. Their data shows that about 800,000 Americans seek medical attention for dog bites each year. Of those, 386,000 require treatment in an emergency department.

About half of all dog bites are to children, especially between the ages of five and nine. Because of their size, children require medical attention three times more often than adults who are bitten. Children are more likely to be bitten in the face because they are often at eye level with dogs; 50% of the children bitten are under age 12. In fact, almost all children 12 years of age or older have been bitten at least once by a dog.

Puppies less than 14 weeks of age who growl warrant serious attention. They have very aggressive tendencies, and without exceptionally good training, may grow up to have serious behavior problems. (I had a patient once who was snarling and growling at me at the tender age of 8 weeks. I discussed my fear that this puppy was a really bad apple, as diplomatically as I could, but the client became extremely offended and left my practice. I sent him a letter to clarify my position and two years later I actually got a letter back in return. The dog had attacked and severely injured a child and was euthanized. The client apologized for not believing me in the first place.)

Punishment methods of training have been shown to worsen aggression. The majority of dogs presented to behavior specialists for problem aggression have been trained by their owners at home using punishment methods. [Herron M, Shofer F, Reisner I. Survey of the use and outcome of confrontational and non-confrontational training methods in client-owned dogs showing undesired behaviors, *Applied Animal Behavior Science*, Vol. 117, No. 1-2 (February 2009), pp. 47-54.]

An interesting study done by GE Eskeland, RH Tilung and M Baken, at the School of Psychology Animal Behavior Program of the New College Campus in Southhampton, UK, explored gender differences as well as the effect of reward versus punishment in training dogs. . (*The importance of consistency in the training of dogs: The effect of punishment, rewards, control and attitude on obedience and problem behaviors in dogs.*) Their research showed that the majority of men (93%) punished and controlled their dogs more and rewarded them less. Their dogs had more training problems. Women rewarded the dogs more (69.9% of them), punished them less and used moderate control. Their dogs were more obedient and had fewer behavior problems.

Shyness has the highest heritability factor of all behaviors. Just because a dog is shy does not mean that it was abused. Dog owners often blame past abuse for their dog's timidity but it's more likely due to genetics and poor socialization.

Research shows that in kittens, 3-7 weeks is the socialization period. The greater the number of people the kitten interacts with at this stage, the more social it will be with strangers.

It will also seek more attention from the owners and will be much more likely to become a “lap” cat.

Breed-specific stats: 40% of purebred dogs have genetic defects. Close to 500 canine and 300 feline genetic diseases have been described to date.

5% of Dobermans die of DCM every year.

100% of English cockers and Cavaliers develop MVO/DCM by age 10. The only questions are how soon will it occur and how bad will it be?

Bloat affects about 25% of large and giant breed dogs sooner or later. Almost half of Great Danes will develop GDV. Offer stomach tacking!

Siberian huskies and greyhounds have breed risk for hypertension. Get a BP annually.

25% of dachshunds have had or will have IVDD. Other breeds commonly affected include beagles, cocker spaniels, Shih Tzus, Pekingese, Lhasa apsos, corgis and poodles.

Canine diseases: IMHA is fatal about 1/3 of the time

Postoperative complications are reported in about 1/3 of dogs treated surgically for laryngeal paralysis, LP, using various techniques. Minor wound complications are common. The most common serious complication is aspiration pneumonia, which can be fatal. Recurrence of symptoms can occur with failure of either the sutures or the cartilage used in the tie-back procedure. If the suture breaks or the tissue the suture is tied to tears the symptoms start all over again. The surgery then needs to be repeated.

Glaucoma is one of the most common causes of blindness in pets, especially dogs and rabbits. Many types are genetic. About 1 dog in 100 will develop this disease and, as a result, go blind. The average age at diagnosis is eight. Glaucoma often starts in one eye and soon also affects the other, often blinding the dog within three days.

Reweight puppies frequently and have owners feed an appropriate amount of food. You are aiming for about 4 lbs of weight gain per week, no more. Special diets are made for large breed puppies, which have fewer calories and slow growth rate appropriately. Do not let the breeder talk people into feeding an adult dog food or a calcium supplement. Neither is appropriate and both can lead to even worse problems.

Cardiorespiratory: Fun cardio facts - the blue whale is the largest mammal on earth and its resting heart rate is 5-8 bpm. When it dives, that drops to 3 bpm. The whale's heart is as big as a Volkswagen Beetle! Can you imagine being inside a whale's chest when it beats? Baboom! A little hummingbird's heart beats 3000 times a minute, way too fast to count.

65% of cats with CRF and 87% of hyperthyroid cats are hypertensive. Many hyperthyroid cats become hypertensive in the months following the initiation of treatment with methimazole. Blood pressure should be monitored frequently in these cats.

Siberian huskies have breed risk for hypertension.

Excess sodium leads to excess water retention, which worsens edema and increases the workload on the failing heart. Watching sodium intake is just as important in dogs and cats as it is in people. Unfortunately, many commercial dog foods are loaded with excess salt because it acts as a flavoring and a preservative. Treats, including biscuits such as Milk Bones™, are another big source of sodium, especially in small dogs. Table food can be loaded with sodium too. A single pretzel for a Chihuahua may be a very bad thing. Softened water is also not recommended for pets with heart disease.

Critical care: To explain skin turgor to clients you can say “We pull up the skin into a little tent and see how fast it snaps back down. If it goes down slowly or stays in a tent, the pet is dehydrated.”

Skin turgor doesn't work well in animals with little subcutaneous fat, such as **neonates** and older, thinner cats.

A neonate should have watery urine. If the urine is dark, as small puppy or kitten is dehydrated.

Survival rates in human and animal ICUs are much higher when patients receive aggressive nutritional support. The gut lining receives about half of its nutrition from ingesta passing by. After about 48 hours of not eating, cells in the intestinal lining start to die, absorption of food becomes less efficient and the animal becomes further debilitated.

Clients: 20% of clients consider their pets to be equivalent to their children. 60% of clients think of their pet as being a member of the family, though not as close as a child. The remaining 20% of clients think of their pet as “just a pet.” In many veterinary hospitals, the 20% who think of their pets as children bring in 60-80% of the hospital's income. The bottom 20% account for only 5% of practice income. Spend your time and effort teaching your good clients and don't worry about the rest.

Compliance: According to Hill's, only 7% of pets who could benefit from a prescription diet are eating one. According to Antech Laboratories, 87% of veterinarians do senior wellness testing on their own pets, yet only 9% offer it to their clients. The Compliance Study also revealed that 70% of pet owners had never heard of senior screening. Poor compliance is often due to the veterinarian not doing a good enough job explaining his or her recommendations (multiple times).

Dentistry: Dental care has saved the lives of more pets than any other advance in the field of veterinary medicine in the last 50 years. Promoting dental care to your clients is one of the most crucial things you will do as a veterinary staff member. 80% of dogs and 70% of cats over age 3 have some degree of periodontal disease. Smaller dogs and cats live 15–20% longer if they receive dental care as needed throughout their life. Larger dogs live 10–15% longer.

Periodontal disease in pregnant women increases the risk for having a premature or low birthweight baby by seven times. (Use this stat when talking to women about dental care.)

POD in humans also increases risk for heart attack and stroke by 2-3 times. (Use this stat with men.)

The second leading cause of death in Europe in the Middle Ages was septicemia from abscessed teeth. The only thing that killed more people back then was the plague.

Sixty percent of dental disease occurs below the gumline
Hill's T/D reduces plaque and tartar 37% in dogs and 47% on cats. Eukanuba and Royal Canin diets reduce plaque and tartar in similar amounts.

If you sell your clients T/D, they will save money in the long run by needing fewer dental prophyls. Your clinic will make more money in the long run by selling something the client buys 12 times a year than you would have on the dental cleanings.

Dermatology: The skin is the largest and heaviest organ of the body, and is also one of the most complex. That's why some doctors specialize in dermatology – skin diseases are often complicated and take time to resolve or improve.

It can take dozens of skin scrapings to find *Sarcoptes*. It is much simpler to treat for them and rule them out that way.

Symptoms of scabies appear 2-6 weeks after exposure.

Approximately 30% of dogs with *Sarcoptes* are also allergic to house dust mites.

One flea bite a month is enough to keep a severely allergic dog itching all the time.

The amount of an allergen is not important – remember that the tiny amount of venom in a bee sting can kill you. A single piece of food a pet is allergic to can cause symptoms for weeks.

90% of food-allergic dogs have otitis, and 20% have otitis as their only symptom. 50-80% of atopic dogs have otitis.

Michele R. Rosenbaum, *DVM In Focus*, 10 Common Mistakes in Treating Ear Disease, p. 10-16, May 2006.

Approximately 80% of atopic dogs also have FAD.

West Highland white terriers are prone to seborrheic dermatitis caused by *D. injai*.

People in contact with a dog that has *Sarcoptes* may develop a pruritic, papular rash on the arms, chest or abdomen. Human lesions are usually transient and resolve spontaneously once the dog is treated.

Feline diseases: VS-FCV, virulent systemic feline Calicivirus, can affect multiple organs in the body, and can kill healthy adult cats within 24 to 48 hours. 60% of adult cats and 20% of kittens that contract the disease will die. Those that survive can take weeks to recover.

Rhinotracheitis is a Herpes virus. Like other Herpes viruses, including human *Herpes simplex* that causes cold sores and chicken pox, which can recur late in life as shingles, these viral infections never go away, and they flare up with stress or co-infection. The goal of vaccination is to keep immunity up to minimize flare-ups of the disease. It is not to eradicate the disease. Distemper vaccination, on the other hand, provides lifelong protection at almost 100% efficacy – it's one of the most effective vaccines ever produced.

Herpes virus (Rhinotracheitis) is the most prevalent viral disease of cats. It causes a mild disease in cats and kittens much like the common cold in people. 80% or more of cats have been exposed. Interestingly, 90% of humans have Herpes simplex virus harbored in their nerve tissue from previous exposure to the Herpes simplex virus, which causes cold sores. In a similar way, at least 80% of cats, indoors or out, have Feline Herpes virus in their system.

Adjuvants are chemicals that stimulate the immune system to respond more strongly to the vaccine. They often make the vaccine more effective or longer lasting, but they also increase the risk for adverse vaccine reactions.

The risk of sarcoma is only 1 in 5,000 -10,000 cats, depending on the study.

30-40% of adult humans are seropositive for Toxoplasmosis, suggesting they have been exposed.

10% of the time overgrooming is due to stress and is akin to a person chewing on their fingernails. 90% of the time it's due to allergy causing itchy skin.

40% of cats with IMHA have an underlying infection such as FeLV.

Cats can develop liver disease in as little as 48 hours if they stop eating. Never wait to call your veterinarian if your cat isn't eating well.

If your male cat becomes obstructed, he'll usually die within 24 hours. Any change in urinary behavior in a male cat is an emergency.

There is a 9% occurrence of HCM in seemingly healthy cats.

About 1/3 of diabetic cats who would need insulin on a regular cat food do not need it when on a prescription high protein diet. Those who do need insulin usually need only 1/3 the dose that they would need eating a regular cat food.

About 10% of hyperthyroid cats have a normal TT4 but a high FT4. Radiation treatment is about 98% effective.

Fleas & ticks: Adverse reaction reports to the EPA from OTC flea products jumped from 28,000 in 2007 to 44,000, including 600 deaths, in 2008. Side effects from these products included vomiting, diarrhea, tremors, seizures, eye redness and coughs, among others. The most common reactions were the result of cats exposed to dog products; and using products on pets smaller and /or younger than permitted on the label. As a result, in 2009 the Environmental Protection Agency (EPA) began a yearlong safety review of these products, subsequently recommending stronger label warnings, public education and increased monitoring for adverse events. None of these things are as effective as someone on the veterinary team helping a pet owner to choose the most effective and safest products and carefully explaining how to use them properly.

It used to be thought that in order to prevent fleas from hatching inside the vacuum cleaner we needed to throw away the sweeper bag. Actually, a recent study showed that vacuuming kills 96% of adult and 100% of larval fleas and is a pretty effective method of flea control.

Glen Needham, associate professor of entomology at The Ohio State University and co-author of a study on vacuuming flea eggs, quoted in Vacuuming Sucks for Fleas, an article in Veterinary Practice News, spring 2007.

A client will need 1 flea fogger per room. Foggers don't distribute insecticide around corners or under furniture. Draw a picture of spray going up and falling down for the client.

There are over 2000 species of fleas in the world.

Fleas can perform the human equivalent of jumping over St. Paul's Cathedral in London...not just once but 600 times an hour for three days in a row!

Fleas have a ball of a substance called Resilin above their hind legs, which gives them their bounce. Resilin is the most elastic substance known. A Resilin ball dropped from 100 feet would bounce back to 97 feet!

Bat fleas in Southeast Asia hitch rides to the bat roosts on the backs of bat earwigs - as many as 41 fleas have been counted on the back of one earwig.

An Antarctic flea has evolved to wait 9 months under several feet of ice and snow for its host, the petrel, to return to the nest.

One theory of historians says that lap dogs were bred, not for their company, but to distract the fleas into biting the dog instead of its owner.

London's Natural History Museum contains a collection of souvenirs from 19th century Mexico of "dressed fleas" - tiny, meticulously dressed figures of woodcutter, drummer boy, wedding couple etc., all with flea heads for faces.

Modern life makes it easy to forget about fleas. Our houses are drier than those of our ancestors and flea larvae need moisture to reproduce. Hence we are less plagued with them than our forebears. However, for most of human history humans of all classes were routinely flea-bitten.

Gastroenterology: There are about 100 different causes of vomiting and diarrhea in pets. Some are easy to find and treat but others are more complex.

1/3 of the time ultrasound gives a false negative or false positive for pancreatitis. In general, ultrasound misses about 1/3 of abdominal pathology.

In a study that sectioned the pancreases of 100 dogs at necropsy, 96% of them had evidence of pancreatitis in at least one section of pancreas.

The normal intestinal immune system consists of several different types of cells whose jobs are to scavenge up and destroy foreign cells, such as bacteria, which invade beyond the intestinal lining. They also destroy toxins and any foreign materials they find. They are sort of like a police force that travels up and down within the intestinal wall, keeping order. With IBD, these cells go out of control.

99 of 100 cats with frequent hairball vomiting had intestinal pathology on biopsy in a study done by Dr. Gary Norsworthy, most from IBD/lymphoma but several with other types of intestinal cancer. Frequent hairball vomiting is a sign of intestinal disease & reduced intestinal motility.

Heart disease: Cardiomyopathy can start as early as six months of age, or as late as 15 years, but most affected dogs start developing symptoms at 6–8 years of age. By the time symptoms develop, the heart is already severely damaged. Life expectancy at this stage is usually short-months to a year or two.

Diagnosing DCM early, and starting the affected pet on heart medication, can prolong life expectancy for these dogs by 1 to 3 years. Many dogs will start to show abnormalities on an ECG in the early stages of the disease. A simple ECG strip, done once a year is a screening test for cardiomyopathy that should be done annually for all Boxers, English Cocker Spaniels, Doberman Pinschers over one year of age, and other at-risk breeds, along with their annual vaccinations. Alternatively, for many genetic problems, including Acute Ventricular Dysrhythmia Syndrome in boxers, we now have DNA screening tests.

One study of dogs with heart disease showed that 19% of their caloric intake was coming from treats and scraps. Many of these dogs were receiving their medications in high salt treats such as lunch meat, cheese and peanut butter.

Heartworm: Poor compliance in giving preventive medication is often due to poor understanding of the severity and nature of the disease. According to an American Heartworm Society (AHS) survey conducted in 2008, 35% of owners who have their dogs seen annually by veterinarians fail to give their pets heartworm preventatives. Only about one third of the 1000 dog owners surveyed knew that the disease is transmitted by mosquitoes.

There are 1 million new canine heartworm cases in the U.S. every year.

Male dogs are affected by heartworm disease 2-4 times as often as females.

About two-thirds of pet owners forget to give at least one dose of monthly heartworm medication each year. Only a little over half of oral heartworm preventatives sold are administered as directed. When the pet owner does forget a dose, the average time before the medication is remembered and given again is 30 days. 33% of pet owners miss several doses and about 20% forget so many that they give up and stop giving it altogether (Statistics from Ft. Dodge and Merial).

The AHS survey revealed that 60% of those polled believed that the cost of treating heartworm disease in a dog was only about \$250 and they thought it would be simple to treat – you prevent it with a pill, why wouldn't you treat it with one? They don't at all understand how lengthy, risky and expensive treatment can be, nor how serious it can be for the pet.

If you are talking to a cat owner, and sometimes to a dog owner too, the owner will say, "but my cat/dog never goes outside." Head them off at the pass by commenting that, "Interestingly, about one third of cats that get the disease stay strictly indoors. The few mosquitoes that come into your house are more than enough to carry the disease."

Intestinal parasites: 1-3 million people, most of them children, pick up roundworms every year in the U.S. Most develop gastrointestinal flu-like symptoms but 700 children per year suffer from blindness or permanent visual impairment. A study reported in 1985, which analyzed serum collected from children with gastrointestinal illnesses between 1971 and 1973 showed that 5% of children were infected with *Toxocara* and that, in some groups and populations, up to 30% of children 1 to 11 years of age were infected. This reference was a landmark study because prior to that it had been thought that only about 10,000 people acquired roundworms every year. The number went up by a factor of 100 and prompted the CDC to pay more attention to the issue of zoonotic roundworm incidence and deworming protocols for veterinarians.

Herrmann N, Glickman LT, Schantz PM, et al: Seroprevalence of zoonotic toxocariasis in the United States: 1971-1973. *American Journal of Epidemiology* 122(5): 890-896, 1985.

95% of puppies and kittens are born with intestinal parasites or contract them shortly after birth. This is why we Deworm puppies and kittens multiple times.

Just because a fecal tests negative doesn't mean the pet doesn't have worms! In one study, 80% of puppies had *Toxocara* in their intestines but only 20% were positive on fecal exams.

Schantz PM, Moorhead AR, et al: Intestinal parasites are common in Fulton County, Georgia, Proceedings of the Annual Meeting of the American Association of Veterinary Parasitology, No. 80, San Francisco, 1994, 93-94

A single gram of feces from a pet with roundworms can contain 300,000 roundworm eggs! It's amazing how contaminated a yard can become! Not surprisingly, children of people who raise dogs have higher incidence of Toxacariasis, as a litter of puppies sheds millions of eggs.

80-100% of puppies are born with *Toxocara canis* (roundworms). Many are co-infected and have multiple types of parasites.

Little, S., Parasites and People, a Roundtable on Zoonotic Disease, *Veterinary Forum* 20(A), 2004.

When a hookworm lets go of its intestinal feeding site the bite site continues to ooze blood, exacerbating the blood loss they cause.

Although hookworms usually cause skin disease in humans, adult *Ancylostoma caninum* have been recovered endoscopically from the small intestines of people with eosinophilic enteritis.

Whipworms eggs are difficult to find in stool samples because the adult worms shed eggs intermittently. Multiple tests may be needed to diagnose them. They shed a lot of eggs at a time when they do pass them, though. Adult whipworms live months to years, and females produce 4000-8000 eggs per day. Idexx has an Ag test for whipworms now that should be utilized if you suspect them.

Whipworm eggs are also not as buoyant as other parasite eggs, so they are best found using sugar solution and centrifugation to test the stool. If your hospital spins its fecals you have an advantage over clinics that don't.

Trichuris suis (whipworms found in swine) eggs have been shown to survive for 11 years. Once parasite eggs are there, they ain't goin' away.

Giardia can cause belching and flatulence in dogs. if a pet has these symptoms, look for it.

About 1/3 of puppies and kittens carry *Giardia*.

Giardia is the most common intestinal parasite of humans but people usually have different strains than our pets do.

Laboratory screening: Laboratory testing likely will account for 15-20% of the income of your practice.

18% of middle aged and older cats (above age 7) that appear healthy upon physical examination have an underlying disease.

10% of cats over age nine have elevated T4 levels and above age twelve that increases to 20%. That's a lot of hyperthyroid cats! Two thirds of those cats with hyperthyroidism and/or chronic kidney disease will have or develop hypertension and many will have periodontal disease, pancreatitis, diabetes or other health problems that need diagnosis and treatment as well.

23% of senior dogs that appear healthy upon physical examination have an underlying disease. Even 5% of young pets that appear healthy upon physical examination have an underlying disease, and 7% of dogs less than eight years old have low thyroid levels.

Clients like to feel special and they are pleased when you seem to know a lot about their specific breed of dog or cat, so use that method as applicable. Such scripts as "Dobermans like Max are particularly prone to hepatitis, a form of liver disease, so it's especially important to do blood test screening regularly" work well.

By the time liver or kidney disease is apparent on blood screening, 75% of organ function is already damaged and the disease may be at a late stage. The earlier we can detect a disease the better.

Almost all dogs over age 12 have some degree of nodular and vacuolar change in their livers.

Topical or systemic steroids, phenobarbital, antifungals, tetracyclines, sulfas and arsenicals cause an increase in alk. phos. within 30 days, usually 2-6 times normal. Retest once off drugs if possible.

65% of dogs and cats with hepatobiliary shunts have decreased BUN.

Nutrition: Pet foods such as Science Diet and Eukanuba have six times the amount of fatty acids than grocery store brands.

Young puppies and kittens should increase their bodyweight by about 10% each day. By three weeks of age the intestinal wall thickness will double to facilitate the passage of solid food.

Colostrum is rich in protein, immunoglobulins, hormones and other substances which promote development of the GI tract. Without getting colostrum from their mom, the intestinal mass does not double during the first 24 hours of life as it should, but instead grows much more slowly.

A study comparing the protein needs of miniature poodle puppies to Great Dane puppies showed that the large Great Dane pups needed higher protein levels. The poodles had normal

growth rates and normal blood chemistry values when fed a puppy diet containing 21% protein, but the Great Dane pups, though their growth rates were normal, had low serum albumin levels and red blood cell counts. So, small puppies need more energy density but less protein in their diet.

Even more interesting is a study that showed Labrador retriever pups needed 50% more of the amino acid methionine than did the same age beagle pups.

Cats over age twelve have been shown to have a greater energy/calorie requirement. Just like people, by the time we and our feline friends are in our 90's we are prone to being too thin. Many cats experience wt. loss with increasing age. Studies show that some older cats are able to digest and absorb as little as 1/3 of the nutrients they did when they were younger.

Do pets' sense of taste and smell diminish with age? This happens in humans, so it is probably true for pets as well. This may be part of the reason older pets can get so fussy about what they will eat. Amyloid deposits may be found along the olfactory and facial nerves of older pets, which suggests that nerve function in those areas would be affected, just as amyloid deposits in the brain are associated with Alzheimer's disease in people.

Treats should never comprise more than 10% of the daily food intake.

About 50% of Americans regularly use supplements, and about 10% of pets are taking them, too.

65% of pet owners whose pets have cancer are giving them supplements, usually without the knowledge of the veterinarian. [Freeman LM, Aboud SK, Fascetti AJ, Fleeman LM, Michel KE, Laflamme DP, Bauer C, Kemp BL, Van Doren JR, Willoughby KN. Disease prevalence among dogs and cats in the United States and Australia and proportions of dogs and cats that receive therapeutic diets or dietary supplements, *J Am Vet Med Assoc* 2006 Aug 15;229(4):531-534. and Lana SE, Kogan LR, Graham JR and Robinson NG. The use of complimentary and alternative therapies in dogs and cats with cancer, *J Am Anim Hosp Assoc* 42:361-365, 2006.]

When starting a pet on a fatty acid supplement, it takes 3 weeks for the blood level of Omega 3 to plateau and 12 weeks for the OM3's to replace the OM6's in the outer membranes of the cells. Warn owners it can take a long time for J/D to work!

Puppy food supplemented with DHA leads to smarter, more trainable puppies – great for getting clients to switch to better diets!

Did you know that there is not a single vitamin manufacturer in the United States anymore? All of our vitamins are imported, including the thiamine in our bread or flour, the Vitamin D in our milk and the ingredients of Flintstones chewables. Manufacturing standards and quality control are up to the individual manufacturer. As we have discovered during pet food recalls in recent years, we don't always know where pet food ingredients (or human and pet nutraceuticals) really come from. Many of these products come from overseas.

Consumerlabs.com did a study on human glucosamine supplements. They took 40 brands off the shelves and analyzed them, to find that only two of them contained exactly what was listed on the label. Clients should buy good quality glucosamine supplements from us, not from the grocery store or on-line. Probiotic supplements are at least as bad and many fatty acid supplements are probably questionable as well. They usually contain what is stated on the label but many of them, like the fish they came from, are contaminated with heavy metals.

In cat patients with kidney disease, just changing to Hill's K/D™ as the only therapy increases life expectancy 1-2 years. Clients need to understand what a big difference a special diet can make.

Ross SJ, Osborne CA, Kirk CA, et al. Clinical evaluation of dietary modification for treatment of spontaneous kidney disease in cats. *JAVMA* 2006;229:949-957

If a pet doesn't eat the new food within 48 hours the client will usually give up on it. Call backs to follow up with the client as to whether the pet is eating the food, and to offer suggestions such as changing to a different prescription diet brand or adding canned food, gravy, etc. should be done within 2 days of taking the new food home. Again, this is a very important part of the pet's treatment plan. Also warn cat owners that they may need to start with just a few kernels a day and work up very slowly.

Not all cats will eat canned food, no matter how much you would like them to. Water fountains are good for bladder and renal diseases for Mr. Crunchy cats.

About 50% of the time in cats and 18% of the time in dogs food allergy symptoms are present in more than one body system - for example, both itchy skin and diarrhea. Upon re-exposure to a substance the dog or cat is allergic to, symptoms will recur anywhere from 1 hour to two weeks later.

Obesity: According to AAHA's original 2003 Compliance Study, 35% of adult cats are overweight but only 14% of clients are told their cats are overweight.

According to the Association for Pet Obesity Prevention (APOP), 45% of dogs and 58% of cats are overweight or obese (2009 numbers).

Obesity is a life shortening disease. Purina's 14 year study on Labrador retrievers showed a life expectancy two years shorter for overweight dogs, and the development of arthritis two years sooner. Few things can improve an animal's life expectancy and quality of life more than weight management.

Kealy RD, Lawler DF, Ballam JM, et al. Effects of diet restriction and life span and age-related changes in dogs. *J Am Vet Med Assoc* 2002;220:1315-1321

Excess weight is one of the most important factors in the development of arthritis. A 10% to 15% weight loss results in improved clinical signs of arthritis, and as little as 5% to 10% weight loss improves mobility, according to pet owners. Keeping weight off is a key to preserving joint health for at risk pets.

Lisa Freeman, DVM, PhD, Dipl. ACVN, a nutritionist at the veterinary school at Tufts University, did a study on OTC brands of "lite," "light," "low calorie" or "less calorie" diets that was published in *JAVMA* in Jan. of 2010. She found that 50% of them exceeded the limits on calories per cup for low calorie diets set by government regulations. In other words, many pet foods sold as low calorie really aren't.

Just ten extra kibbles per day is enough to cause a cat to gain 4 lbs. by age ten. The average cat prefers to eat about 10-15 times per day, one mouthful at a time.

My rule of thumb for cats is ¼ cup pf food twice a day for females and 1/3 cup for males. For dogs, 1 cup per 30 lbs. of BW per day. This is generally much less than what it will say on the pet food label.

To get a pet to lose weight you will need to have the owner decrease food amount at least 25%. Have them cut back that much, reweigh in 1 month and cut back another 25% if no improvement. (So, for example, 2 cups per day becomes 1.5 and then eventually 1-1.25. If this amount seems way too low, you need to switch to a prescription wt. loss diet so the diet is not protein-deficient.) They can add carrots or green beans in an equivalent amount to what they cut out – so ½ cup of kibble becomes ½ cup of carrots.

Oncology: Lymphoma is a common cancer of cats and is twice as likely to occur in cats living in a house with a person who smokes. Two smokers in the household means a fourfold increase in risk for a cat. Smoke is heavier than air so pets, who spend most of their time lower to the ground, are more at risk. Cats not only inhale the smoke, but when grooming themselves they lick and swallow ash and particulates that settle onto their fur. Lymphoma usually occurs in the respiratory or digestive system where exposure to the toxins in cigarette smoke is the greatest.

Lymphoma accounts for 33% of all cancers in cats, and 90% of those that spread to multiple organs in the body.

About 2/3rds of splenic tumors are hemangiosarcoma, 1/3 are benign hemangiomas. A few are another type of tumor altogether.

Purina's study showing a two year longer life expectancy for dogs that were kept a little lean also showed the diseases the heavier dogs died from. It wasn't heart disease or diabetes or high blood pressure, as you would expect (because that's what overweight people are more at risk for). The diseases that the more overweight dogs developed as they got older were various cancers.

Cats wearing over-the-counter flea collars have higher risk for squamous cell carcinoma in the mouth. They groom the insecticide off themselves and get it in their mouths.

Lawn chemicals increase risk for bladder cancer in Scotties.

Fire retardant chemicals in fabrics, carpeting and furniture have been implicated as a cause of thyroid tumors in cats. In general, using "green" or natural products in your home, such as low VOC paint and formaldehyde-free building materials protects animals as well as humans.

Pharmacology: Half of all human patients take the wrong medications, in the wrong doses, at the wrong times or in the wrong ways, according to the Institute for Safe Medication Practices (ISMP). Every year in the US, these inadvertent errors lead to an estimated 125,000 deaths and more than \$8.5 billion in hospital costs. In addition, 67% of Americans cannot remember the names of their own medications. In order to minimize problems with medications for pets, we need to be very aware of the fact that clients are easily confused when it comes to drugs and dosages.

It's interesting but frustrating that, although 40% of dog owners have given their pet aspirin, they get very concerned over the side effects of the much safer products that we can provide. The newer Cox 2 specific NSAIDs are many times safer than older drugs such as aspirin but most pet owners don't know the difference. Therefore, it's our job to carefully explain the risks but also to put them into perspective. Most common side effects are mild and temporary.

Counterfeit and mislabeled medications are commonly sold over the internet. To educate your clients about why they should purchase prescription products directly from their veterinarian, the FDA has put together a brochure for clients, sponsored by the U.S. Food and Drug Administration, the National Association of Boards of Pharmacy and the American veterinary Medical Association. You can visit any of their websites for more information, www.fda.gov/Drugs.htm; www.nabp.net; www.avma.org/issues/prescribing/default.asp.

Senior care & screening: Clients prefer to hear the word "senior" vs. "geriatric."

Try to correlate the pet's age to human age: *"If Fluffy were a person, she would be over 50 now, so we need to look more closely for problems that start to occur at this age."* Clients relate to this technique very well.

Spay/neuter: Clients often ask “Will spaying/neutering change my pet’s personality?” Intact male dogs represent 80% of dogs presented to veterinary behaviorists for dominance aggression, the most commonly diagnosed form of aggression. (Behaviorists are trying to phase out the use of the term “Dominance Aggression” but this was an older study.) Intact males are also involved in 70-76% of reported dog bite incidents. Yes, altering a pet can have effects on the personality – but usually for the better. You could say, “No, though neutered pets tend to be more focused on their owners and are much less likely to roam and fight.”

Weight gain of up to 38% has been reported in spayed female dogs fed free choice after spaying. It’s very important to feed an appropriate amount of food once a pet is altered.

The majority of unsprayed female dogs and cats will develop mammary tumors (breast cancer) as they get older. Spaying a pet before her first heat almost completely eliminates this risk.

For some breeds, early spaying or neutering increases risk for hip dysplasia. The age at which we recommend altering pets may vary with the breed and the sex of the pet.

About 60% of unsprayed female rabbits die of uterine cancer by age six.

25% of dogs at shelters are purebred

Toys and Treats: Always supervise a pet when it’s chewing on a toy, so you can watch for choking.

The hair on the outside of a tennis ball is very abrasive and wears the enamel off dogs’ teeth. It’s OK to play fetch but then put the ball away, don’t let them gnaw on it. Smooth balls from pet stores are better for the teeth but one study showed that 50% of them are contaminated with lead.

Behaviorists recommend giving dogs stuffed animals to rip apart as an enrichment activity. They, however, do not have to remove pieces of said stuffed toys from the dog’s intestines. If the dog not only rips toys up but eats them, don’t give them!

The three most common things that break dogs’ teeth are ice cubes (if you must give ice, use shaved or chipped ice), bones (if you must give them, boil them for a couple hours first) and chew hooves (just don’t go there). Even Nylabones can cause slab fractures. If you whack a toy on your shin and it hurts, it’s too hard to give your dog! If you can’t flex a plastic toy in the package, it’s too hard.

People break their teeth on popcorn kernels.

One of the most common causes of death in mountain lions is septicemia from abscessed, broken teeth. The size of the tooth or the dog doesn’t matter. Fracturing a tooth is like flaking an arrowhead. One strike in the right place and a piece of tooth flakes off. If the root is exposed by the fracture, the tooth is a goner.

Any toy less than 1.5” in diameter can be swallowed by a cat. Glitter balls, tiny mice...

Urinary tract disease: According to Veterinary Pet Insurance (VPI), lower urinary tract disease is the number one medical condition affecting cats. Chronic renal failure is second and diabetes is fifth, both leading to one of the most common symptoms of illness – PU/PD.

Zoonoses: 60% of the nearly 1500 diseases recognized in people have zoonotic potential. Nearly 75% of newly emerging diseases such as the Ebola, avian influenza and West Nile viruses are zoonotic.

According to Antech Diagnostics, A survey of 370 veterinarians in Washington state revealed that 280, or 77%, of respondents recognized that it was very important to educate clients about zoonotic disease prevention. However, only 158, or 43%, indicated that they regularly initiated discussions about zoonotic diseases with clients. Only 57% had client educational materials on zoonoses available in their clinics. (About ¼ of the veterinarians surveyed had themselves had a zoonotic disease during their careers.)